

Town of Harwich
BOARD OF WATER/WASTEWATER COMMISSIONER'S MEETING AGENDA*
Wednesday, May 26, 2021, 1:00pm

REMOTE PARTICIPATION ONLY
OPEN PUBLIC FORUM

For those members of the public wishing to make comment you may do so by a combination of email and phone by;

1. First, send an email to: **dpelletier@harwichwater.com**
(Send emails at any time after the meeting agenda has been officially posted)
 - a. In the subject line enter "request to speak Jane Doe"
 - b. Replace Jane Doe with your name - No need to add any more detail to email
2. Please wait until the Chairman has opened this agenda item for Open Public Forum
3. **Join from your computer:** <https://global.gotomeeting.com/join/843431493>
4. **Or by phone, dial:** 1 (224) 501-3412
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6. Please be patient and eliminate any background noise
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8. When your name is called use *6 to unmute yourself

I. CALL TO ORDER

II. WELCOME

- A. Newly elected members Noreen Donahue and John Gough

III. CONSENT AGENDA

A. Minutes

1. April 28, 2021
2. May 6, 2021

IV. PUBLIC HEARINGS/PRESENTATIONS

- A. Discussion and possible vote to approve updates to Water Rules & Regulations- 1:00pm
B. Discussion and possible vote to approve Wastewater Rules & Regulations- 1:30pm

V. OLD/UNFINISHED BUSINESS

VI. NEW BUSINESS

- A. Board Reorganization- *Discussion and Possible Vote*
B. Capital Plan Review

VII. SUPERINTENDENT'S REPORT

VIII. COMMISSIONER'S REPORT

IX. CORRESPONDENCE/ANY OTHER BUSINESS

X. NEXT MEETING: TBD

XI. OPEN PUBLIC FORUM

A. See dial in instructions above

XII. ADJOURNMENT

**Per the Attorney General’s Office: The Board of Water Commissioners may hold an open session for topics not reasonably anticipated by the Chair 48 hours in advance of the meeting following “New Business.” *If you are deaf or hard of hearing or are a person with a disability who requires an accommodation, contact the Water Department Office at 508-432-0304 x.0 or by email at customerservice@harwichwater.com*

Authorized Posting Officer:

Tracey Alves

Tracey Alves, Board Secretary

Posted By: _____

Town Clerk

Date: _____

IV. PUBLIC HEARINGS/PRESENTATIONS

- A. Water Rules & Regulations-1:00pm
- B. Wastewater Rules & Regulations- 1:30pm



Town of Harwich, Massachusetts

Water Department

Water Rules and Regulations

Adopted by

Board of Water & Wastewater Commissioners

DRAFT

Adopted <<TBD>>

Introduction

Under authority of the General Laws, Acts of the State Legislature of the Commonwealth of Massachusetts, the following rules and regulations are hereby established by the Town of Harwich in the county of Barnstable, and hereby made and shall be considered a part of the contract between the Harwich Water Department and every person or persons liable for water charges or other charges subject to our jurisdiction, and the filing of an application to take water, or the taking of water, shall be considered express assent to be bound by these rules and regulations and any other changes which may hereinafter be made.

By the virtue of Massachusetts General Law Chapter 41 and other authority and powers, the Water/Wastewater Commissioners of the Town of Harwich, Massachusetts establish the following Rules and Regulations relating to the provision of water by the Harwich Water Department. All customers on the Harwich Water System are bound by these Rules and Regulations and future amendments thereto and are further bound to take water only for purposes stated in an application made by the customer for water service, made to and approved by the Harwich Water Department.

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Section 1: Definitions

- 1.1 Backflow** – The flow of water or other fluids, mixtures or substances into the distribution pipes of a potable water source.
- 1.2 Backflow Prevention Device** – An approved mechanical device designed to prevent Backflow.
- 1.3 Contractors and Developers** – Contractors and Developers shall mean an individual, firm, corporation or any entity who installs water mains and their appurtenances.
- 1.4 Corporation Stop** – A shut off valve near the main that is used to isolate water from the main from the service connection.
- 1.5 Cross Connection** – An actual or potential connection between a distribution pipe of potable water supplied by the public water system and any waste pipe, soil pipe, sewer, drain or any other contaminated or hazardous source. Without limiting the generality of the foregoing, the term "cross connection" shall also include any bypass arrangement, jumper connection, removal Section, swivel or changeover connection and any other temporary or permanent connection through which Backflow can or may occur.
- 1.6 Curb Stop** – Part of the water service, usually located at or near the owner's property line, where the Town has complete access and control to shut off the water supply to the premises.
- 1.7 Customer** – The term "customer" shall mean the individual, firm, corporation or any entity listed as the owner of the property. Customer shall mean the Owner of the Premise / Property, who shall be responsible for payment of bills for charges for water and sewer service to the property whether or not the premises is occupied by the Owner or the Owner's authorized representative.
- 1.8 Department** – "Department" shall mean the Town of Harwich Water Department.
- 1.9 Irrigation/Sewer Deduct Meter** – Meter used for the purpose of determining water use for lawn sprinklers or other approved process use that are either owned and maintained by the Water Department or the Owner of the Property.
- 1.10 Main** – A "main" shall mean the supply pipe laid in the street from which property connections are made. The Department shall consider part of the main to include from the corporation stop to the street side of the curb stop.
- 1.11 Meter Pit** – An underground vault enclosing a meter.
- 1.12 Service** – A "service" shall mean the pipe running from the curb stop and a curb box into property. Customer Water Service shall be defined as the entire water service excluding any corporation stop and/or valves directly associated with the water main. The Customer will be assessed for any repairs, replacements, or other services rendered to the Customer Water Service.

- 1.13 Superintendent** – “Superintendent” shall mean the Superintendent of the Water Department or the Superintendent’s designee.

Additional Definitions

Additional definitions as applicable are adopted as set forth in Massachusetts Universal State Plumbing Code, 248 CMR and in the Massachusetts Board of Fire Prevention Regulations, 527 CMR.

Section 2: General Provisions

2.1 Contractual Agreement

Acceptance of service shall bind the customer to the laws, rules, regulations and policies of the Commonwealth of Massachusetts, the Town of Harwich and the Harwich Water Department, and shall form a part of the contract with every customer and shall be adhered to and govern the relations between the Department and the customer who is connected to the municipal water system and is bound hereby.

2.2 Application for Water Service

All applications for any new installations, alterations, replacements or change to water service shall be submitted for approval to the Superintendent or Superintendent’s designee to the water office by the owner of the property or their authorized agent in writing. All applications shall include an engineered plan stamped by the Board of Health locating the septic system on the property. A building permit must be acquired before a service tap can be furnished.

2.3 Ownership Responsibilities & Liability

All pipes, valves, taps and other appurtenances between the municipal water main and the curb stop up to the property line are the property and responsibility of the Department. All piping, valves, equipment and any other appurtenances “downstream” of the curb stop are the property and responsibility of the customer although such items are required to meet the standards and specifications of the Department. An exception to the above is the primary water meter, which will always be the property of the Department.

2.4 Responsibility for Charges

Customers of water shall be charged with and held responsible for all water passing through their water meter. All charges remain with the account until paid regardless of sale.

2.5 Availability of Municipal Water

Application will be accepted for review subject to there being an existing municipal water main in a street or right-of-way abutting the premises to be served, but approval of an application shall in no way obligate the Department to extend its mains to provide water to a property.

2.6 Location, Plans and Specifications

The Department has the exclusive right as to the location of any and all water services, fire service lines, hydrants and water meters on the distribution system. Plans for said construction and or replacement shall be submitted with the application showing the curb

box connection, the service line to the structure and the meter location. In the event that more than one meter is serviced by one service line, there will be a manifold used to provide a separate meter hookup for each designation. This must be provided on each preliminary plan before final approval is given. Any service line over 100' must have a meter pit closest to the curb stop or property line before their meter installation is approved.

2.7 Construction

Owner of property desiring construction, alterations or attachments connected with the water supply shall submit plans and specifications for the proposed work to the Superintendent for inspection and approval and for a determination as to whether the same is permissible. The Superintendent shall determine the terms, charges and conditions under which the proposed use shall be permitted.

2.8 Private Wells

All private wells used for irrigation shall not be connected to the Harwich water system or domestic plumbing at any time. Should any violation be noted, the Department reserves the right to shut the water off until the situation is resolved and all fees have been paid.

2.9 Right of Entry

Owner or occupants of any premises served by the Harwich water system shall, upon presentation by Department personnel of their credentials, authorize entry to their premises without a warrant for the purpose of inspecting and surveying their water system for new installation, cross connection, leak detection or to remove, repair, read or replace the water meter at any time the department deems necessary. When such access is refused, the water shall be shut off and shall not be turned on until such access has been allowed and fees have been paid.

2.10 Fires

In the event of a large fire all customers shall curtail the use of water in the affected area.

2.11 Conditions under Which Service is Furnished

The Town does not guarantee constant pressure or uninterrupted service, nor does it assure the customer either a full volume of water or the required pressure necessary to effectively operate hydraulic elevators, sprinkler systems or other appliances, the same being subject to all the variable conditions that occur in the supply of water from the Town's water system.

2.12 No Liability for Interruption of Service

No customer shall be entitled to damages or to have payment refunded for any interruption of supply, occasioned by accident to any portion of the works, by shutting off for the purpose of additions or repairs to the works or by the stoppage or shortage of supply due to causes beyond the control of the Department, such as excessive drought, excessive use of and waste of water by customers or by leaks or defects in the pipes or appliances owned by customer or other customers.

2.13 No Liability for Dirty Water

The Town shall not be responsible for damages caused by dirty water resulting from opening or closing of any gate, use of any hydrant, the breaking of any pipe, or maintenance of the water system.

2.14 No Liability for Customer's Pipes

The Town assumes no liability for conditions, which exist in customer's pipes and cause trouble coincident with or following the repairs of any main, service pipe, meter or other appliances belonging to the Department.

2.15 No Liability for Collapsed Boilers, Etc.

The Department reserves the right at any time and without notice to shut off the water in mains for the purposes of making repairs, extensions or for other necessary purposes. Customers having boilers or other appliances on their premises depending on the pressure in pipes to keep them supplied with water are hereby CAUTIONED against danger from these sources and are required to provide, at their own expense, suitable safety appliances to protect themselves against such danger as per Massachusetts Drinking Water Regulations 310 CMR 22.22. In any event, it is expressly stipulated that the Department will not be liable for any damage resulting from water having been shut off either through accident or necessity.

2.16 No Liability for Shutting Off Water without Notice

When it becomes necessary to shut off the water from any Section of the Town because of an accident or for the purpose of making changes or repairs, the Department shall endeavor to give timely notice to as many customers affected thereby as time and the character of the repairs or the accident will permit and shall, so far as practical, use its best efforts to prevent inconvenience and damage arising from any such cause. However, failure to give such notice shall not render the Department responsible or liable for any damages that may result from the shutting off of the water or any coincident conditions.

2.17 Restriction of Water Use

The Department reserves the right in periods of declared drought or emergencies or when, by Declaration of a State of Water Emergency under Massachusetts General Laws Chapter 21G are deemed essential to the protection of the public health, safety and welfare, to restrict water supply for secondary or non-essential purposes such as watering of lawns and gardens (either by hand or sprinkler) and vehicle washing (EXCEPT for sanitary purposes such as rubbish trucks). The Department shall have the right to fix the hours and periods when water may be used for such purposes. Any such restrictions will be promulgated by means of Special Water Regulations or By-Laws adopted by the Harwich Board of Water/Wastewater Commissioners. During this time the filling of swimming pools, hydro seeding, soaker hoses and power washing are strictly prohibited.

2.18 Easements

In any case where an existing municipal water main or appurtenances are located on private property and a recorded easement does not exist, an implied easement is deemed to exist with the same force and effect as a recorded one.

2.19 Liability for Freeze Ups

It is the responsibility of all water service customers to ensure that all plumbing, fixtures, meters and appliances are protected from freezing. The customer shall make any repairs, which may be necessary to prevent leaks and damage. Neither the Town nor the Department shall be held responsible for loss or damage to any plumbing, fixtures, meters or appliances due to freezing and any repairs to same made by the Department shall be paid for by the customer.

Section 3: Charges**3.1 Establishment of Rates**

Rates chargeable for water and payable by the customer shall be determined by the Harwich Board of Water/Wastewater Commissioners as instructed under Massachusetts General Laws Chapter 41 § 69B.

3.2 Bills Payable

Bills for water service are due and payable upon issuance of the bill. The failure of the customer or his/her agent to receive notice of their water bill or other related charges does not relieve them from the obligation for payment or from the consequences of nonpayment. All charges are due and payable upon issuance of billing and are past due THIRTY (30) DAYS after the date of the billing. The records of water supplied in the Department shall be sufficient basis for billing and to commence action for nonpayment against present and or consequent owners of record.

3.3 Overdue Charges

Any overdue charge including late fees or interest charges may be collected by any legal means, including a lien on the property or shutting off the water service as an action of contract as provided under the provisions of Massachusetts General Laws Chapter 40 § 42A-42F.

3.4 Payment Plans

If a payment plan is requested, the account must not be in arrears by more than two billing periods. If a payment plan is requested after the original billing due date, a late penalty will be assessed to the account. If the terms of the payment plan agreement are not kept, the plan becomes void.

3.5 Shut-Off for Non-Payment

The Water Department may shut off the flow of water to a property if the water customer has failed or refused to pay the lawful charges associated with the account. A water shut-off notice will be issued by means of a notice card left at the property and or by certified postal mail directed to the last address furnished to the department giving at least 36 business hours' notice as required by law. If the full balance is not paid within the 36 business hours, the water service may be terminated by department personnel between the hours of eight anti meridian and four post meridian, Monday through Friday. After the service has been shut off, the account will be assessed a reconnection fee to have the water reinstated and any associated administrative costs.

The balance must be paid in full before the water service can be reinstated. If the turn on is requested after regular operating hours, the after-hours rate will be assessed and the

balance is to be paid no later than the next business day. If the water cannot be turned off due to special circumstances, a lien will be placed against the property. The property owner or tenant may at any time appear before the Board of Water/Wastewater Commissioners. The property owner may also appeal a Board's decision to the Appellate Tax Board within three months of the date hereof pursuant to the provisions of G. L. c. 59, §§ 64 to 65B, inclusive.

3.6 Collection of Miscellaneous Water Charges

All department services and materials rendered at a property shall be subject to the same conditions as charges for water.

3.7 Delinquent Accounts

No person who owes an overdue bill shall be entitled to further use of water or services at the same or any other premises until such charges are paid in full, together with any associated fees.

3.8 Claims for Adjustments on Bills

All claims for adjustments of water bills shall be made within thirty (30) days of the billing due date. Abatements will be made for clerical errors, misreads or failure of Department equipment. Abatements will not be issued for water leaks or high consumption, unless otherwise determined by the Board of Water/Wastewater Commissioners.

When determining abatements for domestic water leaks (excluding irrigation leaks), usage from three similar usage quarters can be averaged and any usage above may be considered for adjustment at the first-tier rate as a one-time disaster forgiveness occurrence.

3.9 All Water to be Metered and to be Paid

All water must be metered and paid for whether used or wasted. A minimum charge shall be assessed for water service from the date the water is connected to the town water supply, unless otherwise determined by the Board of Water/Wastewater Commissioners.

3.10 Leaks

The Department shall have the right to shut off water supplied to any property where a leak exists or is believed to exist. Any such leaks must be repaired and must pass inspection by the Department before water will be restored. In addition, each customer shall be responsible for the cost of any repairs to any private portions of the water system as well as the cost of water.

3.11 Service Tap Renewals or Replacements

In the event a new service tap is required or requested it shall be considered a service renewal using the existing main tap. If a new main tap is needed, applicable charges will apply.

Section 4: Meters**4.1 Meter Installation**

A shut-off valve at the meter inlet shall be the first fitting inside of a serviced building and shall be installed by the Department. A ball valve as the first fitting “downstream” of the meter shall be installed at the expense of the customer. The meter shall be located in a clean, dry, warm and accessible location. A certified Plumber must complete any connection past the meter. Any service line over 100’ must have a meter pit closest to the curb stop or property line before their meter installation is approved.

The appropriate size, type and location of the meter shall be determined and approved by the Department and based on the AWWA Manual Sections M22 and M6 or as amended. All meters will be remote read as required by the Department. Any meter larger than 2” must be a compound meter. Meter and installation are at the expense of the owner. Routine meter maintenance shall be provided by Department.

4.2 Customers to Pay for Meter Repairs

Meter repair or replacements due to damage caused by accident or negligence shall be charged to the customer.

4.3 Meters Purchased from Department

All water meters must be purchased from the Department. Only these meters may be used on its water system.

4.4 Meter Removal

Water meters shall not be removed from the water system by anyone other than Department personnel. Once a meter has been removed, it is the responsibility of the owner to maintain custody of the water meter at the property. Violation of this rule shall be considered meter tampering and be subject to applicable fines.

4.5 Meter Pits

Installation of meter pits shall be at the customer’s expense. When it is necessary or expedient to locate the meter in an underground box or vault approved by the Department, the customer shall bear the expense of same and shall bear the responsibility of reasonable care and maintenance of said box or vault such as keeping it clean and dry. The customer shall not be permitted to cover the pit or in any way hinder access to the water meter. Meter pit covers must remain exposed at all times. Pits shall be furnished with inlet and outlet connections that accept a variety of Mueller underground service connection fittings that meet requirements of the latest revised AWWA Standard C800-89. For the purpose of standardization, the meter pit shall be Mueller with specifications determined by the Superintendent or Superintendent’s designee.

4.6 Meter Tampering

A penalty or charge will be levied for each incident of tampering, installation alteration, and removal of a water meter by anyone not authorized by the Department. In addition, the Department reserves the right to pursue further prosecution in accordance with Massachusetts General Law Chapter 165 § 11.

4.7 Water Department's Right to Change Meters

If, in the opinion of the Superintendent, a meter does not fit the conditions of the service installation, the Department has the right to change such meter. Such a change shall be made in accordance with current regulations and paid by the customer.

4.8 When Meter is Out of Order

If a meter fails to register, the customer shall be charged based on the best available information concerning water use.

4.9 Repairing Meters

The Department shall have the right to remove, repair or replace any meter at any time it so determines.

4.10 Access to the Meter

It shall be the duty of all customers to ensure that meters on service connections be readily accessible at all times to Department personnel. Failure to provide access or remove any obstruction which prevents access to the meter within three days after being notified by the department shall cause the water to be shut off to the premises and it shall not be turned on until all obstructions are removed, all regulations complied with, and all expenses for shutting off and turning on the water are paid.

4.11 Residential Meter Testing vs. Testing Meters by Request

If during any dispute where a water meter reading is being contested, a customer may request to have the meter sent to a certified testing facility at the owner's expense. Should the Department request to have the meter tested, it will be at the Department's expense. If as a result of the test the meter is found to register over two (2) percent more water than actually passes through it, the meter shall be replaced. At that time, they may receive abatement. Their bill will also be adjusted in accordance with the result of this test.

However, if it appears that the customer was charged or has paid for less water than they should have been charged or should have paid, they shall, forthwith, be charged with the proper additional amount and shall pay the same together with the expense of the examination and test to the Department. If the Department chooses to change a meter at any time, it is not an admission that there is something wrong with the present meter.

4.12 Commercial/Industrial Meter Testing

The Superintendent can require that a large commercial or industrial meter be tested if there is reason to believe that said meter is not registering water accurately. Based on AWWA Standard C700, all meters shall be tested by agents or representatives of the Department.

Commercial/Industrial Meter Testing will be done at the expense of Department. If Superintendent requires such testing, the owner will be notified via certified mail. The owner will have 10 business days from receipt of letter to notify the Water Department of what action has been taken for the repair or replacement of the meter and 20 business days to have the actual repair or replacement completed. Failure to respond to the first notice will result in a second notice informing the owner that if in 10 business days they have not responded, the water service to the building will be shut off. The billing will be based on the highest quarterly usage out of the last four billing cycles.

4.13 Irrigation/Sewer Deduct Meter

Properties served by the Towns wastewater collections system may install, at the owner's expense, a second meter to monitor outdoor usage. Properties electing to install an irrigation/sewer deduct meter will have two (2) water meters, one meter will register all water entering the property and the second meter capturing only outdoor usage not contributing flow to the municipal sewer system. Outdoor usage captured by the second meter will NOT be subject to sewer usage fees. Irrigation/Sewer Deduct meters shall be installed in accordance with the Department Irrigation/Sewer Deduct Meter Policy.

Section 5: Service, Pipes and Fixtures**5.1 Service Pipes**

Customers must keep their water pipes and fixtures in good repair and protected from freezing temperatures at their own expense. They shall be held responsible for any damage resulting from their failure to do so. They shall prevent any waste of water.

5.2 Joint Use of Pipes or Trenches

Water service pipes will NOT under any circumstances be placed in the same trench with other pipes, conduits or similar structures such as gas lines, electrical conduit, sewer pipe, etc.

5.3 Portion of Service Pipe Furnished by Water Department

New service connections shall be made by the Department and brought to the meter. The Customer shall be charged the current rate for tapping and connection fees.

5.4 Right to Repair and Replace Service Pipes

The pipe from the property line to the meter is the responsibility of the customer and all the repairs to the same shall be made at customer's expense unless covered by the Service Tight Protection plan. All service pipes between the street line and the meter must be repaired or replaced by the Department when it deems it necessary for the protection of the supply or the supplying of satisfactory water service. The cost shall be charged to the customer. The Department also reserves the right to assess the condition of "owner responsibility" service piping, valves, etc. on a periodic basis in order to determine the functional and physical adequacy of the stated appurtenance and, if such is determined to be inadequate, the Water Superintendent may order the owner to replace such at the owner's expense. Failure to take corrective actions as prescribed by the Superintendent will be cause for termination of water service to those premises. In addition, each customer of water furnished by the Department shall be responsible in case of a break or a leak in the service pipe for both water loss and cost of repairs. Costs will be actual or estimated as determined by the Department.

5.5 Temporary Service from Adjacent Premises

When permission to open a permanently paved street is refused by the Highway Department or when, for any physical reason, it is impossible to open a street and the applicant requests that water be furnished temporarily from an adjacent service, the same may be done at the expense of the customer if approved by the Superintendent.

5.6 Materials on Private Premises

All fittings supplied by the Department to the customer shall be billed to the customer.

5.7 Irregular Service

Services that are not used for permanent and or habitable structures must be approved by the Department before any use is allowed.

5.8 One Service to Each Unit

The Department will only allow one (1) service connection per unit. A meter shall be placed in each individual unit located in a building. This includes all commercial or industrial buildings, new Condos and Town Houses.

5.9 Requests for Turning On or Shutting Off Water

Requests for turning on or shutting off a water service for repairs shall be made during normal business hours, except in case of an emergency. Customers shall be charged for turn on and turn off of each such service. Only Department personnel shall open and or close curb stops. Should the customer require after hour turn on or turn off, they shall be billed at the overtime rate. The Department shall not be held responsible for or perform any work downstream of meter.

5.10 Seasonal Service

All seasonal service requests for water turn on or shut off will require a two-week notice for completion (the two-week notice begins in advance of water turn on request date and for shut off requests, the two-week window begins after the property has been drained) and will be done between the hours of 7:00 a.m. and 3:30 p.m., Monday through Friday except for emergencies. All prior bills, charges, fees and liens must be paid in full prior to service being activated. If a seasonal customer fails to schedule their 2-week notice and wishes to pay the out of rotation fee, they shall be billed at the overtime rate. See applicable Rates and Fees. The owner shall be responsible for having the service properly winterized prior to scheduling the water to be shut off by the Department.

5.11 No Pipes Furnished in Winter

No new water mains shall be installed from November 15th through March 15th unless weather permits. The only other exception allowed are circumstances deemed an emergency. Applications must be received by November 1st for installation by November 15th. Installation of services beyond the end of an existing water main shall not be allowed. The main must be extended (including necessary hydrants and appurtenances) to the furthest limit of the customer's property at their expense. Water mains shall be looped when required by the Superintendent.

5.12 Service Pipe Trenches

Service pipes shall not be placed within 10 feet of any other utilities, except under special conditions and with the approval of the Superintendent. The Department shall not be responsible for damage to other utilities laid within 10 feet of a water service or water main.

5.13 Standby Fire Protection

Customers desiring standby fire protection must submit a water service application to the Department. The Department shall furnish water for a fire protection service in

accordance with the specifications for that sprinkler system. All equipment for this purpose shall be installed entirely at the expense of the customer and with the approval of the Superintendent. Such pipes shall not be used for supplying water for any other purpose than the fire system. The fire system must be arranged so that Department personnel can make easy inspection. Whenever it is considered necessary for the protection of the water supply and in the interest of the Town, the Superintendent shall have the right to require the installation of meters, alarms, backflow devices or other accessories. The installation and upkeep of such equipment shall be done so at the customer's expense. All installations and testing must be completed in accordance with Massachusetts General Laws.

5.14 Water Supply Availability

The Department shall make the determination as to the availability of adequate water supply for such services. The Department shall not bear responsibility to extend existing water mains in order to provide adequate water supply for such service. No fire service connection shall be less than a six (6) inch diameter and shall not be used for anything other than fire protection.

No water shall be taken or used through private fire systems for the purpose of testing unless the Superintendent issues written permission. Such test must be conducted under the supervision of the Department.

5.15 No Right to Furnish Water to Others

A customer shall not be permitted to supply the premises of another person with water, except in special emergencies and then only with the approval of the Superintendent.

5.16 Use of Fire Hydrants

The use of all fire hydrants is restricted to employees of the Water Department or by persons given specific authorization by the Water Department. During emergencies members of the Fire Department of the Town of Harwich and or other towns lending mutual aid are authorized to operate fire hydrants. In the event that a hydrant is to be used for any other purpose, the Department must be notified and a hydrant meter installed. If the hydrant meter is needed longer than a 24-hour period during frigid weather, the Superintendent or his/her acting agent may require the removal and reinstallation of the meter in order to protect it from freezing. All labor and usage charges incurred from the use of the hydrant, are the responsibility of the requesting party. Hydrants are not to be used to fill swimming pools. Any unauthorized use of fire hydrants without written permission of the Harwich Water Department will result in a \$1,000.00 Fine.

5.17 Cross Connection Control

If, in the opinion of the Superintendent, the installation of an approved backflow preventer (s) on the property side of a meter is considered necessary for the safety of the water system, such approved device(s) shall be immediately installed at the expense of the customer after due notice in writing has been given to the customer by the Superintendent. Said device(s) shall be installed and tested in accordance with the drinking water regulations of Massachusetts, 310 CMR 22.22. All tests shall be performed by the Department or agent and shall be charged as set forth in § 8. Failure to install or properly maintain a Department approved device, may result in the water being

shut off to the property until compliance requirements are met. In addition, all private water lines running below grade shall be fit with a testable backflow device.

Section 6: Requirements & Specifications for Laying Water Mains

6.1 Materials and Installations

All materials to be used in conjunction with any and all water mains and installations of the same shall be in strict accordance with these “Specifications for Water Mains and Service Installation” of these regulations. All water mains and appurtenances shall be installed by the Department employees or a Contractor who has been approved by the Department.

6.2 Pipe Size

All water mains shall be sized by the Department in conjunction with the Master Plan of the distribution system, or as calculated by the Department or its consulting engineers. All new water mains shall have the minimum diameter of eight (8) inches. Piping for hydrant services shall have the minimum diameter of six (6) inches.

6.3 Fire Hydrant Spacing

Fire hydrants shall be spaced at a minimum distance of 500 feet in residential zoned areas; 250 feet in commercial, business, and industrial zoned areas. The Fire Chief can request a different spacing standard depending on the situation. The applicant must show proof that the Fire Chief has approved all proposed fire hydrant locations. Measurements shall be taken along traveled way, whether public or private. Space and additional fire hydrants shall begin at the closest existing hydrant. An additional fire hydrant shall be placed at the dead end of all water mains.

6.4 Fire Hydrant Access

No person shall obstruct access to a fire hydrant. Fire hydrants shall have a three-foot clear radius measured from the center of the stem of the top of the hydrant. No foliage, fencing, parking space, or other object shall obstruct the clear area. No person may landscape to change the grade around the base of the hydrant so as to prevent the use of a four inch cap. Location where existing objects such as, but not limited to, buildings, walls, fences, trees, on sloping grades that does not permit a three (3) foot clearance radius, may be granted a waiver by the Water Department. Before any waiver of this Regulation is granted, all other possible locations must be considered. Existing hydrant locations shall not be altered or moved for any reason unless determined by the Superintendent.

6.5 Cost of Water Mains and Hydrants

In private division of lands, commercial, business or industrial complexes, and all other areas not presently serviced by Harwich water system, the developer or owner shall be responsible for all costs with regard to water main installation(s), hydrants and connection(s) to existing system and or maintenance of already installed water mains and hydrants. All water mains shall be installed to the furthest property line.

6.6 Need for Water Mains

The developer or owner of a division of land where water is available within 500 feet will be required to serve and supply the development with water in accordance with these

regulations. Any property that has existing public water service and is a division of land, the developer or owner will be required to upgrade the water mains and services to comply with these rules and regulations before the transfer of any parcel. Industrial, commercial, condominiums or multi-family residential, and like buildings that are not a division of land shall be reviewed by the Water Superintendent and the Fire Chief on an individual basis. They shall still be governed by these Rules and Regulations and be required to install and maintain water mains and fire hydrants.

6.7 Application for Water Main Installations

An application for water main installation shall be completed by the developer or owner and submitted to the Department for review and approval before any work can proceed. All applications must contain the complete information requested and an engineered construction plan prepared by a Massachusetts Registered Professional Engineer. Payment of all required tapping fees, and installation fees including the service availability charge and any other fees established by the Board of Water/Wastewater Commissioners shall be made at the time of application.

Water main installations must be performed by an approved contractor listed on the Department's certified Water Main Installer list. Water main inspections must be performed by an approved inspector listed on the Department's certified Water Main Inspector list.

Contractors and/or Inspectors interested in becoming certified, must first submit a letter of interest, credentials, certificates of insurance and three letters of reference for similar work performed in nearby, surrounding towns, to the Board of Water/Wastewater Commissioners for approval. Once approved, the contractor and/or inspector must complete 3 water main installations and/or inspections within the town of Harwich during a probationary timeframe. Upon the successful completion of 3 jobs that meet or exceed the Department's expectations, the contractor and/or inspector will be added to the certified list of Water Main Installers and/or certified Water Main Inspectors.

6.8 Pipe and Fittings

All water main pipes shall conform in design and manufactured to the latest issue.

ANSI/AWWA standard C151-91 Class 52 "Ductile-Iron pipe, Centrifugal cast, for water or other liquids". The pipes shall be supplied in lengths not to exceed 20 feet. Pipe shall have a pressure class of 300.

All fittings shall be Ductile-Iron and conform in design and manufactured to the latest issue of AWWA standard C110 "ductile-Iron and Gray-Iron fittings, 3 ins. through 48 in. for water and other liquids".

All pipe and fittings shall have a Cement-Mortar lining inside and a Bituminous Seal Coat applied both inside and outside to conform to AWWA C104, "Cement-Mortar lining for Ductile-Iron pipe and fittings for water".

Push on and Mechanical joints shall be manufactured domestically and shall conform in design and manufactured to the latest issue of AWWA standard C111 "Rubber-Gasket joint for Ductile-Iron pressure pipe and fittings".

6.9 Valves

All valves shall conform in design and manufactured to the latest issue of AWWA standard C500 “Resilient-Seated gate valves for water supply”, rated at 150-psi working pressure and a minimum 300-psi pressure test.

All valves shall have a 2-inch operating nut, mechanical joint hubs (except for wet taps), and open in a counter clockwise direction. If shallow depth of burial or other conditions of service requires that the valve be installed in a horizontal position, a nut-operated bevel gear shall be fitted to the valve for service operation through a valve box.

6.10 Hydrants

Hydrants shall comply with the following:

- Direction of Opening – Right Open
- Bury Length – 5.5 feet
- Height (bury Line to Opening Nut) – 28.75 inches minimum
- Model – Traffic (Breakaway Design)
- Color – Safety Blue Body
- All chains must be removed.

All hydrants shall have a permanently mounted marking device approved by the Department.

All hydrants must meet applicable parts of ANSI/AWWA C502 standard. In the event that a hydrant is not in service or temporarily taken out of service, the hydrant is to be clearly marked with an out of service ring and notification provided to the Fire Department.

6.11 Cover over Pipe

Pipe shall have five (5) feet of cover measured to finish grade of the street. Pipe to be hand covered one (1) foot with sand or stone free gravel and compacted and tamped around pipe to give good support and protection.

In case of any excavation, ground water swamps or when any unsuitable materials are encountered, the Contractor shall replace it with good material to provide proper support and alignment of the pipeline. In some cases, the Contractor shall use crushed stone for bedding covered with sand. Trench backfill shall be suitable material taken from excavation, approved common borrow or gravel hauled in. No mud, frozen earth, stones larger than 3/4” or other objectionable materials is to be used for refilling.

6.12 Ledge

All ledges shall be removed to width of two (2) feet or greater than the diameter of the pipe and one (1) foot below the underside of the pipe. A bed of sand shall be placed in the trench prior to laying pipe.

6.13 Blasting Precautions

All blasting shall be discussed with the Superintendent and or the Engineer’s and the decision shall be made on individual bases.

6.14 Survey Markers

Survey markers (line and grade) shall be required on all newly proposed streets. Pipes shall be laid within the roadway layout (easement in certain cases) as shown on plans approved by the Harwich Planning & Zoning Board.

6.15 Excavation within the Limits of Public Ways

Permission shall be obtained from the Highway Department before any excavation can begin within any Town way. Road restoration shall be completed in accordance with local or state regulations. A street opening permit shall be obtained from Massachusetts Department of Public Works before any excavation can begin on any State Highway. This work shall be performed in accordance with permit.

6.16 Service Pipes

Each service shall consist of a corporation stop, curb stop, curb box, ball valve and a meter and remote reader as soon as the water service enters building.

6.17 Testing of Water Mains

Before acceptance by the Department, the pipe shall be pressure tested and chlorinated in accordance with "Installation of Ductile-Iron Water Mains and Appurtenances" AWWA Designation C600 latest edition. No one shall pressure test or chlorinate an installation without notifying the Department at least 48 hours prior. An employee of the Department must be present for the duration of the pressure test and chlorination to witness and sign the chain of custody forms. All pressure test reports shall consist of actual distance of pipe and size, and the number of valves and hydrants. The Town shall furnish a water meter to measure water usage for disinfection and flushing. A sample of water taken after the disinfection of water pipes shall be delivered to a testing laboratory approved by the Commonwealth of Massachusetts. The contractor must then deliver two consecutive copies of the test results with zero background to the Superintendent. Before final approval is given by the Superintendent, the contractor must submit an as-built drawing to the Department. It is at this time the Superintendent shall then determine whether the pipes (project) may be accepted into the Town's water system.

6.18 Tapping Sleeves & Valves: Gate & Butterfly Valves

Tapping sleeves & valves, gate and butterfly valves shall be furnished in accordance with the requirements of the latest revised AWWA Standards C509-94 and C504-94. Tapping sleeves and valves shall be of the same manufacturer. Gate valves 6" through 12" shall be mechanical joint, bronze mounted, resilient seat wedge type, open left (counterclockwise) with 2" operating nut. For the purpose of standardization, tapping sleeves and valves, gate and butterfly valves shall be Mueller.

6.19 Gate Boxes

Buffalo #5663 slide type 24" top with flange at top of box with 30" bottom. Boxes to be cast iron, bituminous coated with cast iron covers for heavy traffic use. Covers shall be identified with legend "WATER".

6.20 Water Mains on Private Roads

It is the sole responsibility of the residents or owner(s) of private roads to repair and maintain all water mains and appurtenances, valves and hydrants. It is also the responsibility of residents and or owner(s) to maintain sufficient amount of soil coverage

over any water main. All water mains are required to maintain a minimum of a 5' depth below finish grade at all times. The Department is not responsible for water mains on private roads.

6.21 Road Layout

Any privately owned pipes and or wires in the Town's road layout are not the responsibility of the Department. Any items in the road layout that are damaged will not be paid for by the Town of Harwich.

Section 7: Violations

7.1 Violations of Regulations

Any violation of these regulations may result in the Superintendent and/or the Board of Water/Wastewater Commissioners ordering a fine in accordance with Massachusetts General Laws Chapter 165, § 11 and/or the shutting off of the water to the violator's premises. If the water is shut off for violations of rules it shall not be turned on again until the Department is satisfied that there shall not be further cause of complaint and charges have been paid.

7.2 Discontinuance of Service

A water service may be discontinued for any reason such as nonpayment of water bills, fees, charges and liens or for violations of any rules and regulations contained herein, and in accordance with Massachusetts General Law Chapter 40 §42. A water service may be terminated without notice for fraudulent use. Reconnection of terminated service will be done ONLY during normal working hours of the Department; a reconnection fee shall be applied. Water service will not be reconnected until all charges have been paid in full.

7.3 Inactive Services

If an account does not have a meter and has been inactive for more than 24 months, the Department may disconnect and cap the service from the distribution system. If the property owner wishes to keep the service connected to the system, he or she must apply for an extension that may not exceed one year unless there is a special condition made and set forth by the Board of Water/Wastewater Commissioners.

7.4 Cross Connections

Whoever maintains a cross connection in violation of M.G.L. c. 111, § 160A, shall be:

1. punished by a fine of not more than \$25,000 for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment, or
2. subject to a civil penalty not to exceed \$25,000 per day for each day that such violation occurs or continues.

Water will be turned off immediately until violation has been corrected. There will be a Turn on and Turn off fee assessed per violation. There is also a testing fee per device, see non water related fees.

7.5 Treatment

No treatment by any unauthorized personnel shall be permitted. If anyone is found adding any treatment to Town's water, they will be subject to fines established by the Board of Commissioners for each individual offense.

7.6 Mandatory Water Use Restrictions

Any customer found in violation of a water ban shall be fined as follows:

- First Offense – written warning
- Second Offense - \$100.00 dollars
- Third and any subsequent offense - \$300.00 dollars

7.7 Swimming Pools

The filling of swimming pools with the use of a fire hydrant is strictly prohibited. Violators will be subject to penalties in accordance with Massachusetts General Laws, Chapter 165.

7.8 Unauthorized Water Use

Whoever unlawfully and intentionally damages a water meter or prevents such meter from registering the quantity of water supplied through it or uses or causes to be used water without consent of Department shall be fined in accordance with Massachusetts General Law, Chapter 165, §11.

7.9 Defacing and Littering Upon Town Owned Property

Any person or persons willfully defacing and or littering upon Town owned property located within its watershed shall be fined no less than \$300.00 dollars.

7.10 Tampering

All gates, valves, shutoffs, water meters and standpipes and any other portion of the municipal system, are the sole property of the Department, and are not to be opened, closed, removed or in any way tampered with or made inaccessible. Only personnel authorized by the Superintendent may operate any portion of the municipal system. Violators will be subject to charges or penalties determined by the Board of Water/Wastewater Commissioners.

7.11 Markouts

No excavator shall, except in an emergency, make an excavation where town water exists unless notice is given to the Department at least 72 business hours before excavation. If an excavation is made without the request of a water mark out, the excavator shall be held solely responsible for any and all damages and injuries caused, and any penalties or legal action that may be brought against excavator, company, or its representatives.

7.12 Utility Markout Policy

- a) Utility shall submit road cut permit request directly to the Highway Department.
- b) Utility shall submit markout request to the Department 72 hours before markout is needed, for 10 or less residences. For 10+ residences, a 2-week notice is required. Bad weather may alter this schedule.
- c) There will be a fee charged per markout(s) per fee schedule.
- d) The markout package shall include the following:
 - Utility's work order/reference and dig safe number

- A map/diagram highlighting area of utility service work to commence.
- Dig safe documentation
- Project start date
- Contact name, number and/or email address of contact.

As of 8/20/13, utility shall provide a complete markout package as noted in item D above. For large projects, Utility Representative must deliver by hand a complete markout package.

Each utility shall not submit more markout request than the utility can complete within thirty (30) days of initial work request(s). If work is not completed within thirty (30) days, a new markout request is required and the utility will be charged for the new markout.

Each utility will receive a monthly bill for services rendered. Payment will be due within 60 days. Late payment will result in late fee charge as per fee schedule.

If payment is not made within 3 months (90 days), the Department will cease all markouts until balance is paid.

Section 8: Rates & Charges

8.1 Setting Fees and Charges

Fees and charges are subject to change upon approval of the Board of Water/Wastewater Commissioners and after all legally advertised public hearings and meetings have been completed.

See Appendix for Current Rates and Fees

Section 9: Irrigation Systems

9.1 Irrigation System Notification

All properties with irrigation systems must notify the Department. If a property owner has not notified the Department, the water may be shut off to the property until proper notification has been filed.

9.2 Irrigation Backflow Device

All irrigation systems must have a testable backflow device. All tests will be conducted by a State Certified Licensed Backflow Device tester. If a system is found to be operating without an approved backflow device, the water may be shut off to the property until all Department compliance requirements are met.

9.3 Irrigation/Sewer Deduct Meter

See Section 4.13 Irrigation/Sewer Deduct Meter

Section 10: Service Tight Program

10.1 Service Tight Program

The Town offers a voluntary Service Tight Protection Plan; this program offers eligible customers the right to apply for enrollment into the Service Tight Program for all services

2" and under from the curb stop to the water meter. Condominiums, apartments, multi-unit properties and service lines after meter pits are not eligible under this plan. All enrollees must agree to and meet all conditions set forth in the Service Tight Program. This service will have an automatic fee, billed quarterly and will provide all services mentioned in the program brochure.

Delinquent accounts over ninety (90) days will be automatically unenrolled and will not be eligible for re-enrollment until all account charges have been paid in full. The Department reserves the right to cancel this program at any time. The Service Tight Program is not transferrable.

Enrollment begins ninety (90) days after application is received. The Customer may cancel the Service Tight Program at any time by placing their request in writing to the Harwich Water Department, 196 Chatham Rd. Harwich, MA 02645.

If the customer chooses to cancel the plan prior to the initial waiting period, they may do so in writing. If cancellation is requested after the billing period, no refund will be given. When the customer chooses to sign up for this service, it is the customer's responsibility to become familiar with the Service Tight Plan guidelines.

The department reserves the right to change the terms and conditions of the policy at any time. Please refer to the applicable Rates and Fees. The Harwich Water Department reserves the right to deny plan coverage for any reason.

Appendix A. Schedule of Rates and Fees

Existing Rates and Fees schedule can be found at <http://www.harwichwater.com/customer-service/billing-payments/water-rates.html>. A proposed rate increase, legal advertisement and hearing will follow in the near future.

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Authentication

Upon due notice and hearing, we the undersigned, acting as Water/Wastewater Commissioners of the Town of Harwich, do this << _____ >> adopt the foregoing “Rules and Regulations of the Harwich Water Department”.

Board of Water & Wastewater Commissioners:

_____	_____
Gary Carreiro, Chairman	Date
_____	_____
Judith Underwood, Vice Chair	Date
_____	_____
Allin Thompson, Clerk	Date

- Adopted: February 25, 1935
- Revised: January 1, 1961
- Revised: January 1, 2001
- Revised: January 10, 2006
- Revised: May 1, 2008
- Revised: May 15, 2009
- Revised: June 19, 2009
- Revised: February 9, 2010
- Rates/Fees: March 1, 2010
- Revised: July 27, 2010
- Revised: December 7, 2010
- Rates/Fees: April 26, 2011
- Rates/Fees: March 13, 2012
- Rates/Fees: March 19, 2013
- Rates/Fees: March 17, 2015
- Revised: October 30, 2015
- Fees: October 30, 2015
- Fees: April 13, 2016
- Fees: September 13, 2017
- Revised: <<TBD>>>



Town of Harwich, Massachusetts

Water Department

Sewer Rules and Regulations

Adopted by

Board of Water & Wastewater Commissioners

DRAFT

Adopted <<TBD>>

Introduction

Pursuant to provisions of Massachusetts General Laws Chapter 83, Section 10, the Town of Harwich hereby establishes the following sewer use rules and regulations (Regulations) governing the use of the wastewater collection system in Harwich, County of Barnstable, Commonwealth of Massachusetts.

While these Regulations will apply to the wastewater collection system throughout the town, they have been specifically developed herein for the wastewater collection system to be implemented in the Pleasant Bay Watershed area of Harwich. Wastewater collected in this area will be conveyed to the Town of Chatham wastewater treatment facility. It is anticipated that these Regulations will be modified accordingly for systems to be implemented in other watersheds.

Purpose

The purpose of these Rules and Regulations are:

- A. To establish the technical and administrative procedures for making connections to the sanitary sewer system including standards of materials and design;
- B. To establish requirements, restrictions, and controls on the quantities and quality of what may be discharged to the sanitary sewer system; such as discharges that may:
 1. Interfere with the operation of the sewer system, pumping station or publicly owned treatment works (POTW) in any way;
 2. Pass through the POTW, to the groundwaters, inadequately treated effluent that may cause contravention of standards for these waters or surface waters or cause violation of the POTW's Groundwater Discharge Permit (GWDP) or negatively impact the watershed into which treated effluent is discharged;
 3. Reduce the opportunity to reclaim or recycle treated wastewater and/or sludge from the system;
 4. Increase the cost or otherwise hamper or limit the disposal of sludges and other residuals;
 5. Endanger municipal employees or the public;
 6. Cause, directly or indirectly, any public nuisance condition;
- C. To prevent new sources of inflow and infiltration (I/I) and eliminate private source inflow;

- D. To provide for equitable distribution to all users of the POTW, all costs associated with the collection, transmission, treatment, and residuals disposal, and to provide for the collection of such costs; and
- E. To provide for the orderly planning of sewer systems' and treatment systems' components to improve the health and environmental quality of the Town of Harwich and its people and resources while discharging wastewater into the Chatham Sewer System.

The following rules and regulations are a part of the contract with every person who discharges wastewater into the Town of Chatham Sewer System from the East Harwich area, and governs the relationship between the Town of Harwich and its consumers, contractors and/or developers, and all other persons who install sewers, discharges wastewater, is connected into the sewer system or applies for a connection to the sewer system.

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Article I. Definitions

Unless the context specifically indicates otherwise, the meaning of terms used in this ordinance shall be as follows:

Section 1. “**Act**” or “**the Act**” shall mean the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq, and the regulations promulgated thereunder, as amended from time to time.

Section 2. “**Board**” shall mean the Board of Wastewater Commissioners of the Town of Harwich.

Section 3. “**BOD**” (Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures in five (5) days at 20 degrees centigrade, expressed in milligrams per liter (mg/l).

Section 4. “**Building Drain**” shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer. The building drain ends at the building sewer which begins five (5) feet or (1.5) meters outside the inner face of the building’s wall.

Section 5. “**Building Sewer**” shall mean the extension from the building drain, five feet (5’) or one and one half (1.5) meters outside the inner face of the building’s wall, to the public sewer or other place of disposal.

Section 6. “**Combined Sewer**” shall mean a sewer receiving both surface runoff water and sanitary sewage.

Section 7. “**Department of Environmental Protection**”, or “**DEP**” shall mean the Massachusetts Department of Environmental Protection, established pursuant to M.G.L. Chapter 21, Section 26 or, where appropriate, the Administrator, Director or other duly authorized official of said agency.

Section 8. “**Director**” (or Superintendent) shall mean the person appointed by the Town of Harwich as the Superintendent of the Wastewater (or Sewer) Department of the Town of Harwich, who is vested with the authority and responsibility for the implementation and enforcement of these rules and regulations or the authorized deputy, agent, or representative.

Section 9. “**Environmental Protection Agency**”, or “**EPA**” shall mean the United States Environmental Protection Agency, or, where appropriate, the Administrator or other duly authorized official of said Agency.

Section 10. “**Garbage**” shall mean solid wastes from the domestic or commercial handling, storage, preparation, cooking, and dispensing or sale of produce.

Section 11. “Industrial Wastes” shall mean any water carried or liquid wastes resulting from any process or industrial manufacturing processes, trade, business, or activity listed in 310 CMR 15.004.

Section 12. “Licensed Utility Installer” or “L.U.I.” shall mean a person, as defined in Section 15, who upon submitting a License and Permit Bond, Certificate of Insurance, and pays the Utility Installer’s License fee, all of which are approved by the Director of the Sewer Department, is permitted to perform the installation of sanitary sewers or building sewers.

Section 13. “Natural Outlet” shall mean any outlet into a watercourse, pond, lake, or other body of surface ground water.

Section 14. “NPDES” shall mean National Pollutant Discharge Elimination System.

Section 15. “Person” shall mean any individual, partnership, co-partnership, firm, company, corporation, association, joint venture, joint stock company, trust, estate, governmental entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine, the singular shall include the plural where indicated by the context.

Section 16. “pH” shall mean the logarithm (base 10) of the reciprocal of the concentration of hydrogen ions expressed in grams per liter of solution.

Section 17. “Private Wastewater Collection, Treatment, and Disposal Facilities” shall mean any system, not owned and/or controlled by a municipal (town) sewer department, used for the collection, treatment, and disposal of wastewater from one or more properties.

Section 18. “Properly Shredded Garbage” shall mean the wastes from the preparation, cooking, and dispensing and sale of food that has been shredded to such a degree that all particles will be carried freely under the conditions normally prevailing in public sewers, with no particle greater than one-half (1/2) inch (1.27 centimeters) in any dimension.

Section 19. “Public property” shall mean land, right-of way, or easement owned or controlled by the Town, or other Town, the Commonwealth of Massachusetts, United States government, or any department, political subdivision, or governmental entity.

Section 20. “Public Sewer” shall mean a sewer in which all owners of abutting properties have equal rights and is controlled by a municipal sewer department.

Section 21. “Sanitary Sewer” shall mean a sewer which carries wastewater from residential dwellings or commercial facilities without industrial waters or waste and to which stormwaters, surface waters, and groundwaters are not intentionally admitted.

Section 22. “Sewage” shall mean a combination of the water-carrying wastes from residences, business buildings, institutions, and industrial establishments, together with such materials, surface waters, and storm waters as may be present. The preferred term is wastewater.

Section 23. “Sewage Treatment Facility” shall mean any arrangement of devices and structures used for treating wastewater. The preferred phrase is wastewater treatment facility.

Section 24. “Sewage Works” shall mean all facilities for collecting, pumping, treating, and disposing of wastewater. The preferred phrase is wastewater facilities.

Section 25. “Sewer” shall mean a pipe or conduit for carrying wastewater.

Section 26. “Sewer Department” shall mean the Town of Harwich’s wastewater collection, treatment, and disposal system(s) owned and operated by the Town of Harwich.

Section 27. “Shall” is mandatory; “May” is permissive.

Section 28. “Slug” shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds, for any period of duration, longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

Section 29. “Storm Drain” (sometimes termed “Storm Sewer”) shall mean a sewer which carries storm, surface, and drainage waters, but excludes wastewater and industrial wastes, other than unpolluted cooling water.

Section 30. “Suspended Solids” shall mean solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids, and which are removable by laboratory filtering.

Section 31. “Town” shall mean the Town of Harwich, Massachusetts or its legal representative, agent, or assign.

Section 32. “Town Administrator” shall mean the Town of Harwich Board of Selectmen’s appointed Town Administrator.

Section 33. “Watercourse” shall mean a channel in which a flow of water occurs, either continuously or intermittently.

Section 34. “Wastewater” shall mean the liquid and water-carried industrial, non-domestic or domestic wastes, including sewage, industrial wastes, other wastes, or any combination thereof, from dwellings, commercial buildings, industrial facilities, and institutions, together with any groundwater, surface water and stormwater that may be present.

Section 35. Abbreviations

ANSI	American National Standards Institute
ASTM	American Society for testing and Materials
AWWA	American Water Works Association
BOD	Biochemical Oxygen Demand

CFR	Code of Federal Regulations
COD	Carbonaceous Oxygen Demand
CWMP	Comprehensive Wastewater Management Plan
DEP	Department of Environmental Protection
EPA	Environmental Protection Agency
HDPE	High Density Polyethylene
I/I	Inflow and Infiltration
MEP	Massachusetts Estuaries Project
MEPA	Massachusetts Environmental Policy Act
POTW	Publicly Owned Treatment Works
PVC	Polyvinyl Chloride
SSA	Sewer Service Area
TSS	Total Suspended Solids

Article II. Regulation of Sewer

Section 1. Existing Structures

Any structure in existence on July 1, 2016, regardless of its flow, may maintain that flow. No person shall modify an existing structure or change its use so as to increase its wastewater flow. Design criteria contained in 310 CMR 15.203, and any Board of Health Regulation modifying such, shall be used to determine whether a proposed modification or change in use shall constitute an increase in wastewater flow. Expansion or modification of existing structures, which may result in increased flow, shall not be allowed unless the increase is in compliance with the Board of Health's Regulations in effect on July 1, 2016.

Section 2. Determination of Present Wastewater Flow

Wastewater flow to the municipal sewer shall be determined using provisions set forth in 310 CMR 15.203: System Sewage Flow Design Criteria, and any local Board of Health Regulation modifying such in effect on July 1, 2016. The owner of any property shall, upon reasonable notice and request, allow an inspection of a property for a determination of flow by an agent of the Board of Health, except that in lieu of this inspection, the owner of the property may submit a floor plan with sufficient detail to account for all outside structure dimensions. This floor plan must bear the signature of approval of a Certified Septic System Inspector.

Section 3. Undeveloped Parcels

For the purpose of determining wastewater flow, any existing lot, otherwise qualified, may be permitted for that wastewater flow as determined under the Board of Health's Regulations in effect on July 1, 2016, or 310 CMR 15,000 et. Seq, whichever is less.

Section 4. Rebuilding because of fire, flood, storm or other acts of nature

A property owner may rebuild a structure destroyed by fire, flood, storm or other acts of nature as a matter of right provided that the new structure does not exceed the wastewater flow of the structure being replaced.

Section 5. Variances

In the case of unusual and substantial hardship, not the result of acts or omissions of the landowner, the Board of Wastewater Commissioners, after a public hearing of which notice has been given by publication and posting for a minimum of two weeks, may grant a variance to this part of the regulation, provided that sufficient capacity exists and such relief may be granted without substantially derogating from the intent or purpose of this regulation or the latest version of the Town of Harwich Comprehensive Wastewater Management Plan (CWMP).

Article III. Building Sewers and Connections

Section 1. No unauthorized person shall uncover, make any connections with or opening into, use, alter or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Superintendent. Any person proposing a new discharge into the system or a substantial change in the volume or character of pollutants that are being discharged into the /system shall notify the Superintendent in writing, and receive the Superintendents' written approval at least ninety (90) days prior to the proposed change in discharge or sewer connection.

No person shall construct, uncover, make any connections with or opening into, use, alter or disturb any public wastewater collection, treatment, and disposal facilities or appurtenance thereof without first obtaining a written permit from the Superintendent working on behalf of the Wastewater Commission.

Section 2. There shall be two (2) classes of building sewer permits for: (a) residential and commercial service and (b) service to establishments producing industrial wastes. In either case, the owner (or agent) shall make application on a special form furnished by the Town of Harwich. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Superintendent and Director of the Health Department. A permit and inspection fees connection charges, and inspection fee shall be paid at the time the application is filed.

Section 3. All costs and expenses incident to the installation and connection of the building sewer to the sewer works shall be borne by the owner. The owner shall indemnify the Town from any loss or damage that may occur either directly or indirectly or occasioned by the installation or repair of the building sewer. Construction of all building sewers shall be performed only by a Licensed Utility Installer.

Section 4. A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another on an interior lot and no private or public sewer is available or can be constructed to the rear building through either: an adjoining alley,

courtyard, driveway, or easement. If these conditions exist, the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer.

Section 5. Old building sewers may be used to connect new buildings only when they are found, on examination and test, to meet all requirements of these rules and regulations and are approved by the Superintendent.

Properties with building sewers that will be connected to the sewer system from a septic system, a portion of the existing pipe may be used as part of the building lateral to a public sewer or to a pumping system only if it meets the requirements in the previous paragraph.

Section 6. A property that is generating wastewater, where a common sewer is available for connection, shall be connected to the common sewer, within one-year (365) days of written notification from the Board of Health, unless the Board determines a different connection schedule following a public hearing. For new construction, connection to the common sewer, where a common sewer is available for connection, shall be completed prior to the issuance of a Certificate of Occupancy.

In the case of construction of new common sewers, or extensions of existing common sewers, said Board of Health written notification shall follow notice from the Board of Water & Sewer Commissioners that said common sewer(s) are complete.

Article IV. Use of Public Sewer

Section 1. No person shall discharge or cause to be discharged any stormwater, surface water, ground water, roof runoff water, subsurface drainage water, uncontaminated cooling water or unpolluted industrial waters to any sanitary sewer.

Section 2. Stormwater and all other unpolluted drainage waters shall be discharged to such systems as are specifically designated as storm sewers or to a natural outlet as approved by the Town Conservation Commission, Town Surveyor of Highways (or equivalent), and/or the Commonwealth of Massachusetts DEP or EPA. Any such discharge may be subject also to an NPDES permit. It shall be the responsibility of the originator of the discharge to obtain all required permits.

Section 3. Cleaning, maintaining, and repairing of building sewers, from the building to the property line at the street, shall be done at the expense of the owner, provided there is a manhole or cleanout at the property line. If there is no manhole or cleanout at the property line, the owner shall be responsible for the building sewer from the building to the public sewer.

Section 4. No person shall discharge or cause to be discharged any of the following described waters or wastes to any public sewer or wastewater works.

- A. Any liquids, solids or gases which, by reason of their nature or quantity, are or may be sufficient, either alone or by interaction with other substances, to cause fire or an explosion or be injurious, in any way to the sewage works, or to the operation of the sewage works, or to the safety and welfare of the workers and the public at large shall be

prohibited from discharge to the wastewater works. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, carbides, hydrides, and sulfides, and any other substance which the Director, the Town of Chatham (for Harwich wastewater collected and treated in Chatham), the State, or EPA has determined to be a fire hazard to the sewer works.

- B. Any waters or wastes containing toxic or poisonous solids, liquids or gases in sufficient quantity, either singly or by interaction with other wastes, to injure or interfere with any sewage collection or treatment process, constitute a hazard to humans or animals and/or create a public hazard in the receiving waters of the sewage treatment facility.
- C. Any water or wastes having a pH less than 5.5 or greater than 9.5 or having any other corrosive property capable of causing damage or hazard to structure, equipment, and/or personnel of the sewage works.
- D. Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the sewage works, such as, but not limited to: fish scales, fish gurry, ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, diapers, feathers, plastics, wood, unground garbage, whole blood, paunch manure, hair and fleshings, entrails, and paper dishes, towels, cups, milk containers, and etc.
- E. Due to the special nature and environmental needs of the Town and the surface and groundwaters of the Town, no person shall discharge or cause to be discharged wastewater containing nitrogen and/or phosphorus compounds in a concentration greater than 50mg/L. Any non-domestic discharges having concentration greater than 50mg/L shall require a special permit from the Director. Said permit may include sampling, flow measurement, pretreatment, and/or special fees as a condition of permit issuance. Any non-domestic discharge having a BOD or TSS concentration greater than 300 mg/L shall require a special permit from the Director. Said permit may include sampling, flow measurement, pretreatment, and/or special fees as a condition of permit issuance.
- F. Any wastewater which will cause interference or pass through.

Section 5. No person shall discharge or cause to be discharged the following described substances, materials, water, or waste if it appears likely in the opinion of the **Director** that such waste can harm the wastewater treatment process, or equipment, have an adverse effect on the receiving stream or can otherwise endanger life, limb, public or private property or cause a nuisance.

Informing the opinion as to the acceptability of these substances, the Director will give consideration to such factors as: the quantities of subject substance in relation to flows and velocities in the sewers; material use in the construction of the wastewater collection and treatment facilities; nature of the wastewater treatment process; capacity of the wastewater collection and treatment facilities; and other factors which in the Directors judgment are pertinent.

The limitations on wastewater strength or mass discharge contained herein may be supplemented with more stringent limitations when, in the opinion of the Director they are warranted:

1. The limitations in this set of regulations are not sufficient to protect the POTW and the sewage works;
2. The limitations herein are not sufficient to enable the POTW to comply with applicable water quality standards, the effluent limitations specified in the POTW's groundwater discharge permit, or effluent reuse;
3. The POTW sludge or other residuals will be rendered unacceptable for disposal or reuse at the Town of Chatham treatment facility desires as the result of discharge of wastewaters at the above prescribed limitations;
4. Municipal employees or the public will be endangered or otherwise affected by nuisance conditions; or
5. Air or ground water impacts will be caused.

The restricted substances are as follows:

- A. Any solid, liquid, vapor, or gas having temperature higher than 65 degrees C (150 degrees F): however, such materials shall not cause the POTW influent temperature to be greater than 40 degrees C (104 degrees F). The Director reserves the right to prohibit or limit the discharge of wastes whose maximum temperatures are lower than 65 degrees C.
- B. Any water or waste containing fats, wax, grease or oils, whether emulsified or not, in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred and four (104) degrees F (0 and 40 degrees C).
- C. Any garbage that has not been properly shredded to a maximum of one half of an inch (1/2"), 1.27 centimeters, in any dimension. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Director.
- D. Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.
- E. Any waters or wastes containing iron chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine requirement, to such degree that any such material received in the composite sewage at the sewage works exceeds any limits established by EPA or DEP for such material.

- F. Any waters or wastes containing phenols or other taste or odor producing substances in concentration exceeding limits, established by the Director, as necessary, after treatment of the composite sewage to meet the requirements of the State, Federal, or other public agencies having jurisdiction over sewage treatment facilities' discharge to receiving waters.
- G. Any radioactive wastes or isotopes of such half-life or in concentration as may exceed limits, established by the Director and not in compliance with applicable State or Federal regulations.
- H. Any water or wastes having a pH in excess of 9.5.
- I. Materials which exert or cause:
1. Unusual concentrations of inert suspended solids, such as, but not limited to: fullers earth, lime slurries, and lime residues or of dissolved solids, such as, but not limited to: sodium chloride and sodium sulphate.
 2. Excessive discoloration (such as, but not limited to: dye wastes and vegetable-tanning solutions).
 3. Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage works.
 4. Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein under Article 1, Definitions.
- J. Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment facilities' effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.
- K. Concentration and/or mass-based limits-No person shall discharge, directly or indirectly, into the sewer works, wastewater containing any of the following substances in concentrations exceeding those specified below on either a daily basis or an instantaneous basis, except by permit. Limits are applicable at the point of exit from a property to the public sewer.

POLLUTANT	CONCENTRATION
	PARTS PER MILLION (mg/L)
Arsenic as As	0.05
Barium as Ba	5
Boron as B	5
Cyanides as Cn (amenable)	0.1
Fluoride as F	20

Chromium (total)	1
Chromium (Cr+6)	0.1
Magnesium as Mg	100
Manganese as Mn	5
Copper as Cu	1
Zinc as Zn	1
Cadmium	0.07
Lead	0.1
Tin	2
Silver	0.1
Mercury	0.01
Nickel	1

Note: All metals are to be measured as total metals.

Section 6. If any waters or wastes are discharged, or are proposed to be discharged to the public sewers, which contain the substances or possess the characteristics enumerated in Section 5 of this Article, and which in the judgment of the Director may have a deleterious effect upon the sewage works, processes, equipment, or receiving waters or which otherwise create a hazard to life or constitute a public nuisance, the Director may:

- A. Reject the wastes.
- B. Require pretreatment to an acceptable condition before discharge to the public sewers.
- C. Require control over the quantities and rates of discharge and/or
- D. Require payment to cover the added cost of handling and treating the wastes not covered by existing taxes or sewer charges.

If the Director permits the pretreatment or equalization of waste flows, the design and installation of the pretreatment facility and equipment shall be subject to the review and approval of the Director and subject to the requirements of all applicable codes, ordinances, and laws.

Section 7. Grease, oil, and sand interceptors shall be provided when, in the opinion of the Director they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; Except such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of the type and capacity approved by the Director, and shall be located as to be readily and easily accessible for cleaning and inspection. MDC Grease Interceptors shall be installed in the building sewer serving restaurants or hotels, boarding houses that prepare and serve food or business of a similar nature. Maintenance, operation, and repair of all installed interceptors shall be at the expense of the owner and subject to inspection by the Director or an authorized representative.

1. Grease traps shall be inspected monthly, for the months in use, by a duly appointed representative of the Town and shall be cleaned by a licensed septage hauler whenever the level of grease is 25% of the effective depth of the trap or at least every three months whichever is sooner. Facility owners/operators shall be responsible for notifying the Wastewater Department of extended periods of time (one [1] month or more) when the grease trap is not in use (i.e. the facility will be closed) to avoid being inspected and billed for those months.
2. Following pumping of a grease trap the grease trap shall be filled with treated water from the WPCF to a point above the discharge pipe.

Section 8. The owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters and other appurtenances, as determined by the Director, in the building sewer to facilitate observation, sampling, and measurement of wastes. Such manhole shall be accessible and safely located, and shall be constructed in accordance with plans approved by the Director. The manhole shall be installed by the owner at the owner's expense and shall be maintained by owner so as to be safe and accessible at all times.

Section 9. All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this ordinance shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater", published by the American Public Health Association and 40CFR, Part 136, and shall be determined from suitable samples taken at the control manholes provided. In the event that no special manhole has been provided, the control manhole shall be determined by the Director. (Normally the control manhole will be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected). Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewer works and to determine the existence of hazards to life, limb, and property. (The particular analyses involved will determine whether a twenty-four (24) hour composite of all outfalls of a premise is appropriate or whether a grab sample for samples should be taken. Normally, but not always, BOD and suspended solids analyses are obtained from 24-hour composites of all outfalls, whereas pH's are determined from periodic grab samples or continuous monitors).

Section 10. No statement contained in this Article shall be construed as preventing any special agreement or arrangement between the Town and any industrial concern whereby any waste of unusual strength or character may be accepted by the Town for treatment, subject to payment therefore, provided that such agreements do not contravene any requirements of existing federal, state, or local laws and are compatible with any user charge and industrial cost recovery system in effect.

Article V. Protection from Damage

Section 1. No person shall maliciously, willfully or negligently break damage, destroy, uncover, deface, or tamper with any structure, appurtenance or equipment which is a part of the sewage

works. Any person violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

Article VI. Power and Authority of Inspection

Section 1. The Director and other duly authorized employees of the Town of Harwich Wastewater Department, bearing proper credentials and identification, shall be permitted to enter all properties for the purpose of inspection, observation, measuring, sampling, and testing in accordance with the provisions of this ordinance. The Director, or their representative, shall have no authority to inquire into any processes including metallurgical, chemical, oil refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterways or facilities for wastes treatment.

Section 2. While performing the necessary work on private properties, referred to in Article VII, Section 1., above, the Director, or duly authorized representative of the Director shall observe all safety rules applicable to the premises established by the owner or occupant person and the owner and/or occupant person shall be held harmless for injury or death to the Director's representative and the Town shall indemnify the owner and/or occupant person against loss or damage to its property by Director's representatives and against liability claims and demands for personal injury or property damage asserted against the land owner /or occupant person and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the owner and/or occupant person to maintain safe conditions as required in Article V Section 9.

Section 3. The Director, and other duly authorized representative of the Wastewater Department, bearing proper credentials and identification shall be permitted to enter all private properties through which the Town holds a duly negotiated easement for the purpose of, but not limited to: operation, inspection, observation, measuring, sampling, repairing, and maintenance of any portion of the sewage works lying within said easement. All entry and subsequent work, if any in said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

Article VII. Penalties

Section 1. Any person found to be violating any provisions of these Rules and Regulations except Article IV shall be served by the Town with written notice stating the nature of violation and the offender shall permanently cease all violations. The Director may immediately halt or prevent any discharge of pollutants which reasonably appears to present an imminent endangerment to the health or welfare of persons. In the event that the Director determines that a discharge of pollutants reasonably appears to present an imminent endangerment to the health or welfare of persons, the Director may provide informal (oral or written) notice of such determination to the discharger. The offender shall, within the period of time stated in such notice, permanently cease all violations by immediately stopping or eliminating such discharge and shall submit written proof of the elimination of the discharge to the Director within forty-eight (48) hours of receipt of notice of the Director's determination. If said person fails to voluntarily halt such discharge, the Director will take such actions as deems necessary to prevent or minimize endangerment to the health or welfare of persons. Such actions may include, but are

not limited to: seeking temporary injunctive relief, entry onto private property to halt such discharge, severance of the sewer connection, suspension of wastewater disposal service, suspension or revocation of a discharge permit, and/or implementation of legal action. After such discharge has been halted, the Director may take such other and further actions as may be necessary to ensure elimination of said discharge and to ensure compliance with the terms of these Rules and Regulation and any discharge permits issued hereunder.

Section 2. Any person who shall continue any violation beyond the time limit provided for in Article VIII, Section 1 shall be guilty of a misdemeanor, and on conviction thereof, shall be fined an amount not exceeding five thousand dollars (\$5,000) for each day for each violation of any provisions of these Rules and Regulations. Each day in which any such violation shall continue shall be deemed a separate offense. These penalties are stated in the Massachusetts General Laws, Chapter 83, as amended by Chapter 174 of the Acts of 1987. Enforcement action shall be considered to begin immediately upon discovery of the violation for the purpose of calculating penalties, etc.

Section 3. Any person violating any of the provisions of this ordinance shall become liable to the Town for any expense, loss or damage occasioned by the Town by reason of such violation.

Section 4. Neither the Town nor any of its employees shall be liable for damages arising out of a malfunction of the system including, but not limited to, backups.

Article VIII. Validity

Section 1. All ordinances or parts of ordinances in conflict with these Rules and Regulations of the Sewer Department are hereby repealed.

Section 2. The invalidity of any section, clause, sentence, or provision of this ordinance shall not affect the validity determined by the Board as to which of any other part of this ordinance which can be given effect without such invalid part or parts.

Article IX. Collection of Sewer and Service Charges

Section 1. Establishment of Rates

Rates and fees for water and sewer shall be determined by the Harwich Board of Water and Wastewater Commissioners as instructed under applicable Massachusetts General Law Chapters 40 and 83.

Section 2. Bills Payable

Bills are due and payable within thirty (30) days from the date of issuance. The failure of the customer or his/her agent to receive notice of their bill or other related charges does not relieve them from the obligation for payment or from the consequences of nonpayment under the Department Rules & Regulations and under applicable Massachusetts General Laws Chapters 40 and 83.

All sewer bills that are outstanding after 30 days will be mailed a demand notice which shall be due within fourteen (14) days. If the charges are still unpaid after the due date of the demand notice, a demand fee will be assessed. If the water service shall be turned off for non-payment of the sewer service charges, the water service will not be turned on until all past charges are paid in full, including all expenses associated with collection of such sewer charges and the shut off of water service. In order to turn off or plug a sewer service without causing a health problem the water service shall also be turned off. Such shut off of water charges shall be as approved by the Commissioners as water rates and charges of the Water Department.

Article X. Grievance and Variance Procedure

A person who seeks a variance or feels aggravated due to the interpretation of these Rules and Regulations as it affects them shall have recourse, without prejudice or retribution, to seek a response to the alleged situation, condition, problem or misunderstanding in the following manner:

Step 1. The person shall present the issue to the Director in writing using the forms available at the Wastewater Departments' office, documenting the time and/or dates of the circumstances and reasons for a variance request or said grievance. The person may expect a reply to the request for variance or grievance within thirty (30) days from the date of filing with the Director.

Step 2. Should the issue not be resolved with the response from the Director or not received within thirty (30) days, the person may take the issue to the Wastewater Commission. Such submission shall include copies of all written documentation of the variance request or said grievance, with all sequence of actions or inactions taken to date.

The Wastewater Commission will use its best effort to hold a hearing within forty-five (45) days of receipt of an application for an abatement, variance or grievance request, and shall render a decision within forty-five (45) days after holding such hearing on the application for a abatement, variance or grievance request.

Step 3. Should the issue not be resolved with the response from the Wastewater Commission or not received within forty-five (45) days after the Wastewater Commission closes the hearing on a person's application for abatement, variance or grievance request, the person may take the issue to the Board of Selectmen. Such submission shall include copies of all written documentation of the variance request or said grievance, with all sequence of actions or inactions taken to date. The Board of Selectmen will use their best effort to hold a hearing within sixty (60) days of receipt of an application for an abatement, variance or grievance request and shall render a decision within forty-five (45) days from date of the hearing.

Article XI. Ordinance in Force

Section 1. This ordinance shall be in full force and effect from and after its passage, approval, recording, and publication as provided by law.

Article XII. Land Use Controls – Wastewater Flow Management

Preamble

The Town of Harwich Board of Selectmen being responsible for the design and construction of the town sewer systems and for the implementation of the Comprehensive Wastewater Management Plan (CWMP) adopt the following Land Use Control – Wastewater Flow Management regulation to achieve Flow Neutral requirements. Sewer Service Areas (SSAs) to be implemented over eight phases during a 40-year period and wastewater flow projections for those areas have been defined after completing a comprehensive and deliberate study of the existing and projected wastewater needs of the Town. Reference is hereby made to the Final CWMP accepted by the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) in 2016. The intent of this regulation is to manage the wastewater flows in Town to those projected in the approved CWMP, and sewage treatment provided through intermunicipal agreements and/or in the case of construction of a wastewater treatment facility, the issuance of flow limits issued through a MassDEP Groundwater Discharge permit.

Background

Any owner of a house, building, or other structure used for human habitation, occupancy, employment, or recreation shall install sanitary facilities thereon in order to connect at his or her own expense to a public sanitary sewer of the Town based on the following sections. All Connection and Extension Permits for sanitary sewers shall be issued at the sole discretion of the Harwich Board of Selectmen. Implementation of the Comprehensive Wastewater Management Plan and construction of the sewer systems are the responsibility of the Board of Selectmen. The Town of Harwich completed a CWMP in 2016 prepared by CDM Smith Inc., to provide a comprehensive wastewater management plan that outlines the existing and future wastewater needs of the Town in order to protect and restore water quality.

To analyze existing wastewater flows and estimate future wastewater needs, the Town was divided into eight Sewer Service Areas primarily by watershed. The Campground Area, Great Sand Lakes area, and the Route 28 Harwich Port area are outside of the Massachusetts Estuaries Project (MEP) watershed areas and thus are grouped separately. Figure 13-4 from the CWMP shows the watersheds and SSAs. Existing and future wastewater flows were also calculated for each of the five watersheds. The approved March, 2016 CWMP, used water use data from 2004 through 2007 to estimate existing and future wastewater needs, identifying a future need of 1,259,000 gallons per day (gpd). The sewer service area flows for each of the eight (8) watershed areas are summarized in attached Table 1-1.

The Harwich Board of Selectmen will use information and recommendations included in the CWMP as a guide when considering applications for new connection and extension permits and thereby manage the capacity within the sewer system to serve the needs of the Town for the 40-year planning period.

Regulation: Land Use Control – Wastewater Flow Management

The Harwich Board of Selectmen are adopting this new Sewer Use Regulation article that will ensure managed smart growth and prevent excessive growth based on availability of municipal sewer service.

General Land Use Controls

The Sewer Use Regulation as adopted by the Board of Selectmen delineates and designates eight SSAs and the wastewater flow to be allocated to those individual areas. The areas are shown on Figure 1-1 and the flows are shown on Table 1-1, are both attached and made a part of this sewer use regulation Article XII. Those flows shall be utilized as a guide by the Town in allocating flows for new connections within the individual SSA during the noted 40-year planning period (2017-2057). Flows are based on actual flows.

Wastewater Flow Management

The Board of Selectmen reserve the right to reallocate flows within all SSAs provided that the following provisions are met:

1. An applicant seeking to alter a SSA or flow within a SSA shall be responsible for all costs associated with that change including potential for filing a Notice of Project Change with the Massachusetts Environmental Policy Act (MEPA) Office as well as burden of proof to demonstrate the public health need or water quality need, and public benefit;
2. A re-allocation of flows within the SSA shall not exceed the total project flow increase for Harwich in the projected 40-year planning period as presented in the March, 2016 CWMP and shown in Table 1-1;
3. A re-allocation of flow from one SSA to another SSA without exceeding the total flow increase shall be subject to a simple majority vote of the Board of Selectmen; and
4. A re-allocation of flows to an area outside an existing SSA shall only be allowed under the following circumstances:
 - a. For non-public health emergencies or water quality benefits, by unanimous vote of the Board of Selectmen and by positive vote of a legally convened town meeting if zoning changes or Town funding is required. This provision is possible provided the total flow for the projected 40-year planning period is not exceeded.
 - b. For public health emergencies, by unanimous vote of the Board of Selectmen and by recommendation of the Harwich Board of Health. This provision is possible provided the total flow for the projected 40-year planning period is not exceeded.

Abandonment of Systems

Existing on-site septic systems that are connected to the Town's sewer system shall comply with Commonwealth of Massachusetts – Department of Environmental Protection Regulations 310 CMR 15.354 – Abandonment of Systems and any local Harwich Board of Health regulations.

Adopted

The Board of Selectmen for the Town of Harwich, MA, do hereby adopt the following Land Use Control – Wastewater Flow Management regulation. The sewer service areas and projected wastewater flows have been designated following comprehensive and deliberate study of the existing and projected wastewater needs of the Town. Reference is hereby made to the Final Comprehensive Wastewater Management Plan (CWMP) accepted by the MEPA Office in 2016.

Sewer Service Areas		
Sewer Service Area Name (SSAs)	Flow Allocation (in gpd)	Approved Flow (in gpd)
Allen Harbor	61,500	0
Herring River	628,000	0
Route 28/Out MEP	28,000	0
Pleasant Bay	326,000	300,000 (1)
Saquatucket Harbor	113,000	0
Wychmere Harbor	31,900	0
Campground	34,800	0
Great Sand Lake	35,800	0
CWMP Total Flow	1,259,000	300,000

1. Town has an executed Inter-municipal Agreement with the Town of Harwich for 300,000 gallons to service the Pleasant Bay Sewer Service Area.
2. Phased approvals for wastewater flow to the listed SSAs will be approved by the town Wastewater Commissioners as inter-municipal agreements and construction of a wastewater treatment facility with an issued MassDEP Groundwater Discharge Permit that outline maximum available sewer flows.

Appendix A. Design of Sewers

Section 1. General

Wastewater collection systems shall be designed separately from stormwater systems. Wastewater collection systems shall not allow for the introduction of rain water, noncontract cooling water, and groundwater from foundation drains, sump pumps, surface drainage or any other source of inflow. Overflows from wastewater collection systems shall also not be permitted.

New sanitary sewers and all extensions to sanitary sewers owned and operated by the Town of Harwich shall be either gravity sewers or low pressure sewers and shall be designed by a professional civil engineer, or registered sanitarian for systems generating less than 2000 gpd licensed to practice in the Commonwealth of Massachusetts, 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 of Harwich Rules and Regulations of the Sewer Department. Plans and specifications shall be submitted to and approved by the Director before initiating any construction. The design shall anticipate and allow for flows from all possible future extensions or development within the immediate drainage area in conformance with Town planning documents.

Section 2. Building sewers shall be constructed of such materials and shall be a minimum four (4") inch diameter pipe for single family residential connections and six (6") inch diameter pipe for multi-family, commercial or industrial connections or as the Superintendent may determine. Sewer pipe shall be made from: ductile iron with the outside coated with extra heavy bituminous coating approved for buried utilities and the inside cement lined, minimum schedule 35 P.V.C. or acceptable substitute approved by the Superintendent. The building sewer shall be laid straight in line and grade.

Single family residential building sewers must have watertight wye cleanouts, with H-20 rated valve frame and cover box, with the word "SEWER" in raised lettering, at all locations where pipe size, slope or direction changes and at the property line. Additional cleanouts may be required for runs of 100 feet or more, or at the discretion of the Director. The cleanout shall be brought to within four (4") inches below final grade, except for paved surfaces, (bituminous concrete, concrete, paving blocks, etc.) the cover shall be flush with the finished surface. Cleanouts in pressure sewers shall be located and constructed per the manufacturer's recommendation.

For multi-family, commercial or industrial sewer connections manholes shall be used at all locations where pipe size, slope or directions changes. Commercial or industrial sewer connections shall include a sampling station, to be used for discharge sampling, located in the road layout at the property line. The sampling station shall consist of a precast manhole with approved frame & cover.

Pressure Sewer Laterals

If building is to be connected to a low-pressure sewer or requires a pump to lift sewage to a gravity sewer, the gravity portion of the installation shall meet the requirements of the previous paragraph. The pressure pipe shall be minimum 1-1/4 inch diameter if a grinder pump is used

and 2-inch diameter if a grinder pump is not used or other such larger size if the sewage flow and characteristics differ from a single-family residence.

Materials

Polyethylene for 1-1/4 –inch pipe through 4-inch pressure pipe with material conforming to ASTM D3350, Type PE-4710 HDPE pressure Class PC 200, SDR-11. Fittings for use with polyethylene pipe and tubing shall be manufactured and furnished by the pipe supplier and in conformance with AWWA C901 requirements. Joints for polyethylene pipe shall be jointed by the butt fusion method in a manner recommended by the pipe manufacturer.

Polyvinyl Chloride (PVC) Pipe- ASTM D2241 PVC pressure pipe material conforming to ASTM D1784, minimum class SDR 21 for pipe 1-1/4-inch through 4-inch, push-on joint conforming to ASTM D3139 with flexible elastomeric gaskets conforming to ASTM F477.

A ball valve with curb stop and check valve shall be installed on all low pressure and force mains, as close as feasible to a property line. Ball valves for low pressure sewers shall be true union type constructed from PVC Type I cell classification with EPDM O-rings. All valve components shall be replaceable. Ball valves 2 inch and smaller shall be pressure rated to 235 psi, while valves larger than 2 inches shall be rated to 150 psi. Ball valves shall have a Safe-T-Block seal carrier to stop flow in either direction, allowing safe removal of the downstream union nut for system service or modification. Ball valves shall be true union ball valves as manufactured by Spears Manufacturing Company, or equal. Check valves for low pressure sewer laterals shall be made of stainless steel or fabric-reinforced synthetic elastomer to allow for a positive seal with minimum backpressure. Check valves shall be true union ball check valves.

Curb stop valves shall be of brass or bronze construction and two rubberized O-ring seals to provide pressure-tight seal. Curb stop valves shall be figure H-15204 as manufactured by Mueller-Oriseal, B22 as manufactured by Ford Meter Box Company, Hayes, Nueseal, or equal. Curb boxes shall be 2-1/2 inch shaft size two-piece screw type. They shall be adjustable from 48-inch to 72-inch. Curb boxes shall be constructed of cast iron and thoroughly coated with two coats of asphaltum varnish. Curb box shall be stainless steel supplied with a hole in the “U” portion for the insertion of a stainless-steel pin. Pins shall be supplied and shall be made of stainless steel. Curb boxes shall be as manufactured by Ford Meter Box Company, Mueller Company, or equal.

Gravity or low-pressure pipe shall have magnetic marking tape 2 inches wide with the words “SANITARY SEWER BELOW,” installed not more than two (2’) feet below finished grade on all mainline and service laterals.

Section 3. Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. All buildings in which any **building** drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sewer or public sanitary sewer, as specified by the Director.

Low Pressure Grinder Pumps or Lift Pumps

Each property serviced by a low-pressure sewer shall have a dedicated pre-manufactured pump station suitable for the flow, pressure and other conditions defined by the property and the public sanitary sewer. The station shall include an in-ground self-contained unit with submersible motor, level controls, sensors, alarms, and an emergency generator plug-in connection.

Properties whose sewage quantities and characteristics are equivalent to four or more families shall install a duplex pump. Refer to further requirements in Appendix A, Design of Sewers, Section 23 - Grinder Pump Systems.

Section 4. No person shall make connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or ground water to a building sewer or building drain which is connected directly or indirectly to a public sanitary sewer.

Section 5. Exhaust from engines, blowoff from boilers, drainage of gasoline or any explosive liquor, liquids, or other flammable substances shall not be permitted to be discharged into any building sewer which is connected directly or indirectly to a public sanitary sewer. At the time a connection is made to the Town's sanitary sewer system, the interior plumbing shall be inspected to ensure that no connections to roof drains, yard drains, foundation drains, sump pumps, or other sources of drainage water is connected to the sanitary sewer.

Section 6. The connection of the building drain into the building sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the Town.

Section 7. The Licensed Utility Installer, listed on the approved sewer connection permit, shall notify the Water and Sewer Departments, a minimum of 72 hours, before the building sewer will be ready for connection to the public sewer. The Director will schedule the time and date to perform an inspection of the building sewer's connection to the public sewer, connection shall be made only under the supervision of the Director or their representative.

Section 8. All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property and/or private property disturbed in the course of the work shall be restored in a manner satisfactory to the Director.

Section 9a. Plumbers and private contractors, of established reputation and experience, who have paid the required filing fees, as stated in Section 13b, and have provided the required license and permit bonds, as stated in Section 13c, and have submitted a Certificate of Insurance with required coverage, as stated in Section 13d, may be approved by the Director as a Licensed Utility Installer (L.U.I.).

Applicants for licenses for installing sewer main and sewer services shall attend a training seminar on the installation of low-pressure pumps that is conducted by the manufacturer, and the applicant shall show evidence of course completion.

Note: The installation of grinder pumps may require other permits such as, but not limited to: electrical and plumbing.

Section 9b. Applicants for licenses as sewer main and sewer service installers (Licensed Utility Installer) are required to pay a filing fee. As set by the Board (see rates and fees schedule).

Section 9c. Applicants for licenses as sanitary sewer and building sewer installers (Licensed Utility Installer) shall obtain a License and Permit Bond in the amount of Five Thousand (\$5,000.00) Dollars or an amount equal to 100% of the construction cost of any proposed sewer connection located within or on public property or an amount approved by the Director, whichever is greater. Said license and permit bond shall remain in full force and effect for a period of one (1) year from date of acceptance by the Town of the L.U.I.'s last sewer connection. This bond will guarantee that the Licensed Utility Installers (L.U.I.) will comply with the statutes, regulations, or ordinances of the Town of Harwich. The license and permit bond shall be duly executed by the Principal of the L.U.I. and by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Director.

Section 9d. Before any Licensed Utility Installer performs any work in, on, under or around streets, sidewalks and property belonging to the Town of Harwich, it will be necessary to furnish, simultaneously with the submittal of the License and Permit Bond, a Certificate of Insurance showing that the contractor has the following coverage:

- | | | |
|--------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------|
| 1. General Liability - | \$500,000
\$500,000-\$1,000,000 | Property Damage
Bodily Injury |
| 2. Automotive Liability- | \$500,000
\$500,000-\$1,000,000 | Property Damage
Bodily Injury |
| 3. Workmen's Compensation and Employer's Liability as required under Massachusetts General Laws. | | |
| 4. Insurance shall include coverage for collapse of underground structures. | | |
| 5. Insurance shall include coverage for projects completed operations. | | |

All above insurance coverage shall remain in full force and effect for a period of at least one (1) year from the date of acceptance by the Town of the last sewer connection installed by the L.U.I. The L.U.I. shall take all responsibility for the work, and take all precaution for preventing injuries to persons and property in or about the work.

Section 9e. The L.U.I. shall pay all debts for labor and materials contracted for or by them on account of the work and shall assume the defense of and indemnify and save harmless the Town

of Harwich and its Officers and Agents from all claims relating to labor and or alleged infringement of inventions, patents, or from injuries to any person or corporation caused by the acts of negligence of the L.U.I. any of its agents or employees, or any subcontractor, in doing the work or in consequence of any improper materials, implements, or labor used therein.

Section 9f. Before the L.U.I.'s License and Permit Bond or any coverage listed in the L.U.I.'s Certificate of Insurance expires, the L.U.I.'s shall send a revised License and Permit Bond or Certificate of Insurance to the Water and Sewer Department showing that the bond or insurance coverage, is still in place. The Licensed Utility Installer shall NOT perform any work in, on, under or around streets, sidewalks and property belonging to the Town of Harwich or any other public property if their License and Permit Bond or any coverage listed in their Certificate of Insurance has elapsed.

Section 9g. Approved Licensed Utility Installers will renew their Utility Installers Licenses by submitting a revised License and Permit Bond, Certificate of Insurance, and License Fee by January 1st of each year. All Utility Installers' Licenses expire at Midnight, December 31st of each year.

Section 10. All sanitary sewer extensions shall require inspection by a qualified inspector or the Director may determine that a building sewer installation or repair will require full time inspection by a qualified inspector. In either case the Director will designate a private inspector as Town Inspector who shall represent the interest of the Town of Harwich during construction of any sanitary sewer extension or building sewer installation or repair, and will monitor and inspect the ongoing progress of the work, full-time observation is required. The costs for the services performed by said Town Inspector shall be paid by the developer or owner, through the Water and Sewer Departments. Flows will not be permitted to be discharged from any service connection until a Certificate of Compliance is submitted by the Town Inspector and the report is approved by the Director.

Section 11. After the completion of any building sewer's repairs or connection to the municipal sewer, the L.U.I. shall fill out a sewer connection tie card, on the forms provided at the Water and Sewer Departments' office, for each building sewer the L.U.I. has performed work on. The tie-card shall be completed before the inspection of the L.U.I.'s work, and before the L.U.I. backfills the building sewer and connection to the municipal sewer.

Section 12. After completion and before the final inspection of any sanitary sewer connection or building sewer connection for residential dwellings with four (4) or more dwelling units, industrial connections, commercial connections with five (5) or more water closets, commercial connection with industrial water or waste, connections of private sewer system or whenever the Director requires, the Licensed Utility Installer, developer or owner will furnish a reproducible digital "as-built" drawing (1" = 20') in .PDF and .DWG format to the Director. The as-built drawing(s) shall contain a plot plan(s) with building(s) and highway layouts, sewer layouts with profiles, force mains, force main gates, pump station(s), pump station(s) details, and descriptions of each building sewer showing the depth of all connections, pipes, and manholes, using buildings or other permanent markers as reference points. The as-built drawing (s) shall contain any other information deemed necessary by the Director.

Section 13. Alternative Sewer Collection Systems

Sewer collection systems not stated in these Rules and Regulations of the Sewer Department shall only be permitted with the Director's conditional approval.

Section 14. Design Capacity and Design Flow

Design Factors

- Peak hourly sewage flow
- Additional peak flows of industrial and commercial wastes
- Maximum groundwater infiltration
- Topography of the immediate area
- Difficulty of installation

Design Period

Sewage collection systems shall be designed for a life span of 50 years, and interceptor sewers shall be designed to handle the maximum capacity of uses in the drainage area as determined by the Director.

Design Flow

Submit a detailed description of the procedures used for calculating sewer design flow to the Director.

The Massachusetts 310 CMR 15.000, the State Environmental Code, Title 5, shall be used for calculating the design flow for sewers. If the Massachusetts 310 CMR 15.000, the State Environmental Code, Title 5, does not have a flow rate for the proposed use, the following methods may be used with the approval of the Director:

Flow Related to Water Consumption

When available, use existing sewage flow and/or consumption data as a basis for sewer design. If such data are not available, using flow data from a similar community or users;

Per Capita Flow

Where actual flow data cannot be obtained, base residential flows from new collection systems on an average daily per capita flow of not less than 70 gallons per day (0.27 m³/day). Add an appropriate allowance for infiltration to this flow;

In all cases, add a minimum allowance of 250-500 gpd/in. diam/mile of sewer (0.24-0.48 m³/cm of pipe diam/km/day) for infiltration to the water consumption, per capita flow or any other calculation method required by the Director.

Section 15. Details of Gravity Sewer Pipe Design and Construction

Minimum Sewer Pipe Size

No gravity sewer shall be less than 8 inches in diameter (20 cm).

Depth

In general, sewers shall be deep enough to drain basement fixtures and to prevent freezing. Water tight insulation shall be provided for sewers that cannot be placed deep enough to prevent freezing. For house connections chimneys (vertical pipe) preformed block units shall be used when the sewer main is greater than or equal to 12 feet deep.

Buoyancy

Where high groundwater conditions are anticipated, the buoyancy of sewers shall be considered, and the floatation of pipe shall be prevented with appropriate design and construction of the sewer.

Slope

Minimum Slopes

All sewers shall be designed and constructed to give a velocity (when flowing full) of not less than 2.0 feet per second (0.61 m/s) based on Manning's formula using an "n" value of 0.013. The Director may permit the use of other "n" values if deemed justified on the basis of research or field data. The following minimum slopes shall only be used if absolutely necessary because of grade restrictions; however, greater slopes are desirable.

Minimum Slope in Feet	
Sewer Size	per 100 Feet (m/100m)
8 inches (203 mm)	0.4
10 inches (254 mm)	0.28
12 inches (305 mm)	0.22
14 inches (356 mm)	0.17
15 inches (381 mm)	0.15
16 inches (406 mm)	0.14
18 inches (457 mm)	0.12
21 inches (533 mm)	0.1
24 inches (610 mm)	0.08
27 inches (686 mm)	0.067
30 inches (762 mm)	0.058

36 inches (914 mm)	0.046
42 inches (1067 mm)	0.037

The use of oversized sewers in order to justify flatter slopes is not permitted.

Slope Between Manholes

Sewers shall be laid out with uniform slope between manholes.

High Velocity Protection

Velocities greater than 12 feet per second (3.7 m/s) shall not be permitted under any flow conditions, unless the Director approves special provisions that will protect against pipe erosion and impact.

Steep Slope Protection

Securely anchor sewers on 15 percent slopes, or greater, to prevent displacement.

Impervious Dams

Impervious dams shall be installed every 300 feet to control the flow of groundwater within the pipe bedding material, when:

- The surrounding native material is considerably less impervious than the pipe bedding material;
- The pipe bedding could produce a hydraulic head of 25 feet on the pipe gaskets and joints during periods of high groundwater flow; and/or
- The sewer is constructed downstream of a waterway or wetland crossings.

Alignment

Sewers shall be laid out in a straight line and alignment, and shall be checked with a laser beam.

Sewer Pipe Material

Sewer pipe material shall be as specified in Appendix B, Construction Technical Specifications, Section 12.

Sewer Pipe Inspection and Testing

The specifications shall include deflection and leakage testing of sewer pipes, as stated in Appendix B, Construction Technical Specifications, Sections 17 and 18.

Section 16. Details of Sewer Manhole and Cleanout Design and Construction

Manholes and cleanouts shall be as specified in Appendix B, Construction Technical Specifications, Section 13.

Manhole Inspection and Testing

The specifications shall include a requirement for the inspection and testing of manholes for leaks or damage as specified in Appendix B, Construction Technical Specifications, Section 21.

Section 17. Inverted Siphons (Depressed Sewers)

Inverted siphons shall only be allowed if there is no other option and it is approved by the Director. Depressed sewers shall have no less than two barrels with a minimum pipe size of 6 inches (15 cm) and shall be provided with necessary appurtenances for convenient flushing and maintenance. Manholes shall have adequate clearances for cleaning equipment and for inspection and flushing. The design shall provide for sufficient heads and pipe sizes to secure velocities of at least 3.0 feet per second (0.92 m/s) for average flows under initial conditions. The inlet and outlet details shall be arranged so that the normal flow is diverted to one barrel and so that either barrel may be taken out of service for maintenance. A hose connection shall be provided to the siphon for flushing purposes.

Section 18. Aerial Crossings

Aerial crossings shall only be allowed if there is no other option, and it is approved by the Director. All aerial crossings shall provide appropriate support for all joints and pipes used for aerial crossing. The supports shall withstand frost heaves as well as overturning, settlement, flooding, thermal expansion, vibrations, and other loads that may act against the piping. Precautions against freezing shall be provided (e.g., insulation and increased slope). Expansion joints between above-ground and below-ground sewers shall be provided. Where buried sewers change to aerial sewers, special construction techniques to minimize damage from frost heaves shall be used. Ductile iron pipe with restrained mechanical joints are required. The bottom of the pipe shall be no lower than one (1') foot above the 100-year flood elevation level.

Section 19. Location of Sewers in Streams

Sewers shall be designed to minimize the number of stream crossings.

Cover Depth

The top of all sewers entering or crossing a stream shall be sufficiently below the natural bottom of the stream bed to protect the sewer line. The following cover requirements shall be met:

- 1 foot (305 mm) of cover where the sewer is located in rock.

- 3 feet (914 mm) of cover in other material. In major streams, more than 3 feet (914 mm) of cover shall be required.
- In paved stream channels, the top of the sewer line shall be at least 1 foot (305 mm) below the channel pavement.

Horizontal Location

Sewers located along streams shall be located sufficiently outside of the stream bed to allow for stream widening in the future and for the prevention of siltation during construction.

Structures

Locate sewer manholes or other structures outside of streams whenever possible. Where structures must be located in a stream, they shall not interfere with the free discharge of flood flows or navigation in the stream. The manholes' covers shall be no lower than one (1') above the 100-year flood elevation level.

Alignment

Sewers shall cross streams perpendicular to the flow without a change in grade.

Materials

Sewers entering or crossing streams shall be watertight and free from changes in alignment or grade. Joints shall be restrained in order to prevent movement from stream forces. Ball-and-socket or restrained joints designed for hard service applications shall be provided.

Backfill materials shall be stone, coarse aggregate, washed gravel, or other materials that will not readily erode, cause siltation, damage pipe during backfill, or corrode the pipe and shall be approved by the Director. In large stream crossings, where required by the Director, place riprap over the sewer pipe for stability and to prevent erosion.

Siltation and Erosion

The design engineer or L.U.I. shall include construction methods that will minimize siltation and erosion in the project specifications the construction methods for sewers in or near streams. Such methods shall control siltation and erosion by limiting unnecessary excavation, including disturbing or uprooting of trees and vegetation, dumping of soil or debris, or pumping silt-laden water into the stream. Specifications shall require cleanup, grading, planting, and restoration of all work areas to begin immediately.

Section 20. Protection of Water Supplies

Cross Connections

No physical connection shall exist between a public or private potable water supply system and a sewer or any appurtenance that would permit the passage of wastewater or polluted water into the potable supply. No sewer shall come into contact with a water pipe and no water pipe shall pass through any part of a sewer manhole or any part of the sewer system.

Relation to Water Works Structures

Sewers shall be located as far as possible from public water supply wells or other potable water supply sources and structures.

Engineering plans shall show all existing waterworks units, such as treatment facilities, basins, pipes, wells, or other waterworks units that are within 50 feet of the proposed sewer or to within the minimum distances required by the Director.

Water Mains' Relation

Horizontal Separation

Whenever possible, lay out sewers at least 10 feet (3.0 m) from any existing or proposed water main. If local conditions prevent a lateral separation of 10 feet, the Director may make an exception on a case-by-case basis when supported by data from the design engineer. Such an exception may allow the sewer to be installed closer than 10 feet to a water main, provided that it is laid out in a separate trench with the top (crown) of the sewer at least 18 inches (46 cm) below the bottom (invert) of the water main or is encased in a water tight sleeve.

Vertical Separation

Whenever sewers must cross water mains, lay out the sewer so that the top of the sewer is at least 18 inches (46 cm) below the bottom of the water main. The sewer joints should be equidistant and located as far away as possible from the water main joints. When the sewer cannot meet the above requirements, relocate the water main to provide for this separation or reconstruct it with mechanical-joint pipe for a distance of 10 feet (3.0 m) on each side of the sewer. One full-length (twenty feet) water main pipe shall be centered over the sewer so that both joints will be as far from the sewer as possible.

Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

When it is impossible to achieve horizontal and/or vertical separation as stipulated above, both the water main and sewer shall be constructed of mechanical-joint cement-lined ductile iron pipe or another equivalent that is watertight and structurally sound. Both pipes shall be pressure tested to 150 psi to ensure that they are watertight, and one of the pipes shall be installed in a water tight sleeve for a horizontal perpendicular distance of

10 feet (3.0) on each side of the other pipe. Any joints in the watertight sleeve shall be as far as possible from the water main’s intersection with the sewer.

Section 21. Details of Low-Pressure Sewer Design and Construction

Layout: The branched configuration of a pressure sewer is required. Looped piping shall not be permitted. Pipe routing shall include long radius sweeps no less than those recommended by the pipe manufacturer.

Pressure pipes shall be designed and installed so that a minimum of five (5) feet of cover material exists over the crown of the pipe at all times. Appurtenances such as isolation valves, air release valves, and clean-outs shall be provided as required by the Director.

Pipe Size: The diameter of the pressure sewer shall be calculated so that it provides a cleansing velocity based on the average daily flow of the system. Force Mains shall have a minimum velocity of three feet per second, 3ft/sec.

Minimum low-pressure sewer pipe sizes shall be as follows (unless there is a significant change in grade):

Number of Homes or Equivalent	Minimum Pipe Size
1-3	1.5
4-9	2
10-18	2.5
19-30	3 (Model recommended)
>30	Must be modeled

Isolation Valves

Isolation valves shall be required to allow isolation of individual girder units, system expansion, and at key locations such as at the property line.

Ball valves for low pressure sewer manholes shall be true union type constructed from PVC Type I cell CLASSIFICATION WITH EPDM O-RINGS. All valve components shall be replaceable. Ball valves 2 inches and smaller shall be pressure rated to 235 psi, while valves larger than 2 inches shall be rated to 150 psi. Ball valves shall have a Safe-T-Block seal carrier to stop flow in either direction, allowing safe removal of the downstream union nut for system service or modification. Ball valve ends shall be as needed to connect to Schedule 430 PVC pipe in low pressure sewer manholes. Ball valves shall be true union ball valves as manufactured by Spears Manufacturing.

Curb Stop Valve

Curb stop valves shall be located at the property line of the street or easement of the sewer main. Curb stop valves shall be of brass or bronze construction and two rubberized O-ring seals to provide pressure-tight seal. Curb stop valves shall be figure H-15204 as manufactured by Mueller-Oriseal, B22 as manufactured by Ford Meter Box Company, Hayes, Nuseal, or equal. Curb boxes shall be 2-1/2-inch shaft size two-piece screw type. They shall be adjustable from 48-inch to 72-inch. Curb boxes shall be constructed of cast iron and thoroughly coated with two coats of asphaltum varnish. Curb box rods shall be stainless steel supplied with a hole in the "U" portion for the insertion of a stainless-steel pin. Pins shall be supplied and shall be made of stainless steel. Curb boxes shall be as manufactured by Ford Meter Box Company, Mueller Company, or equal.

Air Release Valves

Air and vacuum valves shall be installed on low pressure mains. The air and vacuum valves shall be designed to release air from the main when the main is being filled and/or air becomes entrapped in the main, and to admit air into the sewer main when pumps are stopped and the main is being drained by gravity. The body and cover of air and vacuum valve shall be cast iron, floats of stainless steel, protective hood of steel, seats of Buna-N, and miscellaneous internal parts of stainless steel, Manufacturer-Crispin, or equal. Air and vacuum valves shall be located in a manhole or structure with a diameter of 60 inches to allow access for repairs and maintenance.

Cleanout Connections

Cleanouts shall be installed on the pressure mains at sags and other locations where debris can accumulate and clog the lines, and proper valving to conduct required maintenance shall be provided.

Miscellaneous

Magnetic marking tape two (2) inches wide with the words "SANITARY SEWER BELOW," shall be installed not more than 2 feet below finished grade on all mainline and service laterals.

Section 22. Force Mains

Minimum Size

Force mains shall have a minimum velocity of three feet per second, 3ft/sec.

Force Main Pipe Material

Force main pipe material shall be as specified in Appendix B, Construction Technical Specification, Section 14.

Velocity

At design average flow, velocity in excess of 3 feet per second (0.91m/s) shall be maintained.

When the daily average design detention time, in the force main, exceeds 20 minutes, the manhole and sewer line receiving the force main discharge or the sewage shall be treated so that corrosion of the manhole and the exiting line are prevented. The corrosion is caused by sulfuric acid biochemically produced from hydrogen sulfide anaerobically produced in the force main.

Variable Terrain

As far as possible, the alignment and depth of a force main should provide a constant upgrade profile. All force mains shall be designed and installed so that a minimum of five (5') feet of cover material is over the crown (top) of the pipe at all times.

Air Relief Valve

An automatic air relief valve shall be placed at all relative high points in the force main and at 400 feet intervals on level force main runs. All air relief valves shall be protected from freezing.

Drain Valves

Drain valves at all relative low points in the force main shall be provided. These valves shall be connected to gravity sewers or provided with connections for vacuum pumper trucks. All drain valves shall be protected from freezing.

Termination

Force mains shall enter the gravity sewer at a point not more than 2 feet (0.61 m) above the flow line of the receiving manhole.

Testing

Leakage Testing shall be as specified in Appendix B, Construction Technical Specifications, Sections 17 and 18.

Section 23. Grinder Pump Systems

Pumping equipment shall include an integral grinder capable of handling a reasonable quantity of foreign objects that may find their way into a building's sewerage system.

The grinder pump shall be capable of processing foreign objects without jamming, stalling, or overloading, and without making undue noise. The grinder shall provide a positive flow of solids into the grinding zone. Grinder pump stations shall be of the wetwell type.

A list of suitable manufacturers will be available from the Director. Properties whose sewage quantities and characteristics are equivalent to four or more dwelling units shall install a duplex pump.

Design of Pump Station

Access: Outside installation shall be designed with the service manhole constructed of the same material, and at least as thick as the tank. The manhole shall have an opening at the surface with a minimum inside diameter of 30 inches (76 cm); its cover shall be securely lockable. The size of the manhole shall allow for the performance of maintenance and repair functions.

Tank

Construct each tank of concrete or custom-molded, fiberglass reinforced polyester resin using a filament wound process, layup and spray technique, or other approved process that will ensure a smooth and resin rich interior surface that is designed for two times the maximum loading.

The basin shall be concrete, fiberglass-reinforced polyester resin, or other material meeting the minimum strength specifications herein. The basin shall be furnished with one PVC closet flange or one flexible inlet flange suitable for connection to the household gravity line. At a minimum, the basin wall and bottom shall withstand two times the anticipated maximum pressure exerted on the basin, either from soil loadings or buoyancy forces. All station components must function normally when exposed to these loadings. All seals and joints shall pass factory tests to ensure that they are water tight.

Electrical Equipment

Wiring and electrical connections shall be NEMA rated for the environment in which they are to be placed. System shall include an emergency generator plug-in connection.

Pumps

Pump Removal

The grinder pump shall be readily removable without the need for manual disconnection of piping.

Grinder

The grinder shall be positioned immediately below the pumping elements, securely fastened to the pump motor shaft, and driven directly by the same motor. The grinder shall be a rotating type with a stationary hardened and ground stainless steel shredding ring that carries stainless steel cutter bars. This assembly shall be dynamically balanced and run without objectionable noises or vibrations over the entire range of recommended operating pressures.

Pump Opening

The grinder shall be capable of reducing all components in normal domestic sewage or the sewage to be discharged from the building drain, including a reasonable amount of foreign objects (e.g., paper, wood, plastic, glass, and rubber). Objects shall be reduced to finely divided particles that will pass through the passages of the pump and a minimum 1.25-inch (3.2 cm) diameter discharging pipe.

Intake

The grinder shall be positioned so that solids are fed into it from the bottom in an upward flow, reducing the possibility of overloading or jamming. In addition, sufficient turbulence shall be created to keep the tank bottom free of permanent deposits or sludge banks.

Check Valve

The grinder pump shall be equipped with a check valve that is installed in a horizontal position on the discharge pipe. This valve shall provide a full-ported passageway when open.

Ventilation

Adequate ventilation shall be provided in accordance with local and national codes.

Controls

Sensing devices to detect wastewater levels for initiating pump operation and to detect high water levels shall be installed. Level sensing devices shall only be used and shall not be located near flows entering the well.

Section 24. Pumping Station

Design Capacity

A sewage pumping station shall handle the projected peak sewage flows of its tributary sewer collection system. As recommended by TR-16, Guides for the Design of Wastewater Treatment Works (Technical Report #16) and the Hydraulic Institute's Recommended Standards for Pumping Stations. This information may be included in the

Comprehensive Management Plan or other engineering report and any applicable updates or amendments. Pumping stations shall accommodate future expansion, when in the opinion of the Director it is appropriate.

Site Layout

Stations shall be readily accessible to personnel and service vehicles during all weather conditions.

Flood Protection

Wastewater pumping stations shall be protected from physical damage by the 100-year flood elevation and shall remain fully operational and accessible during the 100-year flood. All entrances and/or unsealable openings of the station shall be a minimum of one (1') foot above the 100-year flood elevation. These flood elevations shall be determined from the Federal Emergency Management Agency, and U.S. Army Corps of Engineers, and from the local regulations and ordinances.

Environmental Considerations

Wastewater pumping stations shall be sensitive to the environmental conditions of the site. Visual impacts, architectural style, security, noise levels, odor control, and landscaping shall be considered carefully in station design and shall be reviewed and approved by the Director.

Types of Stations

Wastewater pumping stations fall into three categories: wetwell/drywell, submersible, or suction lift. The preferred type of station is the Suction Lift type. The Director may approve other types under certain circumstances.

Structural Design

Earthquake Loads and Uplift Forces

Stations shall withstand earthquake loads and uplift forces from high groundwater conditions.

Separation

Wet and drywells, including their superstructure, shall be completely separated. Common walls shall be sealed against gas leaks.

Equipment Removal

Provisions shall be made for removing all equipment (i.e., pumps, motors, mechanical screens, motor control centers, etc.) from the station. Access openings, hatches, and/or skylights shall be sized accordingly. Permanent hoisting devices shall be provided as necessary.

Substructure

Station substructures shall be constructed of reinforced concrete, either cast-in-place or precast. Small, prefabricated stations may be constructed of steel plate or fiberglass with the approval of the Director.

Access

The designer shall minimize the confined spaces and shall indicate which spaces meet the definition of confined space on the drawings. Suitable, safe, and separate means of access shall be provided for dry and wetwells. Stairways and/or steps are required for drywells and wetwells containing either bar screens or mechanical equipment that requires inspection or maintenance. A landing with railings shall be provided for stairways or ladders for every 10 vertical feet. Local, state and federal safety codes shall govern in all cases.

Pumps

Number of Pumps

As a minimum, two pumps shall be provided, with each pump being capable of handling peak design flows. Where three or more pumps are provided, the overall station capacity shall be capable of handling peak design flow when any one pump is out of service.

Design

Pumps shall be designed specifically for wastewater use and shall be non-clogging and as allowed by the Director.

Incoming Wastewater and Rate Discharge

Pumping stations shall balance the rate of incoming wastewater with the rate discharged.

Each pump shall have an individual intake valve.

Pump suction and discharge openings shall be a minimum of 4 inches in diameter.

Centrifugal Pumps

Centrifugal pumps shall be used in the drywell/wetwell pumping stations. The pump casing and suction elbow shall be provided with a clean-out access port. Impellers shall

be enclosed or semi-open. To ensure primed pump conditions, the wetwell level shall not drop below the centerline of the pump impeller under normal operating conditions.

Submersible Pumps

Submersible pumping stations may be used when, in the opinion of the Director, circumstances warrant. It shall be possible to remove and replace the submersible pumps without dewatering the wetwell or disconnecting the piping. Pumps shall be of the pull-up design, using a lifting cable and guides for pump removal. The pump shall be connected to the fixed discharge piping with a self-locking coupling. Shaft seal failure or potential seal failure detection alarms shall be provided. Submersible pumps may also be used in a wetwell/drywell configuration, with the Director's approval.

Suction Lift Pumps

Suction pumps shall be self- or vacuum-priming.

Location: The pump equipment compartment shall be above grade or offset, and shall be isolated from the wetwell to prevent humid and corrosive sewer atmospheres from entering the equipment compartment. Access to the wetwell shall not be located in the equipment compartment. Valves shall not be located in the wetwell.

Self-priming Pumps

Self-priming pumps shall be capable of rapid priming at the lead pump-on elevation. Such self-priming and repriming shall be accomplished automatically under design operating conditions. Suction piping shall not exceed the size of the pump suction and shall not exceed 25 feet (7.6 meters) in total length. Priming lift at the lead pump on elevation shall include a safety factor of at least 4 feet (1.2 meters) from the maximum allowable priming lift for the specific equipment at design operating conditions. The combined total of dynamic suction lift at the pump-off elevation and required net positive suction head at design operating conditions shall not exceed 22 feet (6.7 meters).

Vacuum-priming Pumps

Vacuum-priming pump stations shall be equipped with dual vacuum pumps capable of automatically removing all air from the suction lift pump. The vacuum pumps shall be adequately protected from sewage damage. The combined total of dynamic suction lift at

the pump-off elevation and required net positive suction head at design operating conditions shall not exceed 22 feet (6.7 meters).

Wetwells

Divided Wells

The wetwell shall be divided into two sections that are properly interconnected and gated to facilitate repair and cleaning.

Storage Capacity

The effective storage capacity of the wetwell shall be based upon the recommended number of pump starts per hour and the design filling time. The effective volume of the wetwell shall be based on a filling time of 30 minutes under design average-daily-flow rates. To determine the frequency of starts used for design, refer to the pump manufacturer's warranty.

Where tributary wastewater flows are anticipated to be significantly less than the design average flow, provisions should be made so that the filling time under initial conditions does not exceed 30 minutes (i.e., providing a divided wetwell or shortening the wetwell operation range) and the duration of storage in the pump station and force main does not result in septic conditions in the system or the release of objectionable odors to the environment.

Pump Protection

Pumps shall be protected from large solids by readily accessible mechanically cleaned bar racks (screen) or combination device located at the wetwell influent. Bar racks should have clear opening not exceeding 1.25 inches (3.1 cm) unless pneumatic ejectors are used or special devices are installed to protect the pumps from clogging or damage.

Floor Slope

The wetwell floor shall have a minimum slope of 1-to-1 to the hopper bottom. The horizontal area of the hopper bottom shall be no greater than is needed for proper installation and function of the wetwell inlet.

Vortexes

The wetwell and suction inlets of dry-pit pumps shall eliminate the possibility of vortexes. The required submergence of the intake valves shall be determined for the dry-pit pump's location. Intake valves should be flared, with the inlet opening facing down. Every effort shall be made to minimize flow rotation in the wetwell.

Sewage Channels

Sewage channels located in wetwells shall be covered with nonskid, corrosion-resistant grating. They shall be installed flush with a floor, and capable of supporting anticipated loads. All channels shall be drained when not in use. Where the side meets the floor of the channel, fillets shall be provided.

Inlet Sewers

Sewer piping entering the wetwell shall not have air in the pump suction line.

Drywells

Automatic heating and dehumidification equipment shall be provided in all drywells. The electrical requirements shall meet those outlined in subsequent paragraphs of this section.

A sump pump shall be provided in the drywell to remove extraneous water. The discharge pipe of the sump pump shall be equipped with dual check valves and shall be pumped from the drywell into the wetwell above the high-water level. Water ejectors connected to a potable water supply shall not be permitted. All floor and walkway surfaces shall slope to a point of drainage. Pump seal leakage shall be piped or channeled directly to the sump.

Valves

Suitable shutoff valves shall be placed on the suction lines and on the discharge lines of each pump (except on submersible and vacuum-primed pumps). A suitable check valve shall be placed on a horizontal section of each discharge line between the shutoff valve and the pump.

Unless adequate space is available in a dry pit pump room, valves on the discharge piping (including flow meters, if required) shall be in a separate underground precast concrete vault.;

Every pump station shall include appropriate valves and quick disconnects to allow the Town to bypass the existing pumping equipment and valves. The piping shall allow the Town to install temporary piping into the wet well, and discharge to a location downstream of the check and shutoff valves.

Valves shall not be located in wetwells.

Section 24. Controls

All pump stations, grinder pump stations, vacuum sewer stations, and other sewer handling facilities required by the Director shall be connected to the Water and Sewer Departments' Supervisory Control and Data Acquisition (SCADA) System.

All sensing, alarm, and SCADA system devices shall be of the same type, configuration, and function as that used by the Water and Sewer Departments. Each pumping station shall have its own screen display, processor logic controller (PLC), and communications

equipment for the SCADA system and shall also display the required monitoring controls and alarm on the all SCADA system screens of the water and/or sewer systems.

Level Sensing Devices

Level sensing devices shall not be affected by flows entering the wetwell or by the suction of the pumps. All wall penetrations between the wet and drywells shall withstand gas leaks and be located as high as possible to prevent overflow from the wetwell to the drywell. The pumps shall be automatically alternated. Running-time meters shall be installed at all pumping stations for each pump.

Alarm Systems

Alarm systems shall be provided for all pumping stations. At a minimum, the alarm system shall be activated in any one of the following cases:

- High water in the wetwell;
- Low water in the wetwell;
- Loss of one or more phases of power supply;
- High water level in the pump room sump;
- Loss of the alarm transmission or communications;
- Loss of air pressure in the bubbler tube system/level sensing trouble or failure;
- Standby power failure or malfunction of the pump;
- Flooding of building or drywell;
- Smoke/fire alarms;
- Low temperature;
- Surge suppressor failure;
- PLC processor failed;
- PLC low battery;
- Intrusion; and
- Three spare connections

Section 26. Pump Station Ventilation

General

Adequate ventilation shall be provided for all pumping stations. Where the pump pit is below the ground surface, mechanical ventilation is required, especially when screens or mechanical equipment requiring maintenance or inspection are located in the wetwell. The wet and dry well ventilation systems shall not be connected. In pits more than 15 feet (4.6 m) deep, multiple inlets and outlets shall be installed. Switches for the operation of ventilation equipment shall be marked and located conveniently. If odors are a problem, an odor control system shall be installed.

Wetwells

Ventilation may be either continuous or intermittent. For continuous ventilation, at least 12 air changes per hour shall be provided. For intermittent ventilation, at least 30 air changes per hour shall be provided. Heating shall be installed where needed.

Drywells

Ventilation shall be continuous. Heating and dehumidification are required. At least 6 complete air changes per hour shall be provided.

Section 27. Flow Measurement

Suitable devices, as approved by the director, for measuring wastewater flow and power consumption shall be installed in all pump stations.

Section 28. Pump Station Water Supply

Water under pressure shall be provided for cleanup at the pumping station. If a public water supply is used, a Reduced Pressure Zone (RPZ) backflow preventer or other approved device shall be installed on the water service entering the station. No other potable water supply and other piping systems or fixtures shall be connected to the systems supplied by the public water supply.

Section 29. Electrical**Electric Equipment**

Electrical systems shall be designed and installed in strict conformance with the latest edition of the National Electrical Code. Electrical equipment in enclosed places where gas may accumulate shall be noncorrosive and in compliance with the National Electrical Code requirements for Class I Group D, Division I locations.

Submersible Pump Motors

Electrical supply and control circuits shall allow disconnection at a junction box located at or accessible from outside the wetwell. Terminals and connectors shall have watertight seals located outside of the wetwell and shall be protected by separate strain relief.

The motor control center shall be located outside of the wetwell and protected by a conduit seal or other appropriate sealing method meeting the requirements of the National Electrical Code for Class 1, Division 2 locations.

The pump motor shall meet the requirements of the National Electrical Code for Class 1, Division 2 locations.

Submersible pump motors that are totally submerged during the pumping cycle are not required to protect against explosions.

Power cords for pump motor shall be flexible and serviceable under conditions of extra hard use. Ground fault interruption protection shall deenergize the circuit in the event of any failure in the electrical integrity of the cable.

Power cord terminal fittings shall be provided with strain relief appurtenances, and shall facilitate field connecting.

Section 30. Emergency Operations

When the Director deems it is necessary, an independent natural gas or propane engine-generator type source of electric power shall be provided for electrically driven pumps. This source shall be automatically activated when or if any phase of the power supply fails or upon any fluctuation in voltage. Installation shall comply with all applicable requirements of the National Electrical Code.

Small Pumping Stations

When the Director agrees that a small pump station does not require a permanent alternative power supply, electrical connections for portable standby generator or pneumatic connection for portable air compressor shall be installed as approved by the Director.

Controls

Provisions shall be made for automatic and manual startup and cut-in. The controls shall be such that upon automatic startup under emergency conditions, shutdown can be accomplished only manually, except in conditions that would damage the generator or engine.

Size

Unit size shall be sufficient to start up and run all pumps needed to handle peak flows as well as lighting, ventilation, pump controls, and the sump pump.

Exerciser

The engine controls shall be equipped with an automatic exerciser that may be set on any selected schedule to start the generator, to run it under no-load conditions, and to shut it off without activating the alarm system.

Noise Attenuation

Noise attenuation components must be incorporated in the design to produce no more than 60 decibels (db) of noise at the property line.

Section 31. Safety

Adequate provisions shall be made to protect the operator and visitors from hazards. The design and construction of pumping stations shall meet all prescribed local, state, and federal safety laws and codes. Safety provisions shall include the following:

- Handrails at openings, stairways, and other hazardous areas;
- Guards around the belt drives, gears, rotating shafts, and moving equipment;
- Warning signs as appropriate;
- Provisions for power lockout controls at all pumps and equipment;
- Eye wash stations where chemicals are used;
- Adequate lighting in all areas of the pumping station;
- Provisions for confined space entry in accordance with OSHA and regulatory agency requirements;
- First aid equipment; and
- Fire extinguisher.

Section 32. Overflows and Bypasses

Overflows and bypasses shall not be allowed on pumping stations serving sanitary sewage collection systems.

Section 33. Site Protection and Aesthetics

The Director will review the design and location of the pump stations and may determine that fencing, aesthetics vegetation plantings, intrusion alarms, and aesthetics superstructures style or any other site conditions may warrant site protection and/or aesthetics.

Section 34. Odor Control

Odor control equipment may be required by the Director, depending on the siting of the pumping station and force main discharge point.

Appendix B. Construction Technical Specifications

The owner of the property, the developer, and/or Licensed Utility Installer, shall construct and install all sanitary sewers and all building sewers in accordance with the following rules and regulations:

Section 1. The owner, developer, or L.U.I. shall submit to the Director (for approval) plans and profiles of the proposed public sewer extensions and/or building sewer connections.

Section 2. The owner, developer or L.U.I. of a subdivision shall submit to the Director, a subdivision plan approved by the Harwich Planning Board along with the plans and profiles of the proposed public sewer extension.

Section 3. The Contractor doing all the work shall be approved by the Director as a Licensed Utility Installer (L.U.I.) as described in Article II-Building Sewers and Connections, Sections 13a through 13g.

Section 4. All materials, including pipe and manhole structures, shall be of the same make and quality used by the Harwich Sewer Department and approved by the Director.

Section 5. Public sewers and building sewers shall be laid using a transit or laser level. All sewer pipes shall be laid on a bed of crushed stone of at least six inches (6") in depth under the pipe and crushed stone shall extend at least halfway up the side of the pipe. Approved gravel, with no stones larger than two inches (2") in any dimension, shall be used to cover pipe to one foot above pipe. The rest of the backfill material must be approved by the Director, Massachusetts Highway Department or Town of Harwich Department of Public Works. The approved backfill material shall be placed in mechanically compacted lifts of no more than six inches (6") deep or as specified by the Harwich Surveyor of Highways, Massachusetts Highway Department, or other specifications more stringent than the above. The approved backfill material above the gravel shall contain no stones greater than 6 inches in any dimension.

Section 6. Impervious dams shall be considered every 300 feet to control the flow of groundwater within the pipe bedding material when:

- The surrounding native material is considerably less impervious than the pipe bedding material;
- The pipe bedding could produce a hydraulic head of 25 feet on the pipe gaskets and joints during periods of high groundwater flow; and/or
- The sewer being constructed is downstream of any waterway and wetland crossings.

Section 7. Sewers may be deep enough to drain basement fixtures, and shall be deep enough to prevent freezing. Watertight insulation shall be provided for sewers that cannot be placed deep enough to prevent freezing.

House connections chimneys (vertical pipe) preformed block shall be used when the sewer main is greater than or equal to 12 feet deep.

Section 8. Where high groundwater conditions are anticipated, the buoyancy of sewers shall be considered, and the floatation pipe of pipe shall be prevented with appropriate design and construction of the sewer.

Section 9. No mud, gravel or debris shall be allowed to enter the sewer pipes at any time. All pipes shall be capped at end of day's laying and water shall be pumped out of excavation prior to removing the cap.

Section 10. Building sewer connection to the public sewer shall have a wye branch fitting, as approved by the Director, made of the same type of materials as the sewer main being tapped.

Section 11. Minimum size of gravity public sewer pipe diameter shall be eight (8") inches and building sewer pipes shall not be less than four (4") inches in diameter. Minimum sizes of low-pressure sewer mains shall be in accordance with Article IV-Design of Sewers, Section 9. Details of Low-Pressure Sewer Design and Construction.

Section 12. Sewer pipe and building sewer pipe material shall be:

A. Reinforced Concrete Pipe shall meet the following specification:

- Portland cement shall conform to ASTM C-150 Type II;
- The pipe and its appurtenances shall conform to ASTM Specification C-76;
- The reinforcing wire cage shall conform to ASTM Specification A 15, A 82, or A 185, as appropriate;
- Entrained air shall be 5.0% to 9.0% by ASTM C-890;
- Water absorption and three-edge bearing tests shall conform to ASTM Specification C-497; and
- Gaskets shall conform to Sections 3.3 and 3.4 of AWWA Specification C-302.

Note: non-reinforced concrete pipe shall not be used.

B. Extra Heavy Cast Iron Pipe shall meet the following specifications:

Pipe, fittings, and appurtenances shall conform to the requirements of ASTM Specification A-74 or ANSI A-21.11 and gaskets shall conform to ASTM Specification C-564.

C. Heavy Wall Polyvinyl Chloride (PVC) Pipe shall meet the following specifications:

Pipe shall be made from Class 12454-B materials or better in accordance with ANSI/ASTM Specification D-1784, and shall ultraviolet light (UV) protected.

The pipe and accessories shall conform to the requirements of the following, with a minimum pipe stiffness of 46 PSI at a maximum deflection of five percent (5%):

ANSI/ASTM	D 3034	(4" – 15")
ASTM	F 679 Type I	(18" – 27")

D. Ductile Iron Pipe shall meet the following specifications:

- Pipe, fittings, and appurtenances shall be manufactured in accordance with ASTM Specification A-746;
- Pipe shall have a minimum thickness of Class 50;
- Fittings shall conform to ANSI Specification A-21.11 and have a minimum pressure class rating of 150 PSI;

All pipe and fittings shall be cement mortar lined in accordance with ANSI Specification A-21.4 at twice the specified thickness, and have an internal and external bituminous seal coating and closure pieces shall be jointed by means of a mechanical coupling of the cast sleeve type.

E. Extra Strength Vitrified Clay Pipe shall meet the following specifications:

Pipe shall conform to the current requirements of NCPI Specification ER 3300 – 67 and meet the requirements of ASTM Specification C 700.

Note: standard strength vitrified clay pipe shall not be used.

F. Acrylonitrile – Butadiene - Styrene (ABS) Pipe shall meet the following specifications:

Pipe and fittings shall conform to the requirements of ASTM Specification D 2661.

G. Plastic Pipe, sizes 4 inches through 12 inches, shall be ANSI/ASTM D3034, SDR-35 Type PSM Poly (Vinyl Chloride) (PVC) material; minimum pipe stiffness (F/Y) is 46 psi; bell and spigot style and rubber gasket conforming to ASTM F477.

H. Low Pressure Mains and Services for 1-1/4-inch pipe through 4-inch pressure pipe shall be polyethylene pipe with material conforming to ASTM D3350, Type PE-3408 pressure Class PC 160, SDR-11. Fittings for use with polyethylene pipe and tubing shall be manufactured and furnished by the pipe supplier and in conformance with AWWA C901 requirements. Joints for polyethylene pipe shall be jointed by the butt fusion method in a manner recommended by the pipe manufacturer.

Pipe sizes 1-1/4 inches through 4 inches shall be Polyvinyl Chloride (PVC) pipe ASTM D2241 PVC pressure pipe material conforming to ASTM D1784, minimum class SDR 21

for pipe 1-1/4-inch, push-on joint conforming to ASTM D3139 with flexible elastomeric gaskets conforming to ASTM F477.

Fittings for use on PVC pressure pipe of 4-inch nominal inside diameter or greater shall be ductile iron with mechanical joints as described in ANSI 21.10/AWWAC110. The coatings and linings of the fittings shall be as specified for ductile iron pipe.

I. Other pipe materials:

Other pipe materials shall require prior written approval of the Director before being installed.

Materials for sewer construction shall be appropriate for local conditions, including the character of industrial wastes, septicity, soil characteristics, external loadings, and problems such as abrasion and corrosion. All sewers shall be able to withstand damage from superimposed loads. Proper allowances for soil and potential groundwater conditions, as well as the width and depth of the trench shall be used. Where necessary, special bedding, haunching and initial backfill, concrete cradles, or other special construction elements shall be used.

The minimum internal pipe diameter shall be eight (8) inches for gravity sewers.

Joints for the selected pipe shall be designed and manufactured such that "O" ring gaskets of the "snap-on" type are used.

Gaskets shall be continuous, solid, natural or synthetic rubber, and shall provide a positive compression seal in the assembled joint.

Joint preparation and assembly shall be in accordance with the manufacturer's recommendations.

Wye branch fittings, as approved by the Director, shall be installed for connection of laterals.

Bedding, Haunching, and Initial Backfill

Based on the bedding support of the type of soil and potential groundwater conditions, use the following for the anticipated loads:

- Bedding classes A, B, and C, or crushed stone as described in the American Society of Testing Materials standard ASTM C 12, should be used for all rigid pipe, or
- Materials for bedding, haunching, and initial backfill, or classes I, II, or III as described in ASTM D 2321, should be used for all flexible pipe.

Safety and Load Factors

Selection of pipe class shall be predicated on the following criteria:

Safety factor	-	1.5
Load factor	-	1.7
Weight of soil	-	120 lbs/cu.ft.
Wheel loading	-	H-20

Section 13. Manholes and Cleanouts

Manhole and Cleanout Size

Cleanouts

Cleanouts shall be constructed of the same material as the building sewer. The size of the cleanout shall be the same size as the building sewer up to six (6") inches in diameter, for building sewers larger than six (6") inches in diameter manholes shall be used. Cleanouts shall be sealed with removable, re-useable threaded screw-in plug or screw-on cap.

Manholes

Manholes shall be minimum of four (4') feet in diameter with a minimum access diameter of 30 inches (76 cm). Larger diameter manholes may be required by the Director. A minimum drop of 0.10 foot shall be used between entrance and exit inverts.

Location

Manholes and cleanouts shall be installed at the end of each line; at all changes in grade, size, or alignment; and at all intersections. Distances shall not be greater than 300 feet for sewers measuring 15 inches (38 cm) or less in diameter, or 400 feet for sewers 18-30 inches (46-76 cm) in diameter. Greater distances may be permitted for larger sewers or for those carrying a settled effluent, but only with prior approval of the Director. The top of the manhole cover shall be no lower than one (1') foot above the 100-year flood elevation level. Junction manholes on low pressure sewers shall be installed at all intersections

Drop Type

A drop pipe for a sewer pipe with an invert entering a manhole of more than 24 inches (61 cm) above the manhole invert shall be provided. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches (61 cm), the invert shall be filleted to prevent solids deposition.

Drop manholes shall be constructed with an outside drop connection. Outside drop connections shall be encased in concrete, and shall provide access for cleaning as the sewer enters the manhole at the top of the drop connection.

Inside drop connections may be used provided the manhole has the area to facilitate safe access into the manhole with the inside drop in place, and shall be approved by the Director. The inside drop connection shall be secured to the interior wall of the manhole, and shall provide access for cleaning as it enters the manhole at the top. Internal drop pipes and fittings shall be PVC plastic sewer pipe in compliance with ASTM D2241. Corrosion resistant anchors shall be used to attach the drop pipe to the inside surface of the manhole barrel.

Structural Base

Manhole bases shall be constructed or placed on a minimum of twelve (12) inches of crusher run with a maximum stone diameter in all directions of one half ½ inch and free of organic materials.

Diameter

The manhole's minimum diameter shall be 48 inches (122 cm) for standard manholes and 60 inches (153 cm) for inside drop manholes. A minimum access diameter of 30 inches (76 cm) shall be provided. Larger openings shall be provided for manholes that house equipment, as specified by the Director.

Materials

Manholes shall be precast concrete with barrel sections, cones, and bases, manufactured in compliance with ASTM C 478, and shall have an O-ring or bituminous-based gasketed joints. "Precast concrete walls shall be made up using straight, circular barrel sections and eccentric cone sections if manhole steps are required, and concentric cone sections where no steps are required. Manholes can also be poured-in-place concrete. Other types are allowed subject to the approval of the Director.

All tongue-and-groove (or male and female joints in the precast wall, including the joint at the top of the base, shall be made up using the "Snap-On" type O-ring gasket, and shall conform to ASTM C443; except that joint taper shall not exceed 3-1/2 degrees. The precast sections shall be provided with a special groove (cast into the male end) to receive and hold the gasket in position during joint assembly. After joint assembly, the gap between sections shall be packed on the inside and outside with Anti-Hydro "Azpandretes," Masterflow 713 by Master Builders; or Five Star Grout by U.S. Grout Corp., and shall be troweled smooth so that no projections remain on the inside.

Manhole bases shall be constructed of 4,000 psi (28 day) concrete 8 inches thick, or shall be precast bases properly bedded in the excavation. Field constructed bases shall be monolithic, properly reinforced, and extend at least 6 inches beyond the outside walls of

lower manhole sections. Precast manhole bases shall extend at least 6 inches beyond the outside walls of lower manhole sections.

Manholes shall be constructed using minimum 4-foot diameter, precast concrete manhole barrel sections, and an eccentric top section, conforming to ASTM Specification C-478, with the following exceptions on wall thickness:

Manhole Diameter	Wall Thickness
in Feet	in Inches
4	5
5	6
6	7
6-1/2	7-1/2
7	8
8	9

All Sections shall be cast solid, without lifting holes. Flat top slabs shall be a minimum of 8 inches thick and shall be capable of supporting a H-20 wheel loading.

All joints between sections shall be sealed with “O” ring rubber gasket, meeting the same specifications as pipe joint gaskets, or butyl joint sealant completely filling the joint.

All joints shall be sealed against infiltration. All metal parts shall be thickly coated with bitumastic or elastomeric compound to prevent corrosion.

No holes shall be cut into the manhole sections closer than 6 inches from joint surfaces.

Manholes which extend above grade shall not have an eccentric top section. The top plate shall be large enough to accommodate the cover lifting device and the cover.

Manhole Covers

The elevation of the top section shall be such that the cover frame top elevation is one (1) foot above the 100-year flood elevation (in a field), 0.5 foot above a lawn elevation, or at finished road or sidewalk grade.

When located in a traveled area (road or sidewalk), the manhole frame and cover shall be heavy duty cast iron. When located in a lawn or in a field, the manhole frame and cover may be light duty cast iron. The cover shall provide a minimum access diameter of 30 inches (76 cm). The mating surfaces shall be machined, and painted with tar pitch varnish. The cover shall not rock in the frame. Infiltration between the cover and frame shall be prevented by proper design and construction. Covers shall have “Sewer” cast into them. Covers shall be designed so that infiltration is prevented.

Manhole frames, installed at grade, shall be set in a full bed of mortar with no less than two nor more than four courses of brick underneath to allow for later elevation adjustment. In lieu of brick, grade rings may be used for elevation adjustment. Grade rings shall not exceed 6 inches in depth. The total number of grade rings shall not exceed 12 inches in height, however, in no event shall more than 3 grade rings be used.

Manholes which extend above grade, shall have the frames cast into the manhole top plate. The top plate shall be securely anchored to the manhole barrel, by a minimum of six, ½ inch diameter, corrosion resistant anchor bolts, to prevent overturning when the cover is removed. The anchor bolts shall be electrically isolated from the manhole frame and cover.

Ladders

Manhole steps are to be provided in manholes. Steps are to be cast in or grouted solid into the precast units at intervals of 12 inches. Steps shall be in conformance with OSHA requirements having drop front or equivalent. Bolted-on type is not acceptable. Manhole steps to be M.A. Industries, Inc. copolymer polypropylene reinforced with ½-inch steel rod or equal.

Flow Channel or Invert

The flow channel through the manholes shall conform in shape and slope to that of the sewers entering and leaving the manholes. Construct the top of the flow channel so that the flow will remain in the channel under peak conditions. Form or shape the channel walls to the full height of the crown of the outlet sewer and so as not to obstruct maintenance, inspection, or flow in the sewers. When curved flow channels are required, including branch inlets, increase minimum slopes to maintain acceptable velocities. Provide a minimum 0.1-foot drop through the manhole.

Bench or Shelf

Provide a bench on each side of every manhole channel. The bench should have a slope of no less than 0.1 inch per foot or no greater than 0.5 inch per foot. No lateral sewer, service connection, or drop manhole pipe should discharge onto the surface of the bench.

Manhole Inverts

Manhole inverts shall be constructed by laying sewer bricks on their long side with their water structured face up, in straight line or sweeping arch to from the bottom of the invert, from pipe to pipe. Additional sewer bricks will fan out with their water structure facing towards the center of the invert from the invert brick. The invert's width will be the same diameter of the effluent pipe of the manhole. The minimum height of the shelf shall be equal to the crown of the manhole's effluent pipe and it shall be constructed from sewer brick with their water structured face up.

Buoyancy

Where high groundwater conditions are anticipated, the manholes shall be designed and constructed to prevent floatation.

Watertightness

Solid or watertight manhole covers shall be used in areas subject to flooding. All manhole lift holes and grade adjustment rings shall be sealed with a nonshrinking mortar or other material approved by the Director. A bituminous coating shall also be used on the exterior. Inlet and outlet pipes shall be joined to the manhole with a gasketed, flexible watertight connection or with another watertight connection arrangement that allows for differential settlement of the pipe and the manhole.

The Contractor shall furnish manholes waterproofed over the entire exterior surface that will be below finished grade. The water proofing shall not mar or interfere with the specified exterior finish for these structures. Waterproofing shall be accomplished prior to structure installation for precast sections, and shall be applied to dry surfaces under proper weather conditions.

Waterproofing shall consist of a two-coat application of coal tar compound as manufactured by Koppers Bitumastic Super Service Black; Tnemec Heavy Duty Black 46-449; Preco Nitroproof 600; or equal, and shall be applied according to manufacturer's specification. Total thickness of the two-coat application shall not be less than 16 mils.

Pipe Connections

Pipes being connected to new manholes shall be connected to the manhole with cast-in-place rubber boot with clamp around gasket. Pipes being connected to existing manholes shall be core drill opening and seal with link seal water stop between pipe and manhole wall.

Section 14. Force main pipe shall be either

A. Ductile Iron Pipe

- Pipe shall conform to ANSI A21.51;
- The minimum wall thickness shall be Class 52 (ANSI A21.50);
- The pipe shall be clearly marked with either "D" or "DUCTILE";
- Fittings shall conform to ANSI A21.10;
- Pipe shall be furnished with push-on joints and fittings shall be furnished with mechanical joints. Both conforming to ANSI A21.11; and

- Pipe and fittings shall be cement mortar lined and have an internal and external bituminous seal coating.

B. Polyvinyl Chloride (PVC) Plastic Pipe

- Pipe shall conform to ASTM D2241;
- Materials used in the manufacturer of PVC pipe shall meet ASTM C1784; and be ultraviolet light (UV) protected;
- The minimum wall thickness shall be SDR-21;
- Fittings shall conform to ASTM D2241; and
- Joints and gaskets shall conform to ASTM D2241, D1869, and F477.

C. Other pipe materials

- Other pipe materials shall require prior written approval of the Director before being installed.

Trenching, bedding, and backfilling shall be as approved by the authority having jurisdiction over the property, such as but not limited to: the Massachusetts Highway Department, Town of Harwich Department of Public Works, or Harwich Wastewater Superintendent.

Joint preparation and assembly shall be in accordance with the manufacturer's written instructions.

Anchorage, concrete blocking, and/or mechanical restraint shall be provided when there is a change of direction of 7-1/2 degrees or greater.

When the daily average design detention time, in the force main, exceeds 20 minutes, the manhole and sewer line receiving the force main discharge or the sewage shall be treated so that corrosion of the manhole and the exiting line are prevented. The corrosion is caused by sulfuric acid biochemically produced from hydrogen sulfide anaerobically produced in the force main.

The force main shall terminate, in the receiving manhole, at a PVC plastic sewer pipe "T". The vertical arms of the "T" shall be twice the diameter of the force main. The upper arm shall be at least 4 feet long; the lower arm shall terminate in a PVC plastic sewer pipe 90-degree elbow in a flow channel directed to the manhole exit pipe. The "T" and its arms shall be securely fastened to the inside surface of the manhole wall using corrosion resistant anchors.

Force mains shall have a minimum velocity of three feet per second, 3ft/Sec.

Section 15. No sanitary sewer pipe shall be left open into an unfinished house or cellar hole. All pipes must be capped to prevent the flow of surface water or debris from entering the sanitary sewer.

Section 16. All sewer works located in the flood plain district area, established under the zoning by-law, shall require that new and replacement sewer works be designed and constructed to minimize or eliminate infiltration of flood waters into the system or discharge sewerage from the system into the floodwater.

Section 17. Sewer Pipe Testing

A. General

The L.U.I. shall test the first section of pipeline as soon as it is installed to demonstrate that the work conforms to these specifications. The initial section shall not be less than five hundred (500) feet and not more than one thousand (1000) feet of pipeline. Testing of pipe shall closely follow pipe laying.

For all sewer pipe tests, the L.U.I. shall furnish an air or water test pump, an air or water meter, and suitable pressure gauge. The L.U.I. shall also furnish all labor and materials required to install suitable temporary testing plugs or caps for the pipeline and perform the test. The meter and gauge shall be installed by the L.U.I. in such a manner that all air or water entering the section under the test will be measured and the pressure in the section indicated and they shall be kept in use throughout all tests.

The scheduling of deflection and pressure and leakage tests shall be as approved and attended by the Town of Harwich's Sewer Department or Town Inspector.

Before accepting any sewer segment, the L.U.I. shall provide a television tape of the entire sewer including point of connection an existing sewer or pumping station. Television inspection shall be performed by a firm specializing in this work and shall produce the following information:

1. A continuous videotape recording of the entire length of pipe being inspected. The tape shall include location of each section, direction of camera travel, a commentary of the pipe's condition, and various irregularities found and lateral connections.
2. The section of pipe being televised shall be identified at least once every 50 ft.
3. Documentation on television logs and voice recorded on tape shall consist of the following information:
 - a. Distance from the numbered manhole point of beginning on each sewer section to the location of the specific condition being inspected.

- b. Angular orientation of all above conditions inside pipe (i.e., leak at 10:00, service connection at 3:00).
- c. Sewer size, material, and joint spacing.

B. Deflection

Deflection tests shall be performed on all flexible pipes. The tests shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the pipe system.

No pipe shall exceed a deflection of 5 percent. If deflection exceeds 5 percent, the pipe shall be replaced.

The rigid ball or mandrel used for the deflection test shall have a diameter of not less than 95 percent of the base inside diameter or the average inside diameter of the pipe as specified by ASTM D 2122 Standard Test Method of Determining Dimensions of Thermoplastic Pipe and Fittings. The tests shall be performed without mechanical pulling devices.

C. Air Testing

The Town requires air testing in lieu of the exfiltration or infiltration tests. The L.U.I. shall submit the proposed method of air testing to the Director for approval. All air testing shall be performed in accordance with the procedures described in ASTM C828-86 for Clay Pipe or ASTM C924 for Concrete Pipe or those procedures approved by the Director, and shall be specifically designed and manufactured for testing pipelines with low-pressure air and shall be provided with an air regulator valve or air safety valve set to prevent the air pressure in the pipeline from exceeding ten (10) psi. If the results of the air test are unsatisfactory, the L.U.I. shall repair the sewer pipe and perform the air tests until the sewer pipe passes the air test. If site conditions are not conducive to air test, as determined by the Director, the L.U.I. will be required to perform an exfiltration and/or an infiltration test as outlined below.

Low pressure air tests shall conform to ASTM Specification C 828. All sections to be tested shall be cleaned and flushed, and shall have been backfilled, prior to testing. Air shall be added until the internal pressure of the test section is raised to approximately 4.0 PSIG. The air pressure test shall be based on the time, measured in seconds, for the air pressure to drop from 3.5 PSIG. Acceptance is based on limits tabulated in the "Specification Time Required for a 1.0 PSIG Pressure Drop" in the Uni-Bell PVC Pipe Association "Recommended Practice For Low-Pressure Air Testing of Installed Sewer Pipe".

Before pressure is applied to the line all connections shall be firmly plugged. Before the test period starts, the air shall be given sufficient time to cool to ambient temperature in the test section.

If the test section is below groundwater, the test pressure shall be increased by an amount sufficient to compensate for groundwater hydrostatic pressure, however, the test pressure shall not exceed 10 PSI.

The pressure test gauge shall have been recently calibrated, and a copy of the calibration results shall be made available to the Director prior to testing.

Exfiltration Test

If for any reason, approved by the Director, air testing cannot be performed, the Director shall require exfiltration testing. Leakage tests by exfiltration shall be made before or after backfilling at the discretion and under the supervision of the Town Inspector. The length of pipe to be tested shall not exceed 1,000 feet and be such that the head over the crown at the upstream pipe is not less than two (2) feet and the head over the downstream pipe crown is not more than six (6) feet. The pipe shall be plugged, by pneumatic bags or mechanical plugs, in such a manner that the air can be released from the pipe while it is being filled with water. Before any measurements are made, the pipe shall be kept full of water long enough to allow absorption of water and the escape of any trapped air. Following this, a test period of at least two hours shall begin. Provisions shall be made for measuring the amount of water required to maintain the water at a constant level during the minimum two (2) hours test period. If any joint shows an appreciable amount of leakage, the joining material shall be removed and replaced. If the water required to maintain a constant level in the pipe does not exceed twenty-five (25) gallons per nominal diameter, in inches, per 24 hours per mile of pipe and if all leakage is not confined to a few joints, workmanship shall be considered satisfactory. If the amount of leakage indicates defective joints or broken pipes, they shall be corrected or replaced.

Infiltration Test

If for any reason, approved by the Director, air testing and exfiltration testing cannot be performed, the Director shall require infiltration testing be performed. Pipe shall be tested for infiltration after backfill has been placed and the ground water allowed to return to normal elevation. Infiltration tests shall be made only under the supervision of the Town Inspector, and the length of line to be tested shall be not less than the length between adjacent manholes and not more than the total length of each size pipe and shall not exceed 1000 feet. The allowable infiltration shall be twenty-five (25) gallons per nominal diameter, in inches, per 24 hours per mile of pipe in each section tested as determined by means of V-Notch weirs, pipe spigots, or by plugs in the end of the pipe to be furnished and installed by the L.U.I., in an approved manner, and at such times and locations as may be directed by the Town Inspector.

There shall be no gushing or spurting leaks. If an inspection of the completed sewer or any part thereof shows pipes or joints which allow noticeable infiltration of water, the defective work or material shall be replaced or repaired.

Section 18. Sewer Force Main Testing

The sewer force main pipe shall be given pressure and leakage tests in sections of approved length as approved by the Director. For these tests, the L.U.I. shall furnish a water test pump, water meter, and a pressure gauge. The L.U.I. shall also furnish all labor and equipment to install suitable temporary testing plugs or caps for the pipeline and to perform the tests. The meter and gauge shall be installed by the L.U.I. in such a manner that all water entering the section under the test will be measured and the pressure in the section indicated and they shall be kept in use throughout all tests.

The scheduling of pressure and leakage tests shall be as approved and attended by the Town Inspector.

The section of pipe to be tested shall be filled with water by pumping water into it and opening the air release valves and expelling all air from the pipe. If air release assemblies are not available at high points for releasing air, the L.U.I. shall perform: all excavation(s); make the necessary tap(s) at such highpoint(s); plug said holes of the tapping saddles after completion of the test with brass or bronze plug(s); and backfill the excavation(s).

The L.U.I. shall make a leakage test by metering the flow of water into the pipe while maintaining (in the section being tested) a pressure equal to 1.5 times the highest pressure to which the pipe will be subjected under normal conditions of service or 150 psi, whichever is greater. This shall be done by placing the section under pressure by pumping.

The lengths of joint to be used in determining the allowable leakage shall be based on the nominal diameter of the pipe. The allowable leakage shall be less than 11.65 gallons per inch diameter per day per mile of force main tested, maintaining a pressure within 5 psi for a minimum of two (2) hours duration. If the section shall fail to pass the pressure test, the L.U.I. shall locate and repair or replace the defective pipe, fitting, or joint, at the L.U.I.'s own expense.

If, in the judgment of the Director, it is impracticable to follow the foregoing procedure exactly, modifications in the procedures may be made if approved by the Director, but in any event the L.U.I. shall be responsible for the ultimate tightness of the line within the above leakage requirements with no allowances for leakage from valves.

Section 19. Low Pressure Sewer Testing

The sewer low pressure pipe shall be given pressure and leakage tests in sections of approved length as approved by the Director. For these tests, the L.U.I. shall furnish a water test pump, water meter, and suitable pressure gage. The L.U.I. shall also furnish all labor and equipment required to install suitable temporary testing plugs or caps for the pipeline and perform the test. The meter and gage shall be installed by the L.U.I. in such a manner that all water entering the

section under the test will be measured and the pressure in the section indicated and they shall be kept in use throughout all tests.

The scheduling of pressure and leakage tests shall be as approved and attended by the Town Inspector.

The section of pipe to be tested shall be filled with water by pumping water into it and opening the air release valves and expelling all air from the pipe. If air release assemblies are not available at high points for releasing air, the L.U.I. shall perform: all excavation(s); make necessary tap(s) at such highpoint(s); plug said holes of the tapping saddles after completion of the test with brass or bronze plug(s); and backfill the excavation(s).

The L.U.I. shall make a leakage test by metering the flow of water into the pipe while maintaining (in the section being tested) a pressure equal to 1.5 times the highest pressure to which the pipe will be subjected under normal conditions of service or 150 psi whichever is greater. This shall be done by placing the section under pressure by pumping.

The lengths of joint to be used in determining the allowable leakage shall be based on the nominal diameter of the pipe. The allowable leakage shall be less than 11.65 gallons per inch diameter per day per mile of pipe tested, maintaining a pressure within 5 psi for a minimum of two (2) hours duration. If the section shall fail to pass the pressure test, the L.U.I. shall locate and repair or replace the defective pipe, fitting, or joint at the L.U.I.'s own expense.

If, in the judgment of the Director, it is impracticable to follow the foregoing procedure exactly, modifications in the procedures may be made if approved by the Director, but in any event the L.U.I. shall be responsible for the ultimate tightness of the line within the above leakage requirements with no allowances for leakage from valves.

Section 20. Cleaning Sewer Lines

At the conclusion of the work, the L.U.I. shall thoroughly clean all pipelines by washing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered the pipes during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline by installing a screening device that will prevent any debris from entering the public sewer system or a section of the sewer works already approved. If after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned and if the groundwater level is above the pipe or following a heavy rain, the Town Inspector will examine the pipes for leaks. If any defective pipes or joints are discovered, they shall be repaired or replaced as directed by the Town Inspector.

Section 21. Sewer Manhole Leakage Tests

Leakage tests shall be made and observed by the Town Inspector on each manhole. The test shall be the exfiltration test or vacuum test as described below:

For these tests, the L.U.I. shall furnish an air or water test pump, an air or water meter, and suitable pressure gage. The L.U.I. shall also furnish all labor and materials required to install suitable temporary testing plugs or caps for the pipeline, and perform the test. The meter and gage shall be installed by the L.U.I. in such a manner that all air or water entering the manhole under the test will be measured and the pressure in the manhole indicated and they shall be kept in use throughout all tests.

After the manhole has been assembled in place, all lifting holes and exterior joints surface shall be filled and pointed with an approved non-shrinking mortar. The test shall be made prior to placing the shelf and invert and before filling and pointing the interior horizontal joints. If the groundwater table has been allowed to rise above the bottom of the manhole, it shall be lowered for the duration of the test. All pipes and other openings into the manhole shall be suitable plugged and the plugs braced to prevent blow out.

Exfiltration Testing

The manhole shall then be filled with water to the top of the cone section. If the excavation has not been backfilled and observation indicates no visible leakage that is, no water visible moving down the outside surface of the manhole, the manhole may be considered to be satisfactory water-tight. If the test, as described is unsatisfactory, as determined by the Town Inspector or if the manhole excavation has been backfilled, the test shall be continued. A period of time may be permitted, if the Contractor so wishes, to allow for absorption. At the end of this period the manhole shall be refilled to the top of the cone and the measuring time of at least two (2) hours shall begin. This amount shall be extrapolated to a 24-hour rate and the leakage determined on the basis of depth. The leakage for each manhole shall not exceed one (1) gallon per vertical foot per day, a twenty-four (24) hour period shall equal one day. If the manhole fails this requirement, but the leakage does not exceed three (3) gallons per vertical foot per day, repairs by approved methods may be directed by the Town Inspector to bring the leakage within the allowable rate of one (1) gallon per foot per day. Leakage due to a defective section or joint or exceeding the three (3) gallon vertical foot per day, shall be the cause for the rejection of the manhole. It shall be the L.U.I.'s responsibility to uncover the manhole, as necessary, and to disassemble, reconstruct, or replace it as directed by the Town Inspector. The manhole shall then be retested and, if satisfactory, interior joints shall be filled and pointed and the invert constructed.

No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc., it will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the L.U.I. shall take any steps necessary to assure the Town Inspector that the water table is below the bottom of the manhole throughout the test.

If the groundwater table is above the highest joint in the manhole, and there is no leakage into the manhole, as determined by the Town Inspector, such a test can be used to evaluate the water-tightness of the manhole. However, if the Town Inspector is not

satisfied, the Contractor shall lower the water table and carry out the test as described hereinbefore.

Vacuum Testing

The vacuum test shall be based on the time, measured in seconds, for the vacuum to decrease from 10 inches of mercury to 9 inches of mercury for manholes.

Acceptance of manholes is based on the following:

Manhole	Manhole Diameter	Time to Drop 1" Hg (10" to 9")
10 ft or less	4 ft	120 seconds
10 ft to 15 ft	4 ft	150 seconds
15 ft to 25 ft	4 ft	180 seconds

NOTE: For 5ft diameter manholes, add 30 seconds to the times above
For 6ft diameter manholes, add 60 seconds to the times above

The vacuum test gauge shall have been recently calibrated, and a copy of the calibration results shall be made available to the Director prior to testing.

If the test on the manhole fails (the allowable gallons or the time is less than that tabulated above), necessary repairs shall be made and the vacuum test repeated, until the manhole passes the test.

Section 22. Manhole Cleaning

All new manholes shall be thoroughly cleaned of all silt, debris and foreign matter of any kind, prior to final inspection.

VI. NEW BUSINESS

- A. Board Reorganization
- B. Capital Plan Review

Capital Plan FY20-FY31

Fiscal Year	Project	Estimated Cost	Notes
FY20	Truck & Excavator	\$ 125,000	
	Pleasant Lake Tank Fill Pipe	\$ 300,000	
	T1 Generator	\$ 60,000	
FY21	New Source Exploration	\$ 250,000	
FY22	Rt.28 Water main Replacement- Design & Engineering	\$ 500,000	
	Station 8 Generator	\$ 45,000	
FY23	2 Vehicles	\$ 125,000	
	New Well Construction (BOND 0.5M PROJECT)	\$ 500,000	Price dependent on location of source & water quality
	Rt.28 Water main Replacement- Construction (BOND 2.0M PROJECT)	\$ 7,000,000	1.75 miles from lothrop to Herring River Bridge
FY24	Pavement Management Plan	\$ 175,000	
FY25	Paint Pleasant Lake Ave Tank (Bond 1M)	\$ 1,750,000	
	Vehicle Replacement	\$ 75,000	
FY26	Pipe Discontinuity Upgrade (Bond 1M)	\$ 1,500,000	5900 LF of discontinuity
FY27	No Project		
FY28	Relocate HWD HQ (Bond 750K)	\$ 1,500,000	
FY29	No Project		
FY30	Vehicle Replacement	\$ 175,000	
FY31	Construct new tank @ Rt.39 (Bond 3M)	\$ 4,500,000	Replace spider leg tank w/ larger hydropillar

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **New Source Exploration**

5. Department Priority: B: Important/Necessary
 Sequence: 1

6. Purpose of Project Request Form:

Add a new item to the program

7. Location: North Harwich

8. Description: The FY21 request of \$250,000 is a strong number to provide funding for the exploration & installation of a well casing, engineering, permitting, & design for a new well source in the North Harwich area. The FY23 request however is an extremely weak number as it is difficult to confidently estimate the potential needs until the wells water quality and proximity are determined.

9. Justification and Useful Life: 2015 & 2016 were the highest pumping years in department history, with peak days in excess of 6.5 million gallons. The entire water system currently has a pumping capacity of 5,500 GPM which equates to 7.92 million gallons in a 24 hour period. While the community continues to grow the demand for water will continue to rise, justifying the need for an additional well. In addition, should the department suffer a mechanical failure(fairly common) or positive bacteria hit requiring a well to be removed from service, the department may not be able to meet demands resulting in strict mandatory water restrictions.

10. Requested Cost Estimates for:

	2021*	2022*	2023	2024	2025	2026	2027
\$	250,000.00		\$ 500,000.00				

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: **Yes** or No How many years to complete? 3 Reliability of Cost Estimates: Stong, **Average**, Weak

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	250,000.00
Construction:	500,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 750,000.00

12. Recommended Method of Financing:

Retained Earnings:	250,000.00
Retained Earnings:	\$ 250,000.00

13. Net Impact on Operating Costs (+ or -):

<u>Direct Operating Costs</u>	
Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities: Electric/Gas	25,000.00
Other: Treatment Chemicals	6,500.00
<hr/>	
<u>Indirect Operating Costs</u>	
Fringe benefits:	
General administrative costs:	
Other: Future Bond Payments	
TOTAL OPERATING COSTS:	\$ 31,500.00

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:

Committee Sign-Off:

Town Administrator Sign-Off:

COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: December 10th 2020

4. Project Title: **Route 28 Water Main Replacement - Design**

5. Department Priority: B: Important/Necessary
 Sequence: 1

6. Purpose of Project Request Form:

Modify a project already in the program

7. Location: Route 28 Between Lower County Road & Lothrop Ave

8. Description: Design/Engineering for the replacement of approximately 1.25 miles of water main replacement on Route 28 between Lower County Road & Lothrop Ave. Original Scope extended 0.50 Miles due to additional water main failures since submission of the project request. Costs were also increased for required state road existing conditions survey, and estimated unit pricing in 2020 dollars

9. Justification and Useful Life: The water main on Route 28 was installed in the 1940's. There have been several water main breaks in the recent years resulting in large distribution system shut downs. The existing water main has very few gate valves which requires as many 25 gate valves to be closed to isolate & repair a break. This results in many homes and businesses to be without water while repairs are made.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
	\$ 500,000.00	\$ 7,000,000.00				

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: Yes or No How many years to complete? 2 Reliability of Cost Estimates: Stong, **Average**, Weak

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	500,000.00
Construction:	7,000,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 7,500,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	7,000,000.00
Retained Earnings:	500,000.00
Other:	
TOTAL FINANCING:	\$ 7,500,000.00

13. Net Impact on Operating Costs (+ or -):

<u>Direct Operating Costs</u>	
Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities:	
Other:	
<u>Indirect Operating Costs</u>	
Fringe benefits:	
General administrative costs:	
Other:	
TOTAL OPERATING COSTS:	\$ -

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:
 Committee Sign-Off:
 Town Administrator Sign-Off:
 COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL EQUIPMENT REQUEST
for PURCHASE or MAJOR LEASE

1 Department: Water Department
 3 Contact Name: Dan Pelletier
 Phone #: 508-432-0304
 Email: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Item Requested/ Justification: Station 8 Generator

5. Number of Units Requested:

6. Form of Acquisition (x):

7. Department Priority (1-3):
1 highest

8. Cost:

1. Purchase price or annual lease:
Attach lease/Purchase Analysis

2. Plus:
Acquisition, Installation or other costs
(Annual Operating Costs)

3. Less:
Trade-in or other discount:
(Cost Savings/Revenue)

Net purchase cost or annual lease:

Per Unit	Total
\$ 1.00	\$ 50,000.00
	\$ 50,000.00

9. Requested Expenditures for:

2021	2022	2023	2024	2025	2026	2027
	\$ 50,000.00					

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

10. Purpose of Expenditure:

11. Number of Similar Items in Current Inventory: 1

12. Estimated Use of Requested Item(s):

52 Weeks per year (or months if seasonal)

1 Average days per week

2 Average hours per day used

Estimated useful life in years: 10

13. Items to be Replaced:

	Item	Model	Fixed Asset Number	Year Acquired	Mileage/ Hours used	Prior Fiscal Year's	
						Maintenance Cost	Lease Cost
a.	Generac	4922300100		2005	Meter Broken		
b.							
c.							
d.							

14. Recommended Disposition of Replaced Item(s) :
 Sell, Trade, Repurpose, Transfer outside of Town

Reserved:

Committee Sign-Off:
 Town Administrator Sign-Off:
 COC Sign-Off:

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **New Well Construction**

5. Department Priority: B: Important/Necessary
 Sequence: 1

6. Purpose of Project Request Form:

Add a new item to the program

7. Location: North Harwich

8. Description: Construct a new drinking water supply facility as designed under FY21 New Source Exploration

9. Justification and Useful Life: 2015 & 2016 were the highest pumping years in department history, with peak days in excess of 6.5 million gallons. The entire water system currently has a pumping capacity of 5,500 GPM which equates to 7.92 million gallons in a 24 hour period. While the community continues to grow the demand for water will continue to rise, justifying the need for an additional well. In addition, should the department suffer a mechanical failure(fairly common) or positive bacteria hit requiring a well to be removed from service, the department may not be able to meet demands resulting in strict mandatory water restrictions.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
		\$ 500,000.00				

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: Yes or **No** How many years to complete? _____ Reliability of Cost Estimates: Strong, Average, **Weak**

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	250,000.00
Construction:	500,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 750,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	500,000.00
Retained Earnings:	
Other:	
TOTAL FINANCING:	\$ 500,000.00

13. Net Impact on Operating Costs (+ or -):

<u>Direct Operating Costs</u>	
Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities: Electric/Gas	25,000.00
Other: Water Treatment Chem	6,500.00
Indirect Operating Costs	
Fringe benefits:	
General administrative costs:	
Other: Bond Payments	31,600.00
Plan to bond w/ Rt28 Project: Well = 20% total of \$158,000	
TOTAL OPERATING COSTS:	\$ 63,100.00

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:
 Committee Sign-Off:
 Town Administrator Sign-Off:
 COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **Route 28 Water Main Replacement - Construction**

6. Purpose of Project Request Form:

Add a new item to the program

5. Department Priority: B: Important/Necessary
 Sequence: 1

7. Location: Route 28 Between Lower County Road & Lothrop Ave

8. Description: Replace approximately 1.75 miles of water main replacement on Route 28 between Lower County Road & Herring River Bridge

9. Justification and Useful Life: The water main on Route 28 was installed in the 1940's. There have been several water main breaks in the recent years resulting in large distribution system shut downs. The existing water main has very few gate valves which requires as many 25 gate valves to be closed to isolate & repair a break. This results in many homes and businesses to be without water while repairs are made.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
		\$ 7,000,000.00				

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: Yes or **No** How many years to complete? _____ Reliability of Cost Estimates: Strong, **Average**, Weak

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	500,000.00
Construction:	7,000,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 7,500,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	7,000,000.00
Retained Earnings:	
Other:	
TOTAL FINANCING:	\$ 7,000,000.00

13. Net Impact on Operating Costs (+ or -):

Direct Operating Costs

Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities:	
Other:	

Indirect Operating Costs

Fringe benefits:	
General administrative costs:	
Other: Bond Payments	126,000.00
Plan to bond w/ Well Project: Rt. 28 = %80 of total \$158,000	
TOTAL OPERATING COSTS:	\$ 126,000.00

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:

Committee Sign-Off:

Town Administrator Sign-Off:

COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL EQUIPMENT REQUEST for PURCHASE or MAJOR LEASE

1 Department: Water Department
 3 Contact Name: Dan Pelletier
 Phone #: 508-432-0304
 Email: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Item Requested/ Justification: Replace Ford Ranger & F-250-Models TBD

5. Number of Units Requested:

6. Form of Acquisition (x):

7. Department Priority (1-3):
 1 highest

8. Cost:

1. Purchase price or annual lease:
 Attach lease/Purchase Analysis
 2. Plus:
 Acquisition, Installation or other costs
 (Annual Operating Costs)
 3. Less:
 Trade-in or other discount:
 (Cost Savings/Revenue)
 Net purchase cost or annual lease:

	Per Unit	Total
1. Purchase price or annual lease: Attach lease/Purchase Analysis	\$ 2.00	\$ 62,500.00
2. Plus: Acquisition, Installation or other costs (Annual Operating Costs)		
3. Less: Trade-in or other discount: (Cost Savings/Revenue)	2.00	(TBD)
Net purchase cost or annual lease:		\$ 125,000.00

9. Requested Expenditures for:

2021	2022	2023	2024	2025	2026	2027
		\$ 125,000.00				

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

10. Purpose of Expenditure:

11. Number of Similar Items in Current Inventory: 4-Feb

12. Estimated Use of Requested Item(s):

52 Weeks per year (or months if seasonal)
4/5 Average days per week
6 Average hours per day used
 Estimated useful life in years: 10

13. Items to be Replaced:

	Item	Model	Fixed Asset Number	Year Acquired	Mileage/ Hours used	Prior Fiscal Year's	
						Maintenance Cost	Lease Cost
a.	Ford	F-250	Truck 7	2008	100,000		
b.	Ford	Ranger	Truck 12	2011	115,000		
c.							
d.							

14. Recommended Disposition of Replaced Item(s) :

Sell, Trade, Repurpose, Transfer outside of Town

Reserved:

Committee Sign-Off:
 Town Administrator Sign-Off:
 COC Sign-Off:

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **Pavement Management**

5. Department Priority: C: Advantageous/Desirable
 Sequence: 3

6. Purpose of Project Request Form:

Add a new item to the program

7. Location: Various

8. Description: Repave the access roads to the well sites

9. Justification and Useful Life: Continued deterioration of the access roads makes travel to and from the remote well sites difficult and promotes excessive wear and tear on the department vehicles, especially during snow removal efforts. It should be noted that all remote well sites are required by MassDEP to be monitored & visually inspected 365 days a year and maintaining access during all severe weather is mandatory.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
			\$ 175,000.00			

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: Yes or **No** How many years to complete? _____ Reliability of Cost Estimates: Strong, **Average**, Weak

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	
Construction:	175,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 175,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	
Retained Earnings:	175,000.00
Other:	
TOTAL FINANCING:	\$ 175,000.00

13. Net Impact on Operating Costs (+ or -):

Direct Operating Costs

Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities:	
Other:	
TOTAL OPERATING COSTS:	\$ -

Indirect Operating Costs

Fringe benefits:	
General administrative costs:	
Other:	

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:

Committee Sign-Off:

Town Administrator Sign-Off:

COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **Pleasant Lake Tank- Painting/Spot Repair**

5. Department Priority: B: Important/Necessary
 Sequence: 1

6. Purpose of Project Request Form:

Add a new item to the program

7. Location: Oak Street

8. Description: Paint the Pleasant Lake Water Storage Tanke

9. Justification and Useful Life: As of 2025 the existing tank coating will be 20 years old. In a coastal environment it will have exceeded its expected useful life. The department intends to perform a full engineered coating evaluation in FY19. Recommendations will be made at that time identifying the appropriate method for rahabilitation.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
				\$ 1,750,000.00		

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____
 Multi-Phase Project: Yes or **No** How many years to complete? _____ Reliability of Cost Estimates: Strong, Average, **Weak**

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	
Construction:	1,750,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 1,750,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	1,000,000.00
Retained Earnings:	750,000.00
Other:	
TOTAL FINANCING:	\$ 1,750,000.00

13. Net Impact on Operating Costs (+ or -):

Direct Operating Costs

Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities:	
Other:	

Indirect Operating Costs

Fringe benefits:	
General administrative costs:	
Other: Bond Payments	
TOTAL OPERATING COSTS:	\$ -

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -

Reserved:

Committee Sign-Off:

Town Administrator Sign-Off:

COC Sign-Off:

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

CAPITAL EQUIPMENT REQUEST for PURCHASE or MAJOR LEASE

1 Department: Water Department
 3 Contact Name: Dan Pelletier
 Phone #: 508-432-0304
 Email: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Item Requested/ Justification: **Replace Truck 11**

5. Number of Units Requested:

6. Form of Acquisition (x):

7. Department Priority (1-3):
 1 highest

8. Cost:

1. Purchase price or annual lease:
 Attach lease/Purchase Analysis

2. Plus:
 Acquisition, Installation or other costs
 (Annual Operating Costs)

3. Less:
 Trade-in or other discount:
 (Cost Savings/Revenue)

Net purchase cost or annual lease:

	Per Unit		Total
\$	1.00	\$	75,000.00
			(TBD)
	1.00		
		\$	75,000.00

9. Requested Expenditures for:

2021	2022	2023	2024	2025	2026	2027
				\$ 75,000.00		

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

10. Purpose of Expenditure:

11. Number of Similar Items in Current Inventory: 4-Feb

12. Estimated Use of Requested Item(s):

52 Weeks per year (or months if seasonal)

4/5 Average days per week

6 Average hours per day used

Estimated useful life in years: 10

13. Items to be Replaced:

	Item	Model	Fixed Asset Number	Year Acquired	Mileage/ Hours used	Prior Fiscal Year's	
						Maintenance Cost	Lease Cost
a.	Ford	F-150	Truck 11	2010	90,000		
b.							
c.							
d.							

14. Recommended Disposition of Replaced Item(s) :
 Sell, Trade, Repurpose, Transfer outside of Town

Reserved:

Committee Sign-Off:
 Town Administrator Sign-Off:
 COC Sign-Off:

CAPITAL PROJECTS REQUEST

1. Department: Water Department
 3. Contact Person: Dan Pelletier
 Phone #: (508) 432-0304
 Email Address: Dpelletier@harwichwater.com

2. Date Prepared: September 6, 2019

4. Project Title: **Phase 1 Discontinuity Per Masterplan 6,450' Pipe**

5. Department Priority: B: Important/Necessary
 Sequence: 1

6. Purpose of Project Request Form:
Add a new item to the program

7. Location: Varios

8. Description: Remove and replace portions of the distribution system where pipe diameters fluctuate causing flow restrictions throughout various locations in town

9. Justification and Useful Life: This project will increase flow capacities throughout the community which will greatly improve our ability to deliver water during high demand periods.

10. Requested Cost Estimates for:

2021*	2022*	2023	2024	2025	2026	2027
					\$ 1,500,000.00	

If your estimate is indexed for inflation, indicate adjustment percentage (%) used: _____

Multi-Phase Project: Yes or **No** How many years to complete? _____ Reliability of Cost Estimates: Strong, Average, **Weak**

11. Project Cost Summary:

Property acquisition:	
Planning / Engineering / Legal:	
Construction:	1,500,000.00
Furnishings / Equipment:	
Contingency / Other:	
TOTAL COST:	\$ 1,500,000.00

12. Recommended Method of Financing:

Taxes / Current revenues:	
Grants:	
Finance - Lease / Bonds:	1,000,000.00
Retained Earnings:	500,000.00
Other:	
TOTAL FINANCING:	\$ 1,500,000.00

13. Net Impact on Operating Costs (+ or -):

<u>Direct Operating Costs</u>	
Personnel: # of employees:	
Personnel: Full Salary/Benefit (
Purchased services:	
Materials and supplies:	
Equipment purchases:	
Utilities:	
Other:	
<u>Indirect Operating Costs</u>	
Fringe benefits:	
General administrative costs:	
Other:	
TOTAL OPERATING COSTS:	\$ -

14. Net Impact on Municipal Income (+ or -):

Taxes:	
Other income/Grants:	
Gain or loss from sale of replaced asset:	
TOTAL IMPACT ON INCOME:	\$ -
Reserved:	
<i>Committee Sign-Off:</i>	
<i>Town Administrator Sign-Off:</i>	
<i>COC Sign-Off:</i>	

*Individual sheet p/vehicle. Provide Fleet schedule with anticipated replacements.

Date April 2021
PWS No. 4126000

Monthly Weather Report
Harwich Water Department

Day	Snow Fall (in.) (Gallons)	Rain Fall (in.)	Temperature High (°F)	Temperature Low (°F)	Temperature AVG (°F)	Weather Comments	Operator
1		0.76	54	38	46		
2		0.00	42	32	37		
3		0.00	45	32	38		
4		0.00	53	29	41		
5		0.00	51	42	46		
6		0.00	53	45	49		
7		0.00	53	44	49		
8		0.00	54	42	48		
9		0.00	60	41	50		
10		0.00	57	45	51		
11		0.00	53	45	49		
12		0.00	50	39	45		
13		0.00	52	39	46		
14		0.00	55	39	47		
15		0.00	50	39	44		
16		1.08	51	39	45		
17		0.00	46	40	43		
18		0.00	56	41	49		
19		0.00	62	41	51		
20		0.00	60	41	51		
21		0.00	63	48	55		
22		0.00	49	37	43		
23		0.00	58	38	48		
24		0.00	64	41	52		
25		0.64	53	46	49		
26		0.00	55	43	49		
27		0.00	58	42	50		
28		0.22	58	47	53		
29		0.22	53	49	51		
30		0.04	67	51	59		
31							
Total		2.96					
Average		0.10	54.5	41.1			
Max		1.08	66.6	50.7			
Min		0.0	42.5	28.7			

Date April 2020
 PWS No. 4126000

Monthly Weather Report
Harwich Water Department

Day	Snow Fall (in.) (Gallons)	Rain Fall (in.)	Temperature High (°F)	Temperature Low (°F)	Temperature AVG (°F)	Weather Comments	Operator
1		0.04	43	34	38		
2		0.69	44	40	42		
3		0.97	45	43	44		
4		0.03	45	34	39		
5		0.00	48	33	41		
6		0.02	55	40	48		
7		0.00	59	41	50		
8		0.00	51	37	44		
9		0.23	49	37	43		
10		0.00	52	39	46		
11		0.00	55	38	46		
12		0.00	54	33	43		
13		0.25	57	50	53		
14		0.00	57	47	52		
15		0.25	49	38	44		
16		0.00	49	33	41		
17		0.00	51	35	43		
18		0.88	44	36	40		
19		0.00	54	34	44		
20		0.00	52	35	43		
21		0.00	51	31	41		
22		0.00	49	35	42		
23		0.00	51	33	42		
24		1.16	47	44	45		
25		0.00	55	39	47		
26		1.30	51	42	46		
27		0.20	46	39	43		
28		0.02	45	38	42		
29		0.00	54	38	46		
30		0.00	49	44	47		
31							
Total		6.04					
Average		0.20	50.4	38.0			
Max		1.30	59.1	50.1			
Min		0.0	42.8	31.3			

Month/Year April 2021

PWS No. 4126000

Monthly Pumpage Report Harwich Water Department

Date	T1							T2			T3		T10	T11
	Main 1	Main 2	Main 3	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8	Well 9	Pump 10	Pump 11
1	27,076	24,703	20,722	44,297	31,372	38,729	62,401	88,599	93,435	88,770	92,829	89,842	69,194	97,610
2	27,631	25,243	21,014	45,262	32,037	39,671	63,511	86,819	91,538	86,967	91,061	88,054	70,303	95,534
3	50,963	46,490	39,189	82,813	59,136	72,798	118,075	77,117	81,356	77,270	80,667	77,961	130,816	84,777
4	28,029	25,558	21,444	45,723	32,573	40,008	64,770	108,427	114,304	108,590	113,771	110,230	71,662	119,375
5	26,212	23,948	20,068	42,840	30,455	37,577	60,735	88,631	93,421	88,743	92,903	89,756	67,227	97,452
6	55,925	50,954	42,474	92,422	65,152	80,916	127,887	50,578	52,930	50,619	110,601	107,873	149,300	0
7	36,188	32,942	27,380	59,794	42,247	52,422	82,995	87,947	92,709	88,111	92,269	89,795	105,689	0
8	112,284	102,081	83,683	188,477	131,776	164,867	253,923	0	0	0	0	0	81,602	0
9	37,358	33,958	27,660	63,152	43,892	55,040	83,763	98,621	104,005	98,786	103,397	100,735	118,456	0
10	17,853	16,249	12,989	30,674	20,839	26,431	38,909	137,145	144,232	137,083	143,437	138,363	164,251	0
11	77,942	70,924	58,260	130,326	91,019	113,415	175,950	31,879	33,635	31,998	33,662	31,986	233,929	0
12	26,190	23,836	19,968	43,263	30,494	37,841	60,058	123,926	130,767	124,227	129,883	126,925	123,481	83,452
13	33,786	30,719	25,370	56,553	39,526	49,385	76,476	98,225	103,561	98,388	102,973	99,670	84,452	108,209
14	54,003	49,108	40,319	90,747	63,226	79,230	121,804	79,821	83,885	79,827	83,136	78,642	134,770	86,529
15	39,707	36,137	29,911	65,698	45,908	57,231	89,501	85,632	89,907	85,724	118,793	114,343	129,191	106,173
16	25,536	23,233	19,408	42,138	29,725	36,914	58,649	91,884	96,962	92,107	96,268	93,173	64,949	101,213
17	41,316	37,620	31,801	67,530	47,692	59,078	94,738	99,053	104,327	99,302	103,962	99,688	105,492	109,100
18	28,083	25,548	21,235	46,710	32,414	40,458	63,014	106,933	112,574	107,109	111,909	108,054	71,095	118,219
19	55,184	50,278	42,156	90,026	63,875	79,080	127,087	99,252	104,653	99,332	104,022	100,928	144,041	109,211
20	64,362	58,522	48,641	107,247	75,148	93,957	146,626	82,847	87,111	82,999	86,623	82,830	161,877	90,488
21	76,145	69,181	57,416	126,529	88,922	110,846	174,219	60,271	63,531	60,413	63,188	60,111	192,083	66,227
22	51,632	46,891	39,054	85,349	60,189	74,843	118,113	96,070	101,102	96,257	100,727	96,858	130,849	105,504
23	62,000	56,265	45,977	105,241	73,019	91,851	138,317	99,470	104,750	99,548	103,793	98,541	115,617	96,771
24	89,807	81,389	66,175	152,638	105,779	133,143	201,150	53,259	56,003	53,301	56,141	52,974	221,528	58,475
25	27,130	24,607	20,647	45,006	31,584	39,289	61,782	151,921	160,153	152,220	159,191	152,901	68,423	167,000
26	78,525	71,000	58,514	132,027	92,097	115,377	177,143	60,252	63,517	60,374	63,083	59,961	195,215	66,000
27	79,265	71,768	59,196	133,624	93,238	116,741	178,768	44,016	46,342	44,295	46,191	44,338	168,075	48,392
28	90,102	81,560	67,893	150,246	105,413	131,704	204,951	64,615	68,106	64,714	67,663	65,449	196,690	133,865
29	62,598	54,775	46,306	98,398	70,243	86,298	138,431	139,613	144,009	139,868	145,189	139,922	149,712	151,334
30	49,768	44,990	37,474	82,444	58,035	72,074	113,066	122,684	129,116	122,760	128,781	124,696	166,056	134,911
31														
Pumps :	1,532,598	1,390,478	1,152,342	2,547,193	1,787,023	2,227,214	3,476,812	2,615,509	2,751,942	2,619,703	2,826,113	2,724,599	3,886,025	2,435,821
MIN :	17,853	16,249	12,989	30,674	20,839	26,431	38,909	0	0	0	0	0	64,949	0
MAX :	112,284	102,081	83,683	188,477	131,776	164,867	253,923	151,921	160,153	152,220	159,191	152,901	233,929	167,000
STATIONS :	14,113,661							7,987,154			5,550,712		3,886,025	2,435,821
TOTAL :								33,973,372						

Month/Year April 2020

PWS No. 4126000

Monthly Pumpage Report Harwich Water Department

Date	T1							T2			T3		T10	T11
	Main 1	Main 2	Main 3	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8	Well 9	Pump 10	Pump 11
1	83,051	83,641	59,891	149,161	99,880	124,486	182,540	0	0	0	0	0	200,342	0
2	0	0	0	0	0	0	0	144,794	152,662	144,901	151,577	157,142	38,983	159,337
3	80,875	80,806	58,489	144,874	96,824	120,811	177,583	0	0	0	0	0	195,134	0
4	0	0	0	0	0	0	0	149,197	157,478	149,348	156,537	162,098	0	164,477
5	96,947	97,221	70,237	173,435	115,940	141,485	212,422	40,361	42,540	40,554	42,342	43,894	233,891	44,965
6	3,954	4,060	2,928	6,783	4,490	5,478	8,404	115,429	121,636	115,459	120,965	124,397	0	127,103
7	83,929	84,049	60,645	149,874	100,381	124,091	184,426	0	0	0	0	0	202,359	0
8	0	0	0	0	0	0	0	154,103	162,599	154,142	161,576	167,166	0	169,640
9	74,740	75,091	54,162	134,199	89,521	109,468	163,938	16,373	17,163	16,535	17,286	17,836	180,118	18,345
10	0	0	0	0	0	0	0	150,431	158,761	150,600	158,226	163,137	0	165,630
11	120,907	121,317	88,090	214,583	144,315	174,123	265,690	0	0	0	0	0	292,212	0
12	0	0	0	0	0	0	0	110,844	116,905	110,926	116,357	120,231	0	122,100
13	85,319	85,641	61,720	151,973	101,997	123,291	187,234	0	0	0	0	0	205,451	0
14	7,983	8,135	5,915	14,066	9,384	11,320	17,278	142,252	149,821	142,426	149,050	153,403	34,200	125,117
15	83,276	83,416	60,376	147,895	99,479	120,143	182,908	0	0	0	0	0	200,681	0
16	0	0	0	0	0	0	0	155,311	163,898	155,377	163,003	168,569	28,140	170,842
17	57,638	57,517	41,748	102,970	68,684	83,948	126,507	106,451	112,162	106,556	111,377	114,614	139,234	117,202
18	0	0	0	0	0	0	0	119,747	126,270	119,807	125,612	129,913	0	131,707
19	53,023	53,040	38,496	94,932	63,378	80,000	116,069	65,544	69,039	65,495	68,763	71,232	127,820	72,381
20	46,486	46,267	33,553	83,219	55,188	68,470	101,754	89,458	94,278	89,349	93,772	96,494	112,214	98,546
21	73,609	73,746	53,471	132,437	88,287	111,303	161,987	23,496	24,692	23,480	24,669	25,622	177,692	25,903
22	0	0	0	0	0	0	0	155,727	164,352	155,914	163,254	168,971	0	171,381
23	54,935	55,006	39,720	98,384	65,733	81,582	120,913	81,952	86,211	82,056	85,964	87,958	133,135	90,254
24	27,704	27,783	20,157	49,637	33,027	40,854	60,638	168,711	177,717	168,906	176,602	181,886	67,463	185,657
25	64,328	64,285	46,447	114,731	76,767	95,349	141,131	0	0	0	0	0	153,302	0
26	46,508	46,426	33,652	83,138	55,287	67,607	102,082	96,012	101,260	96,138	96,926	99,862	112,471	105,703
27	88,148	88,143	63,897	158,220	105,952	130,707	193,604	0	0	0	0	0	212,367	0
28	87,080	86,999	62,928	155,821	104,193	128,397	191,073	0	0	0	0	1	209,754	0
29	11,001	11,072	8,075	19,535	13,055	15,930	23,935	210,095	221,254	210,194	220,786	227,324	27,447	231,447
30	62,815	62,817	45,539	111,537	74,764	91,700	138,091	0	0	0	0	0	151,847	0
31														
Pumps :	1,394,256	1,396,476	1,010,135	2,491,401	1,666,525	2,050,541	3,060,207	2,296,285	2,420,699	2,298,164	2,404,644	2,481,750	3,436,257	2,497,737
MIN :	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAX :	120,907	121,317	88,090	214,583	144,315	174,123	265,690	210,095	221,254	210,194	220,786	227,324	292,212	231,447
STATIONS :	13,069,541							7,015,148			4,886,394		3,436,257	2,497,737
TOTAL:								30,905,077						