

# **CITY OF HAVELOCK**



## **WATER CONSERVATION PLAN**

**JULY 2007**

## **WATER CONSERVATION\*\***

### **Introduction**

People use water everyday at home, at work and in so many situations that we sometimes take it for granted. Good water is a precious resource that is essential to human survival. It is important to care about using water wisely and efficiently so there will be enough for future generations.

Water systems need to have a good understanding of the demands being placed on their water system. Demands typically increase during hot, dry weather, which is when most shortages occur. In addition, the service population can increase more than twice the size for systems serving coastal areas like the City of Havelock (City). By using water wisely, this will help ease the burden on the water storage, treatment plants and distribution infrastructure. Water efficiency does not mean cramping lifestyles by doing without; it simply means reducing the amount of water that is used.

The City, in its mission to provide the citizens of Havelock potable quality water has developed the following Water Conservation Plan. This plan should be enforced and followed to ensure and preserve one of our most precious natural resources.

The Plan addresses the importance for water responses, voluntary conservation, mandatory conservation, and water use classifications. It also addresses the issues for promoting water conservation practices, water loss, public education and community support.

The purpose of the Water Conservation Plan for the City is to have guidelines to follow and to educate the public.

### **5.8 Irrigation Measures**

According to the City Water Shortage Response Plan, Section 5.3 specifies times for irrigation so as to not impact the system. This is under the Water Shortage Stage II condition section; however, this criterion applies also to the City conservation effort. All use of City water for irrigation will be used only between the hours of 6:00 a.m. and 9:00 a.m. each morning. In the event of a water shortage, the restrictions under Section 5.3 of the City regulations (Stage II –Water Shortage Condition) will apply.

## 5.9 Water Use Classifications



### *Class 1: Essential Water Uses*

-Domestic Use: Water necessary to sustain human life and the lives of domestic pets, and to maintain minimum standard of hygiene and sanitation.

-Health Care Facilities: Patient care and rehabilitation, including swimming pools used for patient care and rehabilitation.

-Public Use: Fire Hydrants –  
1. Firefighting  
2. Certain testing and drills by the fire department if performed in the interest of public safety and if approved by the local governing body.

Flushing of Sewer and Hydrants: As needed to ensure public health and safety and if approved by the local governing body.

### *Class 2: Socially or Economically Important Uses of Water*

#### **All Domestic Uses Other Than Those Included in Classes 1 and 3:**

-Home water use including kitchen, bathroom and laundry use

-Minimal watering of vegetable gardens

-Watering of trees where necessary to preserve them

#### **Commercial, Agricultural, Industrial and Institutional Uses**

-Outdoor commercial watering (public or private) using conservation measures and to the extent that sources of water other than fresh water are not available to use.

-Irrigation for commercial vegetable gardens and fruit orchards or the maintenance of livestock. (Farm animals are not allowed within city limits) Could be left in case we open interconnect with Craven Co. and send water to them?

-Watering by commercial nurseries at a minimum level necessary to maintain stock.

-Water use by arboretums and public gardens of national, state, or regional significance where necessary to preserve specimens.

-Use of fresh water at a minimum rate necessary to implement vegetation following earth moving, where such vegetation is required by law or regulation.

-Watering of golf course greens.

-Filling and Operation of Swimming Pools:

-Residential pools which serve more than 25 dwelling units.

-Pools used by health care facilities for patient care and rehabilitation.

-Municipal pools

-Commercial car and truck washes

-Commercial Laundromats

-Restaurants, clubs, and Eating Places

-Air Conditioning:

-Refilling for start up at the beginning of the cooling season

-Make-up of water during the cooling season

-Refilling specifically approved by health officials and the local governing body, where the system has been drained for health protection or repair purposes.

-Schools, Churches, Motels/Hotels and Similar Commercial Establishments

### ***Class 3: Non-Essential Uses of Water***

-Ornamental Purposes:

-Fountains, reflecting pools, and artificial waterfalls, that do not use recycling systems.

### **Outdoor Non-Commercial Watering (public or private):**

-Gardens, lawns, parks, golf courses (except greens), playing fields and other recreational areas.

-Filling and operations of recreational swimming pools, which serve fewer than 25 dwellings

-Non-commercial washing of motor vehicles

-Serving water in restaurants, clubs, or eating places except by specific request

-Air conditioning: refilling cooling towers after draining except as specified in Class 1

### **Public Use:**

-Fire Hydrants: any purpose, including use of sprinkler caps and testing fire apparatus and for fire department drills, except listed in Class 1

-Flushing of Sewers and Hydrants except as listed in Class 1

For the purpose of this Water Conservation Plan, the City has established some guidelines for the Water Loss Reduction Program. The following documentation will be used for Water Loss in our system and forms may be obtained at the City's main office or satellite offices:

- 1) Water Audit worksheet,
- 2) Request for Evaluation of Interior Fixtures for Low Flow,
- 3) Code Enforcement Low Flow Requirements for New Construction,
- 4) Replacement of New Meters,
- 5) Recordation of Flushing of Blow-Offs in System,
- 6) Hydrant Flushing Sheet for Volunteer Fire Departments in the County,
- 7) Loss of Water in Tanks due to Flushing or Waste,
- 8) City of Havelock Hydrant Flushing Log,
- 9) Water Volume Sheet for Contractors for Flushing.

### **Unaccounted Water**

Unaccounted-for water is the difference between the amount of water a utility purchases or produces and the amount of water that it can account for in sales and other known uses for a given period. Unaccounted-for water can result from the following:

1. Inaccurate or incomplete record keeping;
2. Meter error;
3. Un-metered uses such as firefighting, line flushing, water for public buildings and wastewater treatment plants;
4. Leaks;
5. Water theft and unauthorized use.
6. Processed water at Water Treatment Plants

Based on available data, the amount of unaccounted for water during 2007 year, the percentage of lost water is currently 19.88%. For the purpose of establishing a good Water Loss Reduction Program for the City of Havelock, there will be three parts to the program: 1) Water Audit, 2) Leak Detection and 3) Flushing Program. However, due to conservation efforts in 2007, the Authority's amount of unaccounted for water has been reduced from 27.89% in 2006 to 19.88%. The City continually monitors for unaccounted water.

For the purpose of this Water Conservation Plan, the City has established some guidelines for the Water Loss Reduction Program. Currently, included in the appendices of this program, the following will be used for documentation for Water Loss in our system:

<b>Appendix 1:</b>	Water Audit Worksheet
<b>Appendix 3:</b>	Request for Evaluation of Interior Fixtures for Low Flow
<b>Appendix 4:</b>	Code Enforcement Low Flow Requirements for New Construction
<b>Appendix 5:</b>	Replacement of New Meters

<b>Appendix 6:</b>	Recordation of Flushing of Blow-Offs in System
<b>Appendix 7:</b>	Hydrant Flushing Sheet for Volunteer Fire Departments
<b>Appendix 8:</b>	Loss of Water in Tanks due to Flushing or Waste
<b>Appendix 9:</b>	City Hydrant Flushing Log
<b>Appendix 10:</b>	Water Volume Sheet for Contractors for Flushing

## **WATER AUDIT**

### 1. What is a water audit?

A water audit helps you track water usage. It also helps you pinpoint where you could retrofit plumbing fixtures or change behaviors to reduce water consumption.

### 2. How is a water audit completed?

Conducting a water audit is easy. Simply keep track of your water use for a week using a Water Audit Worksheet. The audit worksheet will allow you to keep track of household water use on a daily basis and to calculate your weekly water use. (On file and updated periodically)

Water losses, whether from leaks, faulty meters, un-metered connections, or other causes, can be a serious financial and operational problem for water supply utilities. Leak detection efforts can significantly reduce waste and conserve our water.

## **DETECTING WATER LEAKS IN THE HOME**

-Running toilets are the number one cause of water wasted in the home. A toilet can leak up to 52,834 gallons a year.

-How can a leak be detected? Turn off all water fixtures, including humidifiers, air conditioners, and refrigerator ice makers. See if the flow indicator or the seep hand on your water meter moves. If so, then you may have a leak somewhere in your plumbing.

-In locating a leak, look for dripping taps first. If the taps are not dripping, check your toilets by adding food coloring to the toilet or pick up leak detection strips from the City, place in your tank and wait 20 minutes. If the dye enters the toilet bowl, that toilet has a leak.

### Making Basic Repairs in the Home

Prior to making any repairs, always consider safety a factor first. If you are uncomfortable about making repairs, consider hiring a plumber or purchasing a how-to book that has detailed instructions on repairs.

**-Repair a tap.** Before starting, make sure that the hot and cold-water valves are turned off that feed the tap. Then, disassemble the tap with a screwdriver and replace any worn, corroded or broken parts. If the tap leaks from the spout, then the washer may be worn and need replaced. If the handle is dripping, the packing may be worn.

**-Toilet repair.** Always check the overflow pipe first. If water is not draining down the overflow pipe, the water is likely leaking past the plunger ball or flapper. Flappers typically need to be replaced every two-five years or sooner if worn. To repair, turn off the water valve that feed the tank and flush toilet until all the water drains out of tank. Then do the following:

-If plunger ball or flapper does not fit snug on valve seat, adjust or replace the lift wire or chain or any other part that may be out of alignment.

-If plunger ball or flapper is worn around edges, replace it.

-If valve seat is scaled or corroded, sand it with an emery cloth. In the event that this does not help, replace the valve seat.

#### Detecting Leaks in the system by Utilities

Utility systems not only encounter leak problems in the system each and every day, but they also rely on customers informing them regarding leaks.

-Make repairs as soon as possible when leaks are found in the distribution lines.

-Keep accurate records for purchased/produced of water versus billed.

-Add to the City's current leak letter to customer when there is a noticeably high usage in a month: **Upon Request by the customer, the City will provide all practical assistance to locate leak on customer's property that individual is unable to locate. (No digging)**

-Another alternative to the above in keeping records for leak detection in the system is the Water System Annual Audit Report. (**Appendix 2**)

#### **FLUSHING PROGRAM**

-The City has established a regular maintenance program for flushing.

-Keep an accurate log of flushing of fire hydrants on the system and requests that Fire Departments do the same.

#### **5.12 Retrofit Program**

The City supports the current Code Enforcement for requiring low flow (flow-restrictive) devices in all new construction in the City.

### 5.13 Public Education

- Primary elements for the City’s public education programs are as follows:
- Utility bill inserts regarding the water conservation issues will be periodically mailed to all customers.
- The City upon request can make presentations to local schools regarding water conservation and water quality issues.
- During the summer months, the City can make presentations to summer day camps on water conservation upon request.
- The City works with media promotion on water conservation that will include billboard advertising and also the advertising in the local newspaper and televised campaigns.
- The City presents all new customers with conservation information packets along with promotional items for their use.
- The City implemented a quarterly newsletter in 2007. The newsletter always promotes water conservation.

### 5.14 Evaluation of Water Reuse as Conservation

Deliberate water reuse and use of “reclaimed” water is an extremely difficult fit for the City. While reuse measures are loosely described as “inexpensive” in terms of relative costs for industry standard wastewater treatment, those measures remain generally fiscally prohibitive. As part of the Wastewater Treatment Plant expansion, water reuse is being considered for irrigation of large parcels owned by the City. While water reuse has great potential, the incorporation of such is not in the foreseeable future.

An additional complicating factor for application of reuse/reclaimed technologies is the fact that the City and Craven are both coastal and ground water dependent. The former topography limits discharge to what may eventually reach brackish or salt marshes or other sensitive riparian areas, the latter to what constitutes surface water overlaying or immediately contiguous to wells. The City well field is confined to the Southeast corridor, making this general area a non-candidate for reuse applications owing to public health considerations. Considering the increased expanses of slow moving and ponded surface water that these technologies involve, public health and nuisance factors favoring an increasingly benign breeding condition for mosquitoes must also be considered as negative.