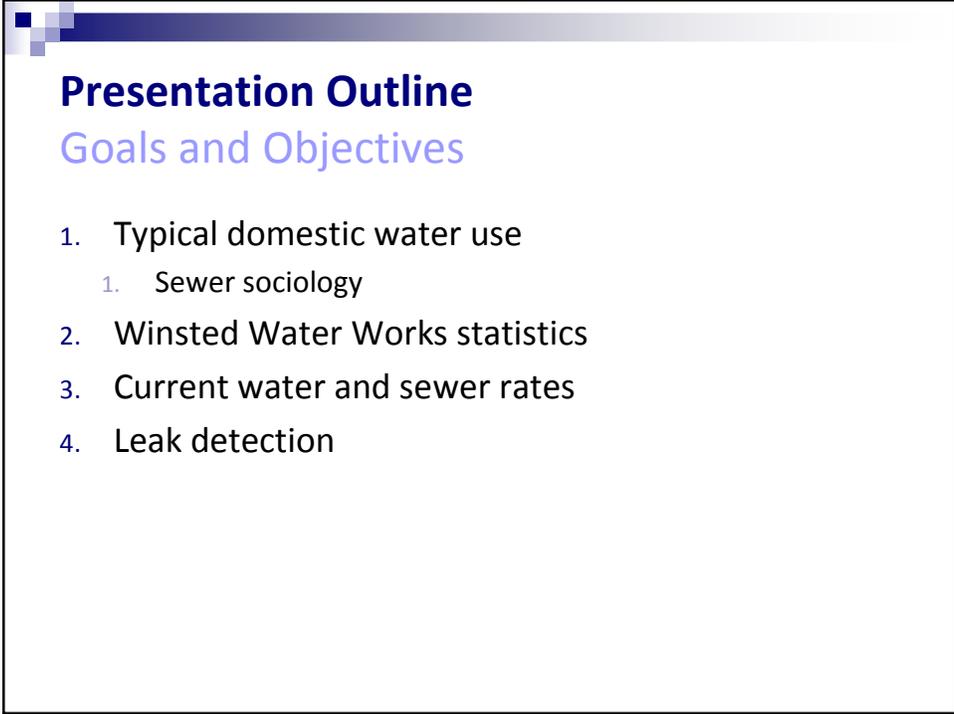


## Domestic Water Use and Water & Sewer Rates

Town of Winchester  
Board of Selectmen Meeting

Neil H. Amwake, P.E.  
January 21, 2014



### Presentation Outline

#### Goals and Objectives

1. Typical domestic water use
  1. Sewer sociology
2. Winsted Water Works statistics
3. Current water and sewer rates
4. Leak detection

## Town Seal

Town of Winchester – City of Winsted



## Daily Demand

### Average

- 75 – 125 gpcd (gallons per capita-day)
  - More affluent customers use more water per day

### Winsted Water Works

- 0.89 MGD Average Daily Demand
- 1.22 MGD Maximum Day Demand (July 14, 2012)
  
- 2,694 Customer accounts

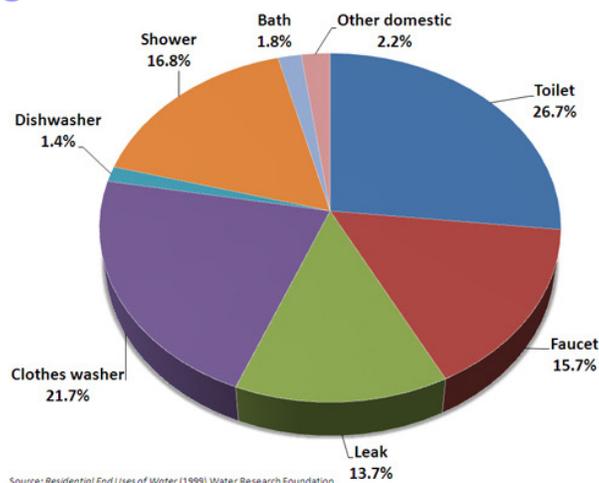
## Daily Demand

### Hourly Variations

- Winter = 0.80x Average Daily Demand
- Summer = 1.30x Average Daily Demand
  
- Early Morning = 0.25x – 0.40x
- Noon = 1.50x – 2.0x

## Daily Demand

### Average



## Daily Water Uses

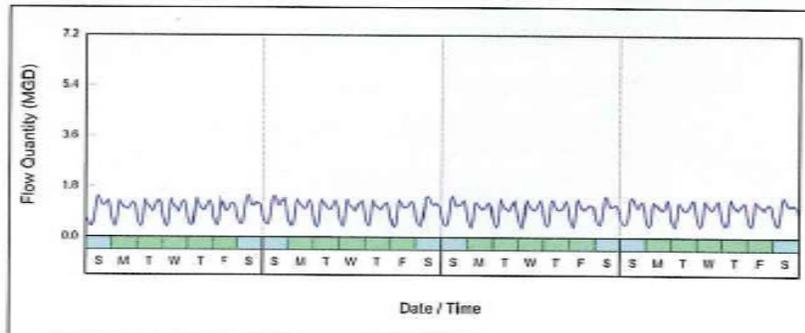
### Typical Residential Consumption

- Water-saving shower: 2.5 gallons per minute
- Nonwater-saving shower: 7 gallons per minute
- Conventional toilet flush: 3 - 5 gallons
- Water-saving toilet flush: 1 - 2 gallons
- Urinal flush: 1 gallon
- Washing hands: 0.25 – 1 gallon
- Brushing teeth w/ water running: 1.5 – 3 gallons per min.
- Dishwasher load: 4 - 15 gallons
- Hand washing dishes: 2 – 3 gallons per minute
- Laundry: 15 - 25 gallons per load

## Daily Demand

### Sewer Sociology

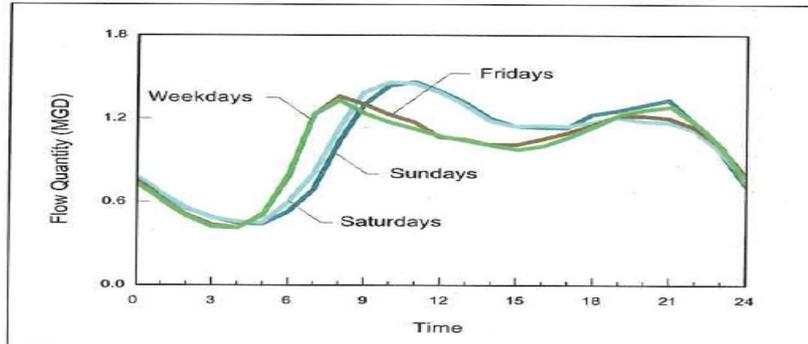
**Figure 1. Hydrograph of Sewer Flow Monitor Data**



## Daily Demand

### Sewer Sociology (continued)

**Figure 2. Diurnal Patterns for Various Days of the Week**



## Water Demand

ccf

1 ccf = 100 cubic feet

1 cubic foot = 7.48052 gallons

1 ccf = 748.052 gallons

## Water and Sewer Rates

### King, King and Associates Statement

“... a residential user who has **historically consumed 2,406 cubic feet per quarter** (a standard used by CT DEEP) will see a **20% increase in water bills**, and a **33% increase in sewer bills**. The quarterly increase is \$28 for water and \$35 for sewer, a total of \$63 per quarter.”

## Water and Sewer Rates

### Current Water Rates

#### Water Base Rates

- |   |                      |
|---|----------------------|
| <input type="checkbox"/> 5/8" Meter (Single Family) | \$79.00 per Quarter  |
| <input type="checkbox"/> 3/4" Meter (2-family)      | \$94.00 per Quarter  |
| <input type="checkbox"/> 1" Meter (Multi Family)    | \$160.00 per Quarter |

#### Water Usage Charge

- |   |                        |
|---|------------------------|
| <input type="checkbox"/> \$3.626 per ccf (100 cubic feet) | First 20,000 gallons   |
| <input type="checkbox"/> \$3.302 per ccf (100 cubic feet) | Usage > 20,000 gallons |
- Previous usage charge of \$2.47 per ccf      Increase of \$1.156 (46.80%)
  - Previous usage charge of \$2.25 per ccf      Increase of \$1.052 (46.76%)

**Base Charge + Usage Charge + High Usage Charges = Water Bill**

## Water and Sewer Rates

### Current Sanitary Sewer Rates

#### Sewer Base Rate

- 5/8" Meter (Single Family) \$50.00 per Quarter
- 3/4" Meter (2-family) \$50.00 per Quarter
- 1" Meter (Multi Family) \$92.50 per Quarter

#### Sewer Usage Charge

- \$3.47 per ccf (100 cubic feet)
  - Previous usage charge of \$2.02 per ccf Increase of \$1.45 (71.78%)

**Base Charge + Usage Charge = Sewer Bill**

## Water Meter

### Leak Quantity

Water Loss In Gallons					
Leak this Size	Loss Per Day	Loss Per Month	Leak this Size	Loss Per Day	Loss Per Month
.	120	3,600	●	6,640	199,520
•	300	10,800	●	6,964	209,520
•	693	20,790	●	8,424	252,720
•	1,200	36,000	●	9,585	286,640
•	1,920	57,600	●	11,324	339,720
•	3,095	92,880	●	12,750	381,600
•	4,295	128,880	●	14,952	448,560

## Water Meter

### Leak Quantity (Shown 4x as Big)

Water Loss In Gallons					
Leak this Size	Loss Per Day	Loss Per Month	Leak this Size	Loss Per Day	Loss Per Month
.	120	3,600	●	6,640	199,520
•	300	10,800	●	6,964	209,520
•	693	20,790	●	8,424	252,720
•	1,200	36,000	●	9,585	296,640
•	1,920	57,600	●	11,324	339,720
•	3,095	92,880	●	12,750	361,600
•	4,295	128,880	●	14,952	448,560

## Water Meter

### Leak Detection

- Locate the water meter dial
  - May include a meter interface unit (MIU)
- Turn off water demand inside the residential dwelling
  - Faucet(s)
  - Shower(s)
  - Toilet(s)
  - Washing machine
- With all of the water off, is the red triangle spinning
  - If so, there is a potential leak inside your home
    - Toilet
    - Dripping faucet

## Water Meter

### Leak Detection



## Water & Sewer

### Future Presentations

1. Water Supply, Treatment & Distribution (2Q 2014)
2. Sanitary Sewer Collection (3Q 2014)
  1. Highland Lake Grinder Pumps
3. Wastewater Treatment (4Q 2014)

## Domestic Water Use

### Questions

- ❖ Comments?
- ❖ Questions?



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