Staff Report

WATER RATIONING ORDINANCE

April 23, 2013

During this presentation staff will review the existing water rationing ordinance with Council, and will highlight areas where staff believes the ordinance should be revised. Council will be asked to provide direction to staff to prepare a revision to the ordinance. Staff will also provide a brief overview of the Water Plant's operational response plan under drought conditions for informational purposes only. No Council action is requested for that item.

BACKGROUND

The current water rationing ordinance has roots in the drought of 1976-77. At that time the Ames area experienced about 14 months of significantly below normal precipitation. This resulted in a drastic lowering of groundwater levels and abnormally high drawdown levels in the downtown well field, which was our only source of drinking water at that time. When it reached a point where it seemed likely that demand would exceed available supply, staff put out a call for voluntary water conservation. The response from Ames citizens was almost immediate and water demand dropped.

Despite voluntary efforts, water levels continued to drop. Several times during June and July of 1977 water use exceeded available supply, and staff were forced to draft and implement a mandatory rationing plan. In 1981, with some minor revisions, that rationing plan was adopted in ordinance form. The ordinance was revised in 2001 by adding a four-tier structure intended to provide different degrees of water use reduction to match current conditions. In 2007, a revision was made reducing the tier structure from four stages to three. The only time rationing has ever been implemented was during the drought of 1976-77.

Staff cannot accurately predict future droughts or any subsequent effect on supply and demand. Based on rainfall, the drought we experienced last summer was the most severe since 2000, and required close monitoring of the situation. Fortunately, the City has added capacity in the form of two new well fields since the drought of 1976-77 and we were able to meet customer needs in 2012, despite setting a new record for single day demand of 9.45 million gallons per day. **In preparation for future drought events, staff is reviewing all aspects of our response program in order to be optimally prepared.**

CURRENT RATIONING ORDINANCE

The existing water rationing ordinance can be found in the Ames Municipal Code, Chapter 28, Division V-- "Water Rationing":

- The Ames City Council declares, by resolution, a "public water shortage emergency."

- STAGE I: Minor Mandatory Conservation
    - Use of potable water that results in ponding or runoff is prohibited
    - The use of potable water to wash vehicles is prohibited except at commercial locations
    - Watering of outdoor vegetation at each customer location is limited to every other day
    - Owners of newly seeded or sodded lawns can apply for a 10-day exemption

- STAGE II: Moderate Mandatory Rationing
    - All restrictions from STAGE 1 apply.
    - The use of potable water to wash vehicles is prohibited except at commercial locations that utilize water conservation equipment such as, recycle/reuse
    - Watering of outdoor vegetation at each customer location is limited to every five days
    - Irrigation rates shall not exceed one inch per day and are limited to specific time of day
    - Owners of newly seeded or sodded lawns are further restricted to an irrigation rate not to exceed one inch per day plus time of day limits
    - The use of hydrant meters for construction purposes is prohibited
    - Each utility service location within city limits shall pay a surcharge rate of $0.075 per cubic foot for monthly use in excess of 1.5 times the average amount metered during the previous December, January and February billing cycles (Base Allocation)
    - Rural customers shall pay a surcharge rate that is 1.15 times the rate established for customers within city limits.

- STAGE III: Severe Mandatory Rationing
    - All restrictions from STAGE I and STAGE II apply except the surcharge rate
    - The use of potable water to wash vehicles is prohibited, including commercial locations
    - Outdoor vegetation shall not be irrigated, with a few very restricted exceptions
    - Outdoor flower and vegetable gardens may be watered once per week, not to exceed one inch
    - Each utility service location within city limits shall pay a surcharge rate of $0.225 per cubic foot for monthly use in excess of 1.1 times the average amount metered during the previous December, January and February billing cycles (Base Allocation)
    - Rural customers shall pay a surcharge rate that is 1.15 times the rate established for customers within city limits.

- Utility customers can appeal to the City Manager for an increase in their Base Allocation which he may grant by specified criteria.
- Utility customers can appeal the surcharge amount to the City Manager who may grant a reduction according to specified criteria.

- The City Manager is authorized to reduce or terminate service of any customer who has received three or more notices of violation of the water rationing provisions.
- Penalties may be enforced in the form of municipal infractions for violation of the water rationing provisions.

REASONS TO REVISE THE WATER RATIONING ORDINANCE

There are two primary concerns that staff would like to address by revising the existing ordinance. First, the existing ordinance surcharge rates have not been updated in step with periodic changes in base rates. In fact, the surcharge rates have not been updated since the ordinance was established in 1981. Also, the base rate structure changed in 2008 from a flat rate to a seasonal inclining block for the majority of customer categories. This necessitates a revision of the rationing ordinance to work in sync with the base rate structure now in place.

Second, in discussions with Utility Customer Service staff, it was determined that the present surcharge method described in the rationing ordinance would require hand calculation for each customer bill for every month the ordinance is in effect, which is on the order of 18,500 customers. This would overwhelm the division and should be avoided. It is possible to pay for custom programming to be developed; however, this is undesirable due to both cost and ongoing issues every time the base software is updated.

REVISED WATER RATIONING ORDINANCE

Below is a conceptual description for revising the water rationing ordinance. Staff is seeking Council reaction to the proposed revisions. **After receiving Council direction, staff will develop the actual ordinance language to be brought back to Council for approval.**

The proposed ordinance revisions will replace the concept of a Base Allocation and associated surcharge rates with "rationing rates" that are multipliers applied to the base water rates. Making this change will eliminate the need to update the rationing ordinance every time the base water rates are changed, because rationing rates become a simple multiplier of base rates. Utility Customer Service has confirmed that this method can be implemented easily with the existing billing software without programming modification, thus eliminating additional programming costs. The need for hand-calculation of bills is also completely eliminated.

The following is a description of the "rationing rate" structure staff is proposing.

Section 28.604 Stage II: Moderate Mandatory Rationing

For each water utility service location, the water utility customer shall pay a rationing rate when Stage II Rationing is in effect. The rationing rate shall be determined by multiplying the rates contained in the below referenced paragraphs by the following factors. The rationing rate shall be effective regardless of the month of the year.

Residential. Multiply the rates in Sec. 28.201(1)(b)(ii)(a) by the following:

First 1,000 cubic feet of usage shall be as shown
Next 1,500 cubic feet shall multiply the rate shown by 2.0
Over 2,500 cubic feet shall multiply the rate shown by 2.0

Non-Residential(Commercial). Multiply the rates in Sec. 28.201 (2)(b)(ii)(a) by the following:

All consumption shall multiply the rate shown by 1.6

Non-Peaking Industrial. Multiply the rates in Sec. 28.201 (3)(b)(ii)(a) by the following:

All consumption shall multiply the rates shown by 1.15

Irrigation & Yard Water. Multiply the rates in Sec. 28.201(4)(b)(ii)(a) by the following:

First 2,000 cubic feet shall multiply the rates shown by 2.0
Next 3,000 cubic feet shall multiply the rates shown by 2.0
Over 5,000 cubic feet shall multiply the rates shown by 2.0

Rural Water Rate. Multiply the rates in Sec. 28.201 (5)(b)(ii)(a) by the following:

First 2,000 cubic feet shall be as shown
Next 3,000 cubic feet shall multiply the rates shown by 2.0
Over 5,000 cubic feet shall multiply the rates shown by 2.0

Section 28.605 Stage III: Severe Mandatory Rationing

For each water utility service location, the water utility customer shall pay a rationing rate when Stage III Rationing is in effect. The rationing rate shall be determined by multiplying the rates contained in the below referenced paragraphs by the following factors. The rationing rate shall be effective regardless of the month of the year.

Residential. Multiply the rates in Sec. 28.201(1)(b)(ii)(a) by the following:

First 1,000 cubic feet of usage shall be as shown
Next 1,500 cubic feet shall multiply the rate shown by 4.0
Over 2,500 cubic feet shall multiply the rate shown by 4.0

Non-Residential(Commercial). Multiply the rates in Sec. 28.201 (2)(b)(ii)(a) by the following:

All consumption shall multiply the rate shown by 2.2

Non-Peaking Industrial. Multiply the rates in Sec. 28.201 (3)(b)(ii)(a) by the following:

All consumption shall multiply the rates shown by 1.6

Irrigation & Yard Water. Multiply the rates in Sec. 28.201(4)(b)(ii)(a) by the following:

First 2,000 cubic feet shall multiply the rates shown by 4.0
Next 3,000 cubic feet shall multiply the rates shown by 4.0
Over 5,000 cubic feet shall multiply the rates shown by 4.0

Rural Water Rate. Multiply the rates in Sec. 28.201 (5)(b)(ii)(a) by the following:

First 2,000 cubic feet shall be as shown
Next 3,000 cubic feet shall multiply the rates shown by 4.0
Over 5,000 cubic feet shall multiply the rates shown by 4.0

Drought Management Plan			
Condition	**General Description**	**Specific Triggers for City Action**	**City Response or Action**
Awareness	•Conditions are normal	•Normal rainfall	•Promote the Smart Water Program
Preparedness	•Drier than normal conditions exist •NWS predicts dry conditions to persist	•Stream Flow < 20 cfs at Skunk North gauge •Observation of decreasing well pumping levels. •US Drought Monitor condition of D1 (Moderate) or D2 (Severe)	•Increase groundwater monitoring frequency. •Install batter boards at the low head dam •Engage public in conservation efforts, with emphasis on irrigation. •Acquire permits and prepare to pump at Ada Hayden. •Contact Story County and remind them we have rights to pump at Peterson Pits •Closely watch well levels, rotating wells as water levels dictate.
Watch	•Extended dry weather continues	•Approximately nine months of below normal precipitation and critically low stream levels. •Water level not flowing over batter boards •Well pumping levels less than 7' in 20% (or more) of wells. Some may be unusable because of low levels. •US Drought Monitor condition of D2 (Severe) or D3 (Extreme)	•W&PC staff meet weekly to review drought situation and observed effect on operations. •Brief City Council on water supply status. •Start pump at Ada Hayden Lake. •Further increase conservation efforts. Utilize social web sites such as city web site and Facebook. Reach out to local media outlets.
Alert	•Extended drought period •Critically low water supply	•More than nine months of below normal precipitation and with no stream flow. •Well pumping levels less that 7' in 50% of wells, or limited to 50% overall capacity due to wells being unusable. •Unable to maintain level of water behind dam •US Drought Monitor condition of D3 (Extreme) or D4 (Exceptional)	•Enter Stage 1 (or greater) of water rationing ordinance. •Suspend well rehab program. •Throttle back well isolation valves to manage low well levels (if possible). •Monitor back-up water sources, and consider pumping from Peterson Pits also. •Consider using some Xenia water.

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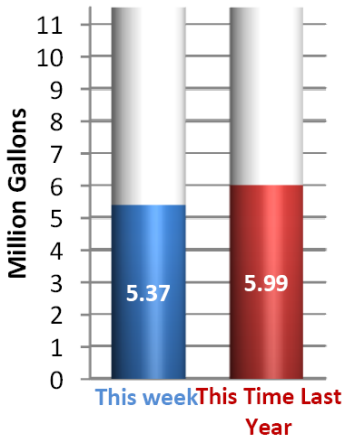
WATER TREATMENT PLANT

Report Date: Wednesday, April 17, 2013

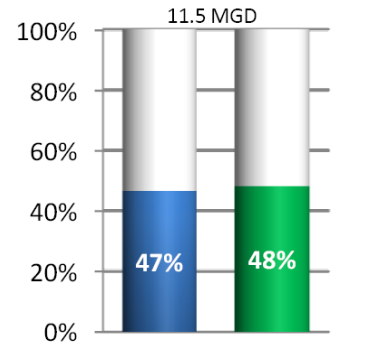
Water Plant Status

Record Peak Day Demand	Record Peak 3-Day Demand	Water Plant Precipitation Totals [inches]		
		7-day	14-day	30-day
9.45 MGD	9.08 MGD	2.18	2.18	2.47

7-Day Average Demand



Current Demands & Production vs. Plant Capacity



System Demand 5.37 MGD

Plant Production 5.56 MGD

Rainfall History [Inches]

Mar-2013 Rainfall

Normal	2.1
Actual	1.79
Deviation	-0.31

12-Month Rainfall

Normal	34.67
Actual	26.93
Deviation	-7.74

Water Supply Status

Running Well Level Status

Wells Out of Service

0

Wells at Watch Levels

1

15

Wells at Acceptable Levels

21

6 7 8 9 10 11 12 13 14 16 17 18 19 20 21 22 23 24 25 26 27

Demand vs. Available Water Supply

Available Well Capacity = 15.00 MGD

Current Demand = 5.37 MGD

Supply:Plant Capacity Ratio= 1.30

Current Demand = 36% of Available Supply

Estimated Water Supply Status

15.0 MGD Max. Well Capacity

0.00 MGD Out of Service

0.44 MGD in Watch Status

14.5 MGD in Acceptable Status