



**City Council - Workshop Agenda  
February 22, 2017 - 5:30 P.M. - Foley City Hall**

1. Call the meeting to order.
2. Pledge of Allegiance.
3. Approve the agenda.
4. S.E.H. - Presentation and Discussion on city infrastructure needs.
5. Other Business
6. Adjourn

# Water System Plan

## 2016 Water System Plan and Pilot Testing

### Foley, Minnesota

SEH No. FOLEY 136484 4.00

February 16, 2017



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# Executive Summary

The following is a summary of a comprehensive study of the City of Foley water system.

## Existing Conditions

The City of Foley's water system currently serves about 2,600 residents and businesses. The major system components include:

- Three municipal supply wells,
- Chemical feed systems at each well to add phosphate, chlorine, and fluoride to the water,
- One (1) 200,000 gallon elevated water tower for water storage, and
- A water distribution network of about 21 miles of water main.

The system has provided adequate quantity of water, but water quality has been a persistent issue. Complaints are typically related to colored water due to iron and manganese (these are considered secondary standards, or aesthetic contaminants). Contaminant levels observed in the Foley water supply range as follows: below to 2.5 times above the recommended level for iron; and 2.2 to 12 times above the recommended level for manganese.

## Population Growth and Water Demand

In order to better evaluate the adequacy of the water system and plan for the future SEH completed water demand and population growth projections.

### *Population*

Historically, the population of Foley has increased from 1,112 in 1960 to 2,603 in 2010. Three population projection techniques were considered for this study. For water system planning purposes, a 2040 population of 3,520 was used to calculate future water demand.

### *Water Demand*

Water demand data was collected and analyzed. On an average day, Foley uses 86 gallons per person per day (GPCD) for a total of 228,000 gallons per day. The maximum water use day is typically during the summer when the City uses about two (2) times the amount of water compared to an average day.

By combining population projections and water demand analysis, the 2040 water demands used for water system planning were determined to be:

- Average Day Demand: 303,000 gallons per day.
- Maximum Day Demand: 605,000 gallons per day.

## Water System Recommendations

Water system recommendations based on SEH's analysis of the existing water system, including water quality, water demand, and population projections, are as follows:

- Water Supply:
  - Construct a new Well 6 at the same site as existing Well 5. These wells should be designed so the firm capacity can meet the City's future maximum day demand.
- Water Treatment:
  - Construct a water treatment plant (WTP) at the site of Well 5 and future Well 6 to remove iron and manganese.
  - As part of this study, SEH conducted a pilot study to determine the feasibility of removing iron and manganese from the water supply to prevent future water quality complaints. SEH's pilot

# Executive Summary (Continued)

WTP was able to remove iron and manganese from the well water to levels below the secondary standards (see Appendix 1: Pilot Study Report).

- Potable Water Storage:
  - Add additional water storage in the form of a ground storage reservoir at the recommended WTP or second water tower, or both.
  - After a second storage facility is added, rehabilitate the existing water tower.
- Distribution:
  - Replace the remaining 4-inch water mains in the City during planned street improvement projects. Install 8-inch water mains except when there are short (less than 1,000') segments that are unlikely to be extended.

## Costs for Recommended Improvements

Capital improvement costs for the recommendations listed above include:

| Improvement Item   | Estimated Cost     |
|--|--------------------|
| Well No. 6   | \$180,000          |
| Iron & Manganese Water Treatment Plant <sup>(1)</sup>        | \$3,401,000        |
| Storage Alt. 1: 200,000 gallon clearwell                     | \$400,000          |
| Storage Alt. 2: 200,000 gallon elevated tower <sup>(2)</sup> | \$1,372,000        |
| Recondition existing elevated tower                          | \$319,100          |
| <b>Total Cost with Storage Alt. 1</b>                        | <b>\$4,300,100</b> |
| <b>Total Cost with Storage Alt. 2</b>                        | <b>\$5,272,100</b> |
| <b>Total Cost with Storage Alt. 1 &amp; 2</b>                | <b>\$5,672,100</b> |

<sup>1</sup>If Storage Option 1 is selected, the cost would be added to the WTP.

<sup>2</sup>Single pedestal water tower design.

Foley, Minnesota

## Wastewater Treatment Facility

February 22, 2017



### Foley WWTF - Ponds

- Two pond systems
- Birch Pond system:
  - 2 ponds
  - 22.2 acres total
- Golf Pond system:
  - 3 ponds
  - 20.77 acres total
- Two lift stations
  - Flowmetering
  - Automatic Samplers



## Foley WWTF – NPDES Permit

- Current permit
  - Issued March 1, 2012
  - Expires Feb 28, 2017
- Permit reissuance application submitted in November 2016
- Seasonal discharge to Stoney Brook
- New permit – what to expect
  - Phosphorus
  - Sulfates
  - Flow



**Minnesota Pollution Control Agency**

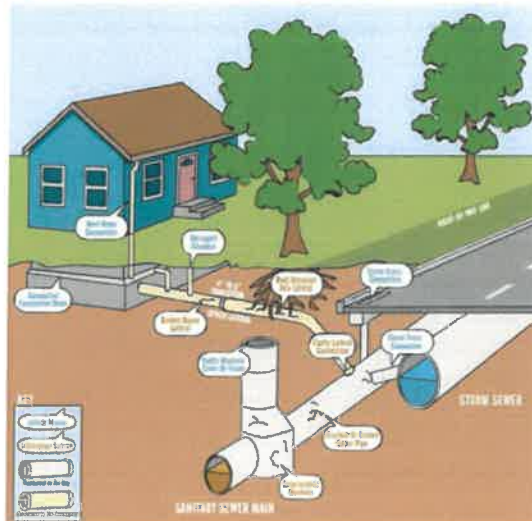


## WWTF – Flow Capacity

| Year | Average Annual Flow, gpd | Permitted Pond Capacity, gpd | % of Pond Capacity Used |
|------|--------------------------|------------------------------|-------------------------|
| 2012 | 292,411                  | 371,300                      | 78.8%                   |
| 2013 | 320,081                  |                              | 86.2%                   |
| 2014 | 406,553                  |                              | 109.5%                  |
| 2015 | 310,918                  |                              | 83.7%                   |
| 2016 | 342,946                  |                              | 92.4%                   |



## Foley WWTF – I&I Flow



## Foley WWTF – I&I Flow Reduction

| Year | Peak Flow, gpd | I&I Flow, gpd | % I&I |
|------|----------------|---------------|-------|
| 2012 | 503,133        | 258,300       | 51.3% |
| 2013 | 500,733        | 244,744       | 48.9% |
| 2014 | 702,833        | 427,569       | 60.8% |
| 2015 | 452,137        | 190,299       | 42.1% |
| 2016 | 414,933        | 119,041       | 28.7% |



## Foley WWTF – Significant Industrial User (SIU)

- Significant Industrial User:
  - Potential to impact POTW
  - Contributes 5% or more flow or load
  - Contributes 25,000 gpd or more industrial process wastewater
- SIU agreement between City and Pouch Tec
  - Two week sampling event
  - Reviewed pond capacity



## Foley WWTF – What's Next?

- New NPDES permit
  - Limits
  - Compliance requirements
- Pond Capacity
  - At or near capacity
  - No sewer extensions per MPCA – no community growth





## Foley WWTF – What's next

- Facility Plan
  - Future flow and load projections
  - Evaluation of alternatives for improvements
  - Environmental review
  - Cost estimates
- Approved facility plan needed for most funding programs



## Questions?

