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# Executive Summary

## Torrington, Wyoming Water Master Plan Level I - Phase II

Prepared for:

The Wyoming Water  
Development Commission

November, 1997

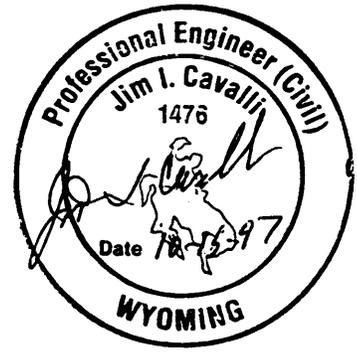
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# **EXECUTIVE SUMMARY**

**TORRINGTON, WYOMING**

**WATER MASTER PLAN**

**LEVEL I - PHASE II**

**WYOMING WATER DEVELOPMENT COMMISSION**

**NOVEMBER, 1997**

51.1248 (Torrington ES 97)

## Table of Contents

Section	Page
1.0 Authorization .....	1
2.0 Purpose and Scope .....	1
3.0 Water Demand Projections .....	2
4.0 Water Supply Improvements .....	5
5.0 Storage and Distribution System Improvements .....	7
6.0 Program for Future Investigation .....	7

## **1.0 Authorization**

The *Level I Water Supply Master Plan Study for the Town of Torrington*, was authorized by the 1995 Session of the Wyoming Legislature to be conducted as part of the Wyoming Water Development Commission (WWDC) program. A Phase II, of the Level I study was authorized by the 1996 Session of the Wyoming Legislature and is the subject of this report.

This Executive Summary presents a brief synopsis of the Level I, Phase II study. The details of the investigation are presented in the accompanying documents, Final Report - Torrington, Wyoming, Water Master Plan Level I, Phase II, November 1997 (Volumes 1 and 2). This report was prepared to compliment, not replace, the Level I, Phase I Report dated November 1995 and should be reviewed in conjunction with that report.

## **2.0 Purpose and Scope**

The purpose of this Level I, Phase II investigation is to further refine concept designs and cost estimates in order to evaluate Torrington's water supply, storage, and distribution system. Specifically the Phase II scope of work included the following tasks:

1. Evaluate wells #5 and #9.
2. Evaluate the area around the golf course as the site for a new well field.
3. Perform a leak detection survey.

4. Refine the CYBERNET computer model of the distribution system that was developed in Phase I. Included in this task was a review of the recommended fire flow values. Also, included was a brief analysis of the South Torrington Water and Sewer District's supply pipeline.
5. Investigate the feasibility of developing a central water system for the area east of Torrington known as the East Highway Water District.

Based on the costs associated with the improvements, and other factors important to a municipal water system, this Phase II report of the Level I investigation develops a master plan for Torrington to pursue with regard to their water system. The Phase I portion of the Level I study also suggested changes to Water Department operational procedures to facilitate efficient operation and longevity of the system.

Analyses were also completed as part of the Phase I portion of this study to determine the feasibility of expanding Torrington's water system to serve rural areas. Preliminary designs and cost estimates were prepared for facilities required to connect rural areas to the Town system.

### **3.0 Water Demand Projections**

Future demands that could be imposed on the Torrington water system over the 25-year planning period from 1995 to 2020 were projected and used in the planning process to define improvements and expansions that will need to be made to the water system during the planning period. Projections of future water system demands were derived by applying per capita demand rates to estimates of future populations. Increased demands on the Town's water system can result from:

1. Population increases within the present water service area. The present service area consists of the Town's corporate limits and three adjoining areas, the South Torrington Water and Sewer District, the North Torrington Water District, and the Torrington Industrial Park.
  
2. Expansion of the service area to serve rural districts. Several rural areas are identified as potential new taps to the Torrington water system.

Estimates of current and projected population levels for Torrington and surrounding areas were developed as part of a wastewater master plan study performed for Torrington by Baker & Associates. These estimates, presented in Table 1, were reviewed with regard to data provided by the Economic Analysis Division of the Wyoming Department of Administration and Information (DAI), and adopted for this Level I study.

**Table 1 -- Estimated Existing and Projected Future Populations**

Area	1995 Estimated Population	2020 Projected Population
Town of Torrington	6,435	7,913
Rural Areas	1,510	4,780
<b>Totals</b>	<b>7,945</b>	<b>12,693</b>

Records of daily water production, provided by the Town of Torrington for the period from 1989 to 1994, were used to estimate the per capita demand rates. The computed demand rates for the Town, and estimated demand rates used for the rural areas, are presented in Table 2. The lower demand rates were used for the rural areas because: 1) rural residents will likely pay significantly more for the water, thereby curtailing use; and 2) rural residents will likely continue to use existing wells for non-potable needs such as lawn and garden irrigation.

**Table 2 -- Per Capita Demand Rates For Torrington and Rural Areas (gpcd)**

	<b>Torrington</b>	<b>Rural</b>
Winter Daily Demand	235	100
Average Daily Demand	432	150
Maximum Daily Demand	1,071	375

The water production records were compared to billing records to determine the quantity of water that is not metered or is lost to the system. The comparison revealed that approximately 30 percent of the water produced during the summer months is not metered. This estimated loss rate increases to about 40 percent for the winter months. These losses are considered to be high and as a part of this Phase II Study, further investigations were conducted to identify means to reduce the losses and thus reduce the per capita consumption rates. These investigations included: conducting a leak detection survey of the Town's distribution system. That study confirmed a number of areas where the leakage was rated from medium to high.

The estimated and projected population figures presented in Table 1 were used with the per capita demand rates presented in Table 2 to generate estimates of existing and projected future demands for the Torrington water system. These demands are presented in Table 3.

**Table 3 -- Estimated Existing and Projected  
Future Daily Water Demands (mgd)**

	<b>Year</b>	<b>Torrington</b>	<b>Rural</b>	<b>Total</b>
Winter Daily Demand	1995	1.5	0.2	1.7
Winter Daily Demand	2020	1.9	0.5	2.4
Average Daily Demand	1995	2.8	0.2	3.0
Average Daily Demand	2020	3.4	0.7	4.1
Maximum Daily Demand	1995	6.9	0.6	7.5
Maximum Daily Demand	2020	8.5	1.8	10.3

#### **4.0 Water Supply Improvements**

The Phase I Report recommended four water supply improvements:

1. Replace Existing Wells #5 and #9
2. Copper Corrosion Control
3. Disinfection
4. Golf Course Well Field

As a result of this Phase II Study, four short term improvements (1-4) and one long term improvement (5) were identified and are listed below:

1. Replace wells 5 and 9 with two wells in the future golf course area well field. This will require significant expenditures for piping and controls compared to adding two wells within the existing water system boundary. As an alternative to this option, we recommend that the Town give serious consideration to Option 5 which is described below.

2. Copper Corrosion Control as identified in the Level I, Phase I report.
3. Disinfection as identified in the Level I, Phase I report.
4. Begin a program of investigating and repairing, where practical, the leaks classified as medium and greater in the leak protection study. (See Appendix A). The cost of this program cannot be accurately defined. We recommend the city establish an annual budget amount to start addressing this problem. The first years experience can be used as the basis for establishing future budget needs.
5. Golf Course Area Well Field: Complete the development of an entirely new water supply system for Torrington. The two wells developed under Item 1 would be included in this system. However, the cost estimate for this item includes all work for six new wells capable of delivering a total flow of 8,000 gpm. Also included is the cost of transmission piping from the booster station to Town. During Final Design, both the proposed route and line size should be reviewed and fine tuned.

**Table 1-1**  
**Summary of Costs - Water Supply Improvements**

Improvement	Initial Cost	Annual Cost	Cost Per 1000 Gallons
1. Replace Wells 5 & 9	\$1,788,983.00	\$64,210.00	\$0.09
2. Copper Corrosion Control	40,000.00	\$20,000.00	\$0.03
3. Disinfection	40,000.00	\$20,000.00	\$0.03
4. Golf Course Well Field	4,194,115.00	\$150,535.00	\$0.22

Assumes 60% State - 40% Local funding @ 7 1/4 % - 20 years

## 5.0 Storage and Distribution System Improvements

The CYBERNET model of the Torrington Distribution System was refined and calibrated. Improvements recommended in the Phase I report were compared to the calibrated model results.

The recommendations contained in the Level I, Phase I report (pages 1-5 and 1-6) remain unchanged for the Phase II report. However, cost estimates have been updated to reflect recent street restoration costs on utility projects in Torrington. They are summarized as shown in Table 1-2 below:

**Table 1-2**  
**Summary of Costs - Water System Improvements**

Improvement	Initial Cost	Annual Cost	Cost Per 1000 Gallons
Fire Flow Main Replacement	\$2,873,027.00	\$140,365.00	\$0.20
Dead End Main Elimination	499,962.00	22,513.00	0.03
Undersized Main Replacement	1,595,529.00	77,951.00	0.11
Hillcrest Delivery System	450,112.00	21,991.00	0.03

## 6.0 Program for Future Investigations

Normally, a Level I study is a preliminary investigation that identifies improvements to be further studied during a Level II program. When the source of supply is groundwater, a Level II program is normally used to verify the presence of adequate quantity and quality of groundwater.

Torrington's case is somewhat different in that there is not a concern that the source will produce adequate quantity. Also, because the main issue regarding quality for Torrington is nitrate concentration, it is highly unlikely that a normal Level II program will be able to prove or disprove the viability of the proposed well field. We believe the only way to improve everyone's comfort level with the proposed well field would be to include an extended period, (6-month), pump test.

Providing such a test dramatically increases the cost of the Level II study from a normal cost of \$150,000.00 to an estimated cost in excess of \$300,000.00.

Not only does the extended pump test double the cost of a Level II program, it likely will add one year to the time any conclusions could be reached. This would mean Torrington would not be in position to receive Level III construction funds until the year 2000.

As an alternative, the Town could consider asking the WWDC for a limited Level III program to develop two wells at the golf course area and place them into the Torrington Supply System. The cost estimate for this option is \$1,788,983.00 which if funded at the 60% - 40% level at 7 1/4 % for 20 years represents an annual cost of \$64,210.00 (\$0.09 per 1000 gallons) plus the cost of operation and maintenance.

The Town could use these two wells for several years before deciding to totally replace their well field. Should these two wells develop high nitrates (we don't believe they will), the Town has not obligated itself to the cost of a total well field replacement. Along with this Level III request, the Town might want to consider requesting a Level II project to further refine the other improvements listed in the Phase I and Phase II, Level I reports.

We recommend Torrington to also consider requesting full Level III funding at this time. It should be remembered, however, that the improvements listed in addition to the well field need to be further refined before any construction plans are prepared. This refinement could be accomplished as the first step in a final design process. The advantage to this approach is to move the project to construction as quickly as possible.

It is also recommended that the Town in conjunction with the South Torrington Water and Sewer District establish a bi-annual program to monitor the flow in the District's line that goes under the North Platte River. This program will help predict when the condition of the line dictates replacement.

The leak detection study identified potential loss of water to be in the range of 213,000 to 301,000 gallons per day. We recommend Torrington initiate a program to try to eliminate all leaks rated as high and as many as practical of those rated as medium. Because of the numerous locations, it appears most prudent to establish a maintenance budget item to address the leaks. A goal of addressing all of the leaks over a 3 to 5 year period would be reasonable.