EXECUTIVE SUMMARY
LARAMIE NORTH SIDE SUPPLY
PROJECT, LEVEL II

November 1, 2000
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EXECUTIVE SUMMARY

1.0 Introduction

In June 2000, Western Water Consultants, Inc. (WWC) contracted with the Wyoming Water Development Commission (WWDC) to perform a Level II investigation for the City of Laramie. The general scope of work is to evaluate water storage and transmission in the northern and eastern areas of Laramie and to evaluate the condition of the existing 20-inch water transmission pipeline from the water treatment plant.

A previous Level II project (RBD, 1996) identified water infrastructure deficiencies in the northern and eastern areas of the City and provided recommendations for improvements. Improvements are needed to increase system reliability, reduce the complexities associated with pumped supply, and to provide fire flow capability for a 50-year planning horizon. The scope of this current Level II project refines the previously evaluated ideas and expands to address several items that were not previously examined. This Level II effort is also needed because the City anticipates that most of the future growth in Laramie will occur in this study area.

Investigation of the existing 20-inch steel transmission pipeline west of town is being performed to complete the City’s understanding of the condition of the existing pipeline and to provide recommendations for needed improvements. Previous Level I and Level II projects have examined other reaches of the 20-inch pipeline and the parallel 24-inch pipeline.

2.0 East Laramie Service Area Preferred Alternative

Nine water storage and transmission pipeline alternatives were studied. The preferred project, Alternative A-1.2, includes a 1.7 million-gallon storage tank, 4 pressure reducing stations, a pumping station, and 7.1 miles of pipeline. Figure 1 presents a conceptual design.

The proposed project provides several benefits. First, a water tank on the east side of town would provide supply reliability similar to the other areas of town that are served from tanks. Second, the proposed project will reduce the complexity of operating the system. The four existing pump stations will be reduced to one. Finally, the transmission and storage infrastructure provides fire flow and peak day demand capability for a 50-year planning horizon, to existing and future developments. There remains an unresolved water quality issue that will
need to be addressed during final design. This issue involves water storage turnover time in the water tank during periods of low demand (i.e. winter).

The estimated Total Project Cost for the recommended alternative is $11,190,000. Table 1 presents a proposal for staging the funding and construction of the project over six years.

Financing the project with the Wyoming Water Development Commission (50%/50% grant loan) would require about a $0.33/1000 gallon water rate increase.

3.0 North of Laramie Service Area - Discussion

The scope of work includes a study of water supply infrastructure that can be provided by Laramie to the potential service area immediately North of Laramie, which is delineated in Figure 2. In this potential service area there have been requests for water from private entities. Also, the City anticipates that development will occur in the area, resulting in more requests for water. Although the Spur Wellfield Project was not specifically developed to be a water supply for North of Laramie, it is favorably located to be evaluated as such.

Figure 2 presents a water storage and transmission system conceptual design that meets the study criteria, and one that takes advantage of the existing infrastructure and water supply capability of the Spur Well Field project. The project has a reconnaissance level cost estimate of $17 million dollars. At this time, the City is not interested in constructing this project.

4.0 Existing 20-Inch Transmission Line

The Level I Master Plan (WWC, 1995) identified water transmission pipeline rehabilitation as a needed activity for continued use and for new water supply development from the Laramie River. Previously completed projects have rehabilitated the 36-inch line and portions of the 20-inch and 24-inch pipelines. This study recommends a rehabilitation program that addresses remaining deficiencies on the 20-inch and the 24-inch pipelines.

Five rehabilitation alternatives were examined. The recommended rehabilitation plan (Alternative No. 5) includes installing pipeline cathodic protection on 10.2 miles of pipeline and direct replacement of 0.3 miles of pipeline. Figure 3 presents the rehabilitation plan. One area of concern is the Riverside Drive (Segment E). The recommended alternative calls for joint bonding protection on this segment, as opposed to replacement. This rehabilitation method does not provide the same level of reliability that replacement provides. Annual costs to maintain the cathodic protection system and perform occasional leak repair should be expected and may range
from $5,000 to $20,000. Despite this additional annual cost, the economics of rehabilitation were shown to be more favorable than replacement in a life cycle cost evaluation.

The Total Estimated Project Cost for the recommended Alternative No. 5 is $2,900,000. Financing the project with the Wyoming Water Development Commission (50%/50% grant loan) would require about an $0.09/1000 gallon water rate increase.
Table 1 - Staged Construction Proposal for East Laramie Design Alternative A-1.2

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$11,190,000
200 HP PUMP STATION
EXISTING 8 MG TANK

FIGURE 1
PREFERRED ALTERNATIVE A-1.2
LARAMIE NORTH SIDE SUPPLY PROJECT, LEVEL II
WYOMING WATER DEVELOPMENT COMMISSION

LEGEND
- PROPOSED PIPELINES
- EXISTING PIPELINES

SCALE
0 1500 FT.
SEGMENT A1
JOINT BOND 20" AND 24" PIPE (22,650') AND INSTALL TWO IMPRESSED CURRENT CATHODIC PROTECTION STATIONS

BEGIN STA. 330+97 — SEGMENT A2
JOINT BOND 20" AND 24" PIPE (12,117')

END STA. 452+14

SEGMENT B, E, C & D
JOINT BOND 20" AND INSTALL IMPRESSED CURRENT CATHODIC PROTECTION STATION

FREeways VAULT
APPROX. STA.
1045+50 AND
1047+32

SEGMENT F & G
REPLACE 20" PIPE ACROSS LARAMIE RIVER AND SURGE/BLOWOFF VAULT

NOTES:
1. PIPELINE ALIGNMENTS ARE APPROXIMATELY SHOWN.
2. PIPELINE STATIONING WEST OF 800+00 IS BASED ON THE PLANS FOR THE 24" TRANSMISSION LINE PREPARED BY J.T. BANNER & ASSOCIATES, 1972. IT IS APPROXIMATE ONLY. STATIONING EAST OF 800+00 IS BASED ON PLANS FOR THE 24" TRANSMISSION LINE PREPARED BY R.J. TPTON AND ASSOCIATE ENGINEERING, 1945.
3. RECOMMENDATIONS APPLY ONLY TO PORTIONS OF 20" AND 24" SYSTEM THAT HAVE NOT BEEN ADDRESSED UNDER PREVIOUS PROJECTS.