EXECUTIVE SUMMARY
CITY OF RAWLINS
WATER SUPPLY PROJECT, LEVEL II

June 4, 1998
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WATER SUPPLY PROJECT, LEVEL II

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I. BACKGROUND

The City of Rawlins obtains water for municipal uses from springs in the upper Sage Creek Basin from an artesian wellfield in the Nugget Aquifer south of Rawlins, and from the North Platte River. Figure ES-1 shows the location of the three sources. Water from the springs and wellfield is transmitted to Rawlins in a steel pipeline that was installed in the late 1980’s. The water may be stored in two reservoirs near the water treatment plant (WTP), or it can enter the plant directly for treatment and distribution to the City. North Platte River water can be pumped to the WTP for treatment via existing pipelines. However, the pumping and delivery system is old and deteriorating, making the system less reliable.

II. STUDY NEEDS

Water demand in Rawlins is expected to increase sharply in the period 1998-2000 with the construction of an addition to the existing correctional facility. Also, the City would like to understand the water supply development needs for a 50-year planning period, assuming moderate service area growth. The City would like to ensure water supplies are sufficient to accommodate the projected growth.

In typical summers, City water demand exceeds the supply available from the reliable Sage Creek Springs and the Nugget Wellfield supplies. This supply deficit is met by providing water previously stored in Peaking Reservoir and Atlantic Rim Reservoir, however, water in reservoir storage can have serious taste and odor problems. The diatomaceous earth filter treatment plant is not capable of treating water for taste and odors and the City needs to understand alternatives and costs associated with treating the reservoir water.
FIGURE ES-1

PROJECT AREA

WATER SUPPLY PROJECT, LEVEL II, PHASE II
CITY OF RAWLINS, WYOMING
III. PHASE I - STUDY SUMMARY

In June 1997, Western Water Consultants, Inc. (WWC) was retained by the Wyoming Water Development Commission (WWDC) to perform a Level II study of the Rawlins water supply system. The study was to be performed in two phases.

The Phase I study results are included in a WWC report titled “City of Rawlins Water Supply Project, Level II, Phase I”, dated November 14, 1997. The Phase I study included a characterization of existing and projected water demands, an inventory of existing water supply capabilities, and the preparation of feasibility level conceptual designs for water supply development projects and for projects that would improve treated water quality.

Based on this study, the City decided to pursue additional study of the North Platte delivery system to provide additional water and pretreatment capabilities at the treatment plant to address taste and odor problems. This is the focus of the Phase II study.

IV. PHASE II – STUDY SUMMARY

North Platte Delivery System

The Phase II study presents a route evaluation of three alternative pipeline corridors between the North Platte River and the existing water treatment plant, and refined design concepts and cost estimates for the projects. The three pipeline routes are shown on Figure ES-1. Each of the delivery system alternatives are capable of pumping the existing 2.31 cfs water right owned by the City and the Union Pacific Railroad.

Table ES-1 presents estimated capital and operational costs and identifies several advantages and disadvantages for each route. Based on the information in Table ES-1, WWC recommends that the Sinclair Intake, Route C, be the priority route for design and construction.
Table ES-1 - Route Evaluation Summary
Rawlins Water Supply Project, Level II

<table>
<thead>
<tr>
<th></th>
<th>Route A</th>
<th>Route B</th>
<th>Route C</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Rattlesnake Butte</td>
<td>Ft. Steele</td>
<td>Sinclair Intake</td>
</tr>
<tr>
<td>Estimated Total</td>
<td>$6,210,000</td>
<td>$6,310,000</td>
<td>$5,630,000</td>
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<tr>
<td>Project Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Annual</td>
<td>$83,000</td>
<td>$83,000</td>
<td>$83,000</td>
</tr>
<tr>
<td>Operation and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Advantages

1. Best potential for conversion to alluvial intake system
2. Poorest access for O&M
3. Intake area located in relatively unstable reach of river. Potential for meander cut-off
4. Raw water tap for Sinclair refinery should be cheaper
5. ROW corridor along Highway 76 would provide for treated water supply line to serve east Rawlins area

Disadvantages

1. Best access for O&M
2. Existing Facility
3. Poorest potential for conversion to alluvial intake system

Water Treatment Plant Improvements

The Water Treatment Plant Improvements project was identified during the Phase I study as a preferred solution that will address current and future water treatment problems.

The existing water treatment plant for Rawlins, has diatomaceous earth (DE) filters without any pretreatment processes. The water treatment plant needs to be improved by adding a pretreatment system. The purpose of the pretreatment is to improve the quality of the drinking water for taste and odor and overall quality, and also to provide adequate treatment processes if North Platte River water is added as a drinking water source.

The existing problems with the water quality include extreme taste and odor problems. The new Enhanced Surface Water Treatment Rule (ESWTR) will require
production of higher quality drinking water including water with less turbidity. The pretreatment processes proposed for the Rawlins water treatment plant will accomplish all of these treatment goals of: 1) reducing taste and odor, 2) improving the turbidity removal to meet more stringent regulations, 3) providing adequate treatment so that North Platte River water can be used as a water source.

A conceptual design and project cost estimate was prepared for the water pretreatment system. The design includes powdered activated carbon addition, sand-ballasted clarification, potassium permanganate addition, and modification of the existing disinfection process. A schematic of pretreatment process is shown on Figure ES-2. The total project cost estimate is $3,750,000, which includes pilot plant testing. The additional operation and maintenance expenses for this process were estimated to be $126,000, for three months of operation at 6 MGD.

V. PROJECT FINANCING AND SCHEDULE

The current project funding needs, alternatives, and constraints are presented in Table ES-2. The information in Table ES-2 was used to perform a financing and scheduling analysis. The objective of the analysis was to determine if there is a project scheduling scenario that will allow the City to construct the projects without having to issue bonds or obtain short term loans. The results of the evaluation were:

1. Short term financing will be necessary if the City designs and constructs both projects concurrently, beginning in 1998. Short term financing costs were estimated to be $230,000 for this concurrent project construction scenario. This is the preferred option for solving the City’s water supply and taste and odor problems.

2. If the City designs and constructs the Water Treatment Plant Improvements project first, followed by design and construction of the North Platte Delivery System, then the short term financing can be reduced. The short term financing cost is estimated to be $100,000.

3. The only project schedule that may be able to avoid short term financing includes constructing the North Platte Delivery System project first, and delaying construction of the Water Treatment Plant Improvements project until late 2002. There are several disadvantages of this schedule that make it the least desirable option.
POWDERED ACTIVATED CARBON ADDITION

(MIXERS)

RAW WATER PIPELINE

POWDERED ACTIVATED CARBON CONTACT TANKS

MICRO-SAND & POLYMER ADDITION

COAGULANT ADDITION

TUBE SETTLER

POTASSIUM PERMANGANATE ADDITION

WETWELL PUMPING TO DE FILTERS

TO MICRO-SAND RECYCLE & SLUDGE DISPOSAL

SAND-BALLASTED CLARIFICATION (ACTIFLO)

RAWLINS WATER TREATMENT PLANT PRETREATMENT PROCESSES SCHEMATIC
Table ES-2 - Project Financing Needs, Constraints and Assumptions
Rawlins Water Supply Project, Level II

<table>
<thead>
<tr>
<th>Project</th>
<th>Carbon County Capital Facilities Tax</th>
<th>Outside Agency</th>
<th>Total Estimated Project Cost (Millions)</th>
</tr>
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<tbody>
<tr>
<td>North Platte Delivery System</td>
<td>2.252</td>
<td>3.378</td>
<td>5.63</td>
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<tr>
<td>Water Treatment Plant Improvements</td>
<td>1.875</td>
<td>1.875</td>
<td>3.75</td>
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<tr>
<td>Totals</td>
<td>4.127</td>
<td>5.253</td>
<td>9.38</td>
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NOTES:

1. **Carbon County Capital Facilities Tax.** This optional sales tax, effective January 1, 1998 is projected to generate 4.375 million dollars over six years. The money is earmarked for use on both projects. Current receipts through February, 1998 are essentially as projected.

2. **Wyoming Water Development Commission.** The City has secured a 60% grant on the total estimated project cost for the North Platte Delivery System. The money will be set aside in a state account so that project expenses will be paid at 60% as invoices are received. Final payments to project contractors (engineering and construction) must be made from this account no later than July 1, 2002.

3. **Wyoming State Loan and Investment Board.** The City plans to submit two requests to this agency for funding 50% of the total project cost. The first application will be in April 1998 and will be a request to cover 50% of the pilot plant study and the final design engineering for the plant. This grant, if awarded, cannot be used until July 1998. The second request is anticipated to be in April 1999 and be for 50% of the construction and construction administration costs. If this grant is awarded, it cannot be used until July 1999.

4. **North Platte Delivery System Total Estimated Project Cost.** As presented in Chapter 2.0, the cost for this project assumes that Route C to the Sinclair Intake is constructed.

5. **Water Treatment Plant Improvements Total Estimated Project Cost.** As presented in Chapter 3.0, the cost for this project is dependent on the results of the pilot scale testing work, which has not yet been conducted.