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WYOMING WATER DEVELOPMENT COMMISSION

MEETEETSE REGIONAL WATER SUPPLY

MASTER PLAN - LEVEL I

EXECUTIVE SUMMARY

OCTOBER 1995

PREPARED BY:



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RIVERTON, WYOMING

IN ASSOCIATION WITH:
WESTER-WETSTEIN & ASSOCIATES, INC.
MORRISON-MAIERLE/CSSA

WYOMING WATER DEVELOPMENT COMMISSION

MEETEETSE REGIONAL WATER SUPPLY

MASTER PLAN-LEVEL I

EXECUTIVE SUMMARY

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October 1995

EXECUTIVE SUMMARY

INTRODUCTION

The Town of Meeteetse is situated on the Greybull River in northwest Wyoming. It is 40 miles south of Cody and 50 miles north of Thermopolis, the other two closest communities. Historically, the community has served as a trade center for the local ranching and oil industry. More recently, tourism has become an increasingly important component of the local economy. Since 1940, the population has ranged between 370 and 510 people. The 1990 population was nearly the same as the 1940 population, 370 people.

In the last two years the town has been approached by two different rural entities asking whether potable water service could be made available to them.

The area that could potentially be served by the Meeteetse system extends from 5 miles above town to several miles below town. It was decided by the WWDC that a Level I Regional Water Master Plan should be conducted to determine how the outlying areas might best be served.

CONCLUSIONS AND RECOMMENDATIONS

The focus of the Meeteetse Regional Water Master Plan is to investigate the demand for potable water service in the Meeteetse area and plan for meeting those needs. In the course of this planning effort, the following conclusions and recommendations have been reached.

Conclusions

- * Meeteetse's present water system is adequate for the area's present and expected population at the year 2015.
- * The potable water demand in the Meeteetse region by the year 2015 will probably be somewhere between 70,000 and 110,000 gallons per day with a population between 520 and 660 people. Not all of those people will be on a central system by that time.
- * The average day use in Meeteetse has been 168 gallons/person/day over the last 11 years.
- * The average production cost of potable water in Meeteetse's system has been \$3.61/1000 gallons over the last four years.
- * There is no presently identifiable groundwater source that would provide adequate quantities of acceptable quality water to augment future needs.

- * A majority of the rural residents living north of town who responded to the study questionnaire indicated that, at present, they are not interested in a central water system given the required user fees.
- * A major new subdivision is being developed immediately southeast of town. Annexing and supplying water to the Antelope Ridge Golf Estates will not affect town water rates.
- * The town's distribution system is adequate for present and forecast service and fire protection needs in town and can deliver needed water to rural areas without modification.
- * The town's water treatment plant intake and combination presedimentation basins/backwash facility need extensive work.
- * The treatment plant is capable of meeting foreseeable future water treatment requirements and supplying a population of about 770 people.
- * The transmission system is capable of serving approximately 900 people.
- * The storage system has the capacity to serve approximately 1,000 people.
- * The town's distribution system is comprised mostly of asbestos cement pipe. This pipe is no longer manufactured. Maintenance and regulatory issues may become more complex with this pipe in the future.
- * The water treatment plant is the weakest link in the system.

Recommendations

- * The rural residents north of town should form a rural water district if they wish to further pursue a central water system.
- * The town's Wood River diversion structure should be reconstructed if the plant is to remain in its present location for more than five years.
- * The following improvements should be planned for the water treatment plant if it is to remain in its present location for more than the next five years.
 - ❖ Reconstruct the presedimentation basins.
 - ❖ Add pretreatment chemical feed capabilities to the head of the

presedimentation basins.

- ❖ Construct a separate backwash pond.
 - ❖ Construct a spill containment curb around the chemical feed equipment in the plant.
 - ❖ The town should contract with an independent operation trouble shooting expert to fine tune chemical feed in the treatment process.
 - ❖ Place constant rate blowdown valves on the sludge waste lines on the sedimentation basins.
- * Repaint the interior of the 16,000-gallon storage tank.
 - * Replace all 4-inch fire hydrants and their leads on Hayes Street.
 - * Through a WWDC Level II investigation, evaluate the long term economics of continuing to use the present treatment plant and site versus relocating treatment operations and source of supply to the Lower Sunshine Reservoir.

DEVELOPING SOLUTIONS

The evaluation of rural service needs in the Meeteetse region focused on the area north of town. This involved two areas: the Mary Avenue and Sayles Lane area immediately across the Greybull River from town and the Vision Quest area 1½ miles north of town.

The Vision Quest system is privately owned and operated. Because of the number of service connections, it falls under the Safe Drinking Water Act administered by the EPA. Over the past several years, EPA has been in contact with Vision Quest numerous times concerning the owner's attempts to comply with required testing and his efforts to meet water quality standards. The groundwater from the subdivision central well does not meet EPA standards. There is little that the system owner can do to alleviate the problem. In all likelihood, the compliance problems for this water system will persist until another source of water can be secured.

The Town of Meeteetse owns and operates the only water system in the region that complies with EPA drinking water standards. It is also the only system that offers any capacity to serve additional users.

Supply Alternatives

Area ground water supplies are typically high in mineral content and of low quality. The Level I

investigation looked at existing ground water sources within a ten-mile radius of town. The existing sources were all found to be of poor quality. None of the geologic formations in the area offer any promise of either a meaningful quantity of water or acceptable quality.

The Town of Meeteetse holds 2.5 second feet of water rights on the Wood River and in Lower Sunshine Reservoir. The town currently treats water from the Wood River. The reservoir supply may offer significant treatment advantages. The supply would be much more consistent in both temperature and turbidity.

General

There are some deficiencies in the town's existing system that need to be corrected for the system to operate efficiently and to be operated with the degree of control that is necessary under today's standards.

Diversion Structure

The snowmelt flood water in 1995 severely damaged the upstream headwall of this structure. It appears that the foundation in this portion of the headwall was severely scoured and undermined.

Because the headworks structure is in a dilapidated condition and has been damaged by 1995 flood waters, it should be reconstructed if the town is going to continue long term use of the Wood River as its source of supply.

Treatment

Following diversion, water can be run through presedimentation basins prior to being pumped into the plant. The present presedimentation basins act as both settling and backwash ponds. This is an undesirable situation. Discharging the sludge and backwash water to the presedimentation basins is discouraged because it increases the potential concentration of any giardia and chryptosporidium that may exist in the influent stream. New presedimentation basins and a separate backwash pond should be constructed.

The water treatment facility is a conventional plant. The processes include chemical feeding, mixing, flocculation, settling, filtration by dual media filters, and chlorination. In the course of the evaluation, it was decided that improvements to the plant operation could result in enhanced efficiencies. Because the Wood River water is so difficult to treat, these enhancements in process management need to be developed through a team effort between the town's operators and an operational expert.

It is strongly recommended that Meeteetse contract with an independent operations specialist to troubleshoot the appropriate chemicals for treatment and recommend adjustments to operating parameters. This independent professional should not be an employee of any chemical supply

company but be free to investigate the products of several companies to get the right combination of chemical feeds. Once this is accomplished, the plant should run much more efficiently. Filter runs should be 20 or more hours instead of the current eight hour or shorter runs.

Another problem is the way sludge is wasted from the sedimentation basins. As a minimum, the method of sludge wasting should be changed to intermittently waste sludge independent of filter backwash.

Assuming optimal operation, the treatment plant has the capacity to serve a population of approximately 770 people.

Transmission System

The transmission line was constructed in 1987 and is in very sound condition. Assuming a maximum day consumption of 540 gallons per person, the line has a capacity to serve a population of about 900 people.

Storage

The town's storage system consists of three tanks. Two small tanks at the plant have a combined capacity of 62,000 gallons. The main tank in town has a capacity of one-half million gallons.

The present storage system can adequately serve a population of about 1,000.

Distribution System

The distribution system is laid out such that all platted lots within town have access to a water main. Most of the mains are made of asbestos cement pipe which is no longer manufactured. Some of the more recently installed mains are PVC pipe. The distribution system is in good condition and provides adequate service and fire protection to the town.

The system's only weakness is that the fire hydrants and leads on the Park Avenue line are all 4 inches. We recommend that these be replaced with 6-inch leads and hydrants.

Feasibility of Separate Irrigation System

In the course of this study the feasibility of a separate raw water irrigation system was explored. The system could pipe irrigation water to all of the lots in town. The system could have the advantage of providing irrigation water during the summer months. The town then would not have to incur the cost of treating water to be used for irrigation purposes.

Savings that could be realized include reduced labor and chemicals of about \$9,500 per year.

Given the \$300,000 cost of the raw water system, its construction cannot be justified by yielding savings of only \$9,500 per year.

CONCEPTUAL COST ESTIMATES

The cost of the recommended improvements is summarized below:

New Diversion Structure	\$105,000
New Presedimentation Ponds	\$105,000
Backwash Pond Facilities	\$163,000
Treatment Plant Improvements	\$ 14,500
Fire Hydrant Replacements	\$ 40,000

ABILITY-TO-PAY

The potential rural users north of Meeteetse need to form a water district before further pursuing a central water system. At this time (November 1995) the people in that area have not pursued formation of a district. Monthly user rates of \$100 to \$130 will be required to support a rural system in this area.

The Town of Meeteetse has limited ability to generate local revenue to match state funds that may be offered them to assist with the recommended improvements. The town has only been able to commit \$48,000 per year to capital improvements over the last four years. At that rate of investment, it will take the town more than five years to accomplish the needed improvements of \$203,000, assuming the town's revenues remain constant.

SUMMARY OF FUNDING SOURCES FOR RECOMMENDED IMPROVEMENTS

WWDC Meeteetse Regional Water Master Plan

September 26, 1995

Project Description	WWDC (67%)	F.L.B. (50%)	Local	Total
Raw Water Irrigation System				Not Recommended
Wood River Diversion Structure	\$70,484		\$34,716	\$105,200
Water Treatment Plant Modifications				
Presedimentation Basin		\$52,500	\$52,500	\$105,000
Backwash Pond		\$81,600	\$81,600	\$163,200
Repaint 16000 Gal. Tank			\$6,200	\$6,200
Chemical Area Spill Curb			\$500	\$500
Independent Operator Consultant			\$5,800	\$5,800
Sed. Basin Blowdown Valves			\$2,000	\$2,000
Fire Hydrant Replacements, Hays St.		\$20,000	\$20,000	\$40,000
Diversion From Dam Penstock				May be recommended in Level II Report
TOTALS	\$70,484	\$154,100	\$203,316	\$427,900

Notes: WWDC Funding is generally 67% grant and 33% loan at 4% for 25 years
 Farm Loan Board Funding is generally 50% grant and 50% loan at 7.25% for 25 years.
 Rural Development (Farmer's Home Adm.) funding may be available for some parts of the above projects

The Wood River Diversion Structure should be reconstructed only if the Level II report recommends continuing to use the Wood River as the town's water source.