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1 INTRODUCTION

1.1 Purpose

The purpose of this study was to perform a Level II, Feasibility Study for the Sunset Ranch Water District. This included determining all pertinent aspects of required system infrastructure to meet the District's short-term and long-term needs including sources of supply, storage, transmission, and distribution.

This study provides a planning tool to help the Sunset Ranch Water District develop a new rural community water system.

1.2 Summary of Recommendations

1.2.1 Water Supply

There is no new undeveloped source of water supply planned for the Sunset Water District. Sunset will obtain water supply through a connection to the City of Newcastle water system. The planned connection will be at the Newcastle Tank No.3. The tank is north of the District near the State of Wyoming Honor Farm. There are no improvements related to the City's wells in relation to this water supply.

1.2.2 Storage

No additional water storage facilities are recommended for the Sunset District at this time. The Newcastle water system tank No.3 will provide adequate storage to meet the District needs.

1.2.3 Transmission

The proposed water system is being sized to provide water only. No fire protection is designed for the system.

To supply water from Newcastle Tank #3 to the District boundary we recommend the installation of a 6” Class 150 PVC water line. The proposed 6” PVC transmission main would be routed approximately as shown on Figure 1-1. The route would take it across property owned by The State of Wyoming, Michael and Denise McGinty, Kenneth and Joyce Avery, Jerry Varner, and James Piana. Right-of-way and access easements will be required for the routing of the transmission main.

The portion of the proposed system that runs along Musser Road (a County road) within the District would also be considered part of the transmission system. This portion of the system could possibly be extended in the future to serve other homes outside of the current district or possibly make an additional inter-tie to the City (if the City system ever expands into the area). It is recommended that this part of the
system be constructed of 6" Class 200 PVC because of the higher pressures in the portion system. This line should be constructed within the road right-of-way.

1.2.4 Distribution

The proposed distribution system would be made up of 4" Class 200 PVC and be routed as shown in Figure 1-1. The higher rated pipe is used because of the higher pressures in the system. We recommend that the district uses the higher strength pipe in the system and regulates the pressures at each service connection with a service line pressure-reducing valve. However for purposes of the cost estimate we included a pressure-reducing valve in the transmission system.

1.3 Earlier Work

There has not been any previous engineering evaluation for a new water system to serve the Sunset area. Two projects have been completed focusing on the adjacent areas, however, and are directly applicable to Sunset. These include:

- Level 1 Water Supply Project, Salt Creek Water District, Newcastle, Wyoming prepared by R.C.H. Associates and submitted to the Wyoming Water Development Commission, December 1996; and


2 WATER SUPPLY DEMAND

2.1 Population and Service Area

Figure 2-1 shows the locations of the Sunset service area in proximity to Newcastle, Wyoming. This section provides information concerning current and future population in the service area, the associated water demands, and the requirements for water system infrastructure.

The existing Sunset service area is estimated to have the potential for about 51 lots over an area of 107 acres. Part of the subdivision was platted into 12-lots and then later merged. Assuming this type of subdivision reoccurs, the subdivision would grow to 51 lots. There are presently 37 owners, resulting in an effective average lot size of 2.9 acres. The estimated present population is 93 based on 2.5 people per dwelling unit. If all 51 lots were developed, the full build out population is estimated at 100, which is estimated to occur by year 2033. Sunset is presently developed to 72% of the estimated full build.
Figure 2-1
Canyon and Sunset Service Area Boundaries

Western Groundwater Services
The Level II Study completed for the Newcastle area (Wester-Wetstein 2000) provides information on population that is used here. This study utilized U.S. Census Bureau and State of Wyoming data and analysis to determine an average growth rate for the area of 1.05% per year. This growth rate is applied here to estimate changes in population.

Figure 2-2 shows the growth potential of the Sunset service area based on the 1.05% growth rate. In order to achieve the full build out population, owners of multiple lots would need to sell vacant parcels, and subdivision of the previously platted 12-lot area would need to occur. Sunset presently has an estimated 37 Equivalent Dwelling Units (EDUs). At full build out, a total of 51 EDUs may occur, as shown on Figure 2-3.

2.2 Water Use Rates

Compilation of water use statistics for the Newcastle area has been completed for the City of Newcastle and surrounding water districts (Wester-Wetstein 2000). A summary of average day demand pertaining to the period from 1998 to 2000 is provided in Table 2-1.

<table>
<thead>
<tr>
<th>Units</th>
<th>Newcastle</th>
<th>Salt Creek</th>
<th>Blacktail</th>
<th>West End</th>
<th>Cambria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallons per day (gpd)</td>
<td>731,900</td>
<td>112,900</td>
<td>56,200</td>
<td>33,730</td>
<td>13,740</td>
</tr>
<tr>
<td>Gallons per minute (gpm)</td>
<td>508</td>
<td>79</td>
<td>39</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>Population</td>
<td>3,265</td>
<td>510</td>
<td>--</td>
<td>300</td>
<td>130</td>
</tr>
<tr>
<td>Gallons per capita day (gpcd)</td>
<td>225</td>
<td>222</td>
<td>--</td>
<td>112</td>
<td>106</td>
</tr>
</tbody>
</table>

Data of this table were obtained from Wester-Wetstein (2000) Table 2-8.

2.2.1 Standard Average and Peak Rates

Of the data tabulated above, the unit water use rate pertaining to the West End Water District is considered most applicable to the Sunset service areas. West End Water District serves a residential population from a new water system constructed in 1985. The proposed Sunset system will also be new construction, and is expected to have similar or less leakage to that of the West End Water District. The Sunset service area presently does not include commercial use, or is likely to include significant commercial water use in the future. We used a 125 gpm average water use rate to meet the Wyoming Water Quality Rules and Regulations, Chapter 12, Section 8(a), requirement that states where water use records are not available to establish water use, the equivalent per capita water use shall be at least 125 gpd for the average daily water demand.
Figure 2-2
Sunset Population and Lot Size
Figure 2-3
Sunset Equivalent Dwelling Units
Maximum day demand and maximum hour demand are estimated from the average day demand by applying peaking factors. A peaking factor of 2.5 is used here in order to estimate maximum day demand from average day demand. This peaking factor is consistent with values tabulated for other Wyoming water systems, and was also used in the 2000 Newcastle Level II Study. The maximum hour demand has been estimated from the maximum day demand by applying a peaking factor of 1.5, as is commonly used for estimating this parameter in municipal water systems. Table 2-2 summarizes the estimated water use rates for Sunset under present conditions and for selected future years. Figure 2-4 shows the change in water use rate with increasing population.

### Table 2-2
**WATER USE RATES**

<table>
<thead>
<tr>
<th>Water Use</th>
<th>Sunset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2003</td>
</tr>
<tr>
<td>Average Day Demand (gpm)</td>
<td>8</td>
</tr>
<tr>
<td>Average Day Demand (gpd)</td>
<td>11,566</td>
</tr>
<tr>
<td>Maximum Day Demand (gpm)</td>
<td>20</td>
</tr>
<tr>
<td>Maximum Hour Demand (gpm)</td>
<td>30</td>
</tr>
</tbody>
</table>

Rates shown are based on present and projected population in the service area, a per capita average day demand of 125 gallons, and peaking factors described above.

Water use in the Sunset District is considered low rate and low volume over the planning period. Due to limited land area, these rates are controlled for the Sunset water system.

#### 2.2.2 Potential Peak Based on AWWA M22 Manual

The peak rates as discussed in the previous section are adequate to use in the modeling of a system as long as the system is being designed to provide fire flows. The fire flow sizing more then adequately accounts for the possible peak demands experienced in a water system that are sometimes well beyond the estimated peak hour demands. To determine the possible peak rates experienced in the system, methods described in the American Water Works Association, *Sizing Water Service Lines and Meters – Manual of Water Practices M22*, Second Edition (AWWA-M22) were used.

Although water use in Sunset Ranch District is considered low rate and low volume over the planning period, the District’s potential service area has acreage that could be developed to higher density. For estimating the potential future peak that could occur in the proposed system, the private lands that are being crossed with the proposed waterline were broken into 40-acre parcels and then 5-acre lots. There was also 20 acres south of the District boundary that was included in this estimate.
Figure 2-4
Sunset Projected Water Demand
These are also the lands that have been or are being annexed into the District. Based on this breakdown there is a potential forty-three additional 5-acre lots. Adding the existing 36 lots in the Subdivision gives a total of 79 potential lots in the district.

Table 2-3 tabulates the peak demand data determined for both the year 2033 population and for the estimated full build out of 79 lots. It can be seen by this data that the potential peak in the system is much higher than was determined as the peak hour demand in the pervious section. For the 2033 estimated population the demands are 199 gpm (AWWA-M22) as compared to the 41 gpm standard peak hour determination.

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Number</th>
<th>Fixture Value gpm</th>
<th>Total Fixture Value gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet (Tank)</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Faucets (Lavatory)</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
</tr>
<tr>
<td>Faucets (Kitchen Sink)</td>
<td>1</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Faucets (Utility Sink)</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Clothes Washer</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Bathtub</td>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Shower Head</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Hose Bibs (5/8&quot;)</td>
<td>2</td>
<td>9</td>
<td>18</td>
</tr>
</tbody>
</table>

**TOTAL FIXTURE VALUE (TFV) (per lot)**  55.2

Assume 51 lots (2033 Population) for total Fixture Value (51 x TFV)

**Total Fixture Value for Subdivision = 2,815.2**

**Peak Demand (gpm) estimated from AWWA-M22 Manual Fig 4.3 = 170**

Applying a pressure factor of 1.17 from table 4.1(AWWA-M22) to adjust to an average working pressure of 80 psi, The DEMAND (gpm) = 198.9

Assuming a full build out of 79 lots (79 x TFV)

**Total Fixture Value for Subdivision = 4,360.8**

**Peak Demand (gpm) estimated from AWWA-M22 Manual Fig 4.3 = 210**

Applying a pressure factor of 1.17 from table 4.1(AWWA-M22) to adjust to an average working pressure of 80 psi, The DEMAND (gpm) = 245.7
2.3 Supply Requirements

Sunset is presently without a centralized water system. The entire demand must be satisfied by new supply. Table 2-4 summarizes the supply requirements for the proposed water system based on the year 2003 service population, and also the projected year 2033 service population.

Sources of supply, such as wells, must provide a capacity equal to the maximum day demand. A two-well system is preferred for a public water system. In a two well system, the maximum day demand is satisfied by two wells, and the average day demand is satisfied with the largest well out of service. A one-well system is allowable when accompanied by storage equal to two times the maximum day demand (WDEQ-WQD, CH.12, Sec 9, (b)(i)).

System infrastructure such as piping and booster pump stations, are based on maximum hour demand, and optionally, maximum hour demand plus fire flow. As shown in Table 2-3, a fire flow rate of 500 gpm is applicable to the Sunset District. This rate dominates the flow requirements for the water system, should fire flow provisions be included (fire flow requirements are discussed in detail in section 4 of this report).

System storage reservoirs shown in Table 2-3 reflect the minimum requirement and are sized based on the criteria of the average day demand for the Sunset system. Neither of these storage reservoir sizes includes fire flow. The 500 gpm fire flow rate for a two hour period results in an additional 60,000 gallons of storage. If fire flow provisions are designed into the water system, the fire flow storage must be added to the minimum storage volumes shown in the Table.

<table>
<thead>
<tr>
<th>Description</th>
<th>Sunset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 2003 Service Population</strong></td>
<td></td>
</tr>
<tr>
<td>Maximum day demand (gpm)</td>
<td>20</td>
</tr>
<tr>
<td>Maximum hour demand (gpm)</td>
<td>30</td>
</tr>
<tr>
<td>Fire flow (optional) (gpm)^a</td>
<td>500</td>
</tr>
<tr>
<td>Storage (no fire flow) (gal)^b</td>
<td>11,600^d</td>
</tr>
<tr>
<td><strong>Year 2033 Service Population</strong></td>
<td></td>
</tr>
<tr>
<td>Maximum day demand (gpm)</td>
<td>27</td>
</tr>
<tr>
<td>Maximum hour demand (gpm)</td>
<td>41</td>
</tr>
<tr>
<td>Fire flow (optional) (gpm)^a</td>
<td>500</td>
</tr>
<tr>
<td>Storage (no fire flow) (gal)^b</td>
<td>16,000^d</td>
</tr>
</tbody>
</table>

TABLE 2-4
SUPPLY AND MINIMUM STORAGE REQUIREMENTS
A Fire flow rate is required for two hours from a storage reservoir.
B Storage volumes do not include additional fire flow volume of 60,000 gallons.
C Storage volume based on two times maximum day demand.
D Storage volume based on average day demand applicable to small two-well systems.

3 WATER SUPPLY ALTERNATIVES

This section provides information on water supply sources that exist in the local area of the proposed Sunset water system. Information is provided on existing water supply wells owned and used by local water districts and the City of Newcastle.

3.1 Existing Wells

Successful water supply wells in the area are invariably installed to produce groundwater from the Madison Formation. This formation consists of limestone, and has permeability due to fracturing and dissolution of the rock. It receives groundwater recharge primarily where the rocks rise to the surface along the Black Hills to the northeast of Newcastle. Table 3-1 provides a summary of existing Madison wells in the area, and Figure 3-1 shows the well locations.

<p>| TABLE 3-1 |
| CAPACITY OF EXISTING WELLS |</p>
<table>
<thead>
<tr>
<th>Well Name</th>
<th>Owner</th>
<th>Map ID</th>
<th>Pumped(^1) (gpm)</th>
<th>Artesian(^2) (gpm)</th>
<th>Reported(^3) (gpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle No. 1</td>
<td>City of Newcastle</td>
<td>NC-1</td>
<td>806</td>
<td>283</td>
<td>1,000</td>
</tr>
<tr>
<td>Newcastle No. 2</td>
<td>City of Newcastle</td>
<td>NC-2</td>
<td>364</td>
<td>150</td>
<td>500</td>
</tr>
<tr>
<td>Newcastle No. 3</td>
<td>City of Newcastle</td>
<td>NC-3</td>
<td>28</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Newcastle No. 4</td>
<td>City of Newcastle</td>
<td>NC-4</td>
<td>712</td>
<td>104</td>
<td>650</td>
</tr>
<tr>
<td>West End No. 1</td>
<td>West End Water District</td>
<td>WE-1</td>
<td>627</td>
<td>405</td>
<td>535</td>
</tr>
<tr>
<td>Salt Creek No. 1</td>
<td>Salt Creek Water District</td>
<td>SC-1</td>
<td>438</td>
<td>113</td>
<td>400</td>
</tr>
<tr>
<td>Crown No. 1</td>
<td>Crown Hill Subdivision</td>
<td>CR-1</td>
<td>900</td>
<td>0</td>
<td>500</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>3,875</td>
<td>1,055</td>
<td>3,585</td>
</tr>
</tbody>
</table>

\(^1\) Estimated rate for a pumped well either using a surface booster or submersible pump.  
\(^2\) Estimated rate for natural artesian flow directly into the water system at normal system pressure.  
\(^3\) Reported capacity based on discussion with water system technical staff.

Table 3-1 is limited to a list of wells that can be used in a public water system. Other wells are present in the area, including Carlson No. 1 (Water Unlimited), the Sioux Oil Company Well, and the Coronado Oil Company well. Discussion of these wells is provided in Wester-Wetstein (2000). These wells are not considered available for use in a public water system. Of the three, only Carlson No. 1 is of useful capacity,
however, recently the Salt Creek Water District discontinued use of this well due to difficulty in negotiating a long-term contract with the owner.

The Walker well shown on Figure 3-1 is another private well in the area that is not considered available for use in a public water system. This well is used for stock watering and is completed in the top of the Minnelusa Formation. State records indicate an estimated yield of 400 gpm. The well is flowing artesian at a low rate, as can be observed from the Salt Creek Road, which passes within 150 ft of the wellhead. The U.S. Geological Survey conducted water sampling in the well and determined a specific conductance of 2,800 $\mu$S/cm, which indicates substantially greater dissolved ion concentrations than occurs in the Madison aquifer (cf. 600-800 $\mu$S/cm).

3.2 Existing Water Systems

The most feasible supply source for the Sunset District will be to connect to the existing City of Newcastle water system.

The City of Newcastle was contacted to assess the feasibility of connecting the Sunset Water District to the City. Preliminary approval for a supply connection was given by the City council as related through the City Engineer. A copy of the letter sent to the WWDC from the City of Newcastle is included in Appendix A. A final agreement is required prior to the start of construction of the Sunset Water System and connection to the City System.

4 SYSTEM DESIGN AND MODELING

The proposed system was designed to try and provide the Sunset District with the best solution to meet their current and future needs in regards to potable water delivery, fire flow capabilities, system expandability, and optimal financial investments. The system was also designed to meet the WDEQ Chapter 12 requirements. These requirements include the following:

- Section 14,b,i, “The system shall be designed to maintain a minimum pressure of 20 psi at ground level at all points in the distribution system under all conditions of flow. The normal working pressure in the distribution system shall be not less then 35 psi.”

- Section 14,b,ii, “The minimum size of a water main for providing protection and serving fire hydrants shall be 6 inches in diameter when service is provided from 2 directions, or where the maximum length of 6 inch pipe serving the hydrant from 1 direction does not exceed 250 feet, or 8 inches where service is provided from 1 direction only.”
• Section 14,b,iv, “Any main smaller then 6 inches shall be justified by hydraulic analysis and future water use.”

• Section 14,b,v, “Dead ends shall be minimized by looping”.

4.1.1 System Modeling

Computer models were developed to investigate and refine the proposed system layout for the Sunset District. The modeling software used was Haestad Method’s, Cybernet Software – V3.0. Print outs of the modeling data is included in Appendix B. The model was used to investigate the water system’s behavior under varying conditions and demand scenarios. Because the system will be under the most stress during the peak demands (maximum day demands, peak hour demands, and AWWA peak demands), most of the investigative modeling conducted on the system used these demands.

Investigation of the system included both static and dynamic modeling. Static modeling was done to investigate the immediate system responses (such as pressures and velocities) during a single additional operating condition such as a fire flow demand. Dynamic modeling was used to simulate the system responses during longer periods of operation (up to 24 hrs). The dynamic modeling simulates the expected changes to the system components such as tank level changes and well production demands.

Model Setup

A GPS field survey of all the existing homes in the District was done to provide vertical and horizontal data for the model. Additional vertical data required was taken from the USGS 7½ Minute Quad sheets for the area. The background used for the model to verify alignment of roads, streets and homes was a composite of the 1994 DOQQs from the WGIAC Spatial Data Clearing House.

Fire flow Modeling of the System

The model was used to simulate fire flow demands at the various locations throughout the proposed system. The data obtained from the fire flow simulations was used to ensure the proposed system designs had adequate capacity to meet the fire flow demands and maintain the WDEQ standards for minimum and normal working pressures.

Fire protection is optional for the Sunset District. If the District elects to achieve fire flow, the basis for determining associated rate and volume is the Insurance Services Office (ISO) “Fire Suppression Rating Schedule”. In rural areas with a separation distance between dwellings of 100-ft or greater, ISO allows a rate of 500 gpm for the duration of two-hours.
5 STORAGE, TRANSMISSION AND DISTRIBUTION

During the development of this report funding for the proposed new water system was pursued and obtained. Part of the funding for the project will be provided by the U. S. Dept. of Agriculture, Rural Development, Rural Utilities Services (RUS). The RUS will not fund new systems to include fire protection. Therefore the alternatives discussed hereafter is for a potable supply water system only.

5.1.1 Storage Requirements

Storage requirements applicable to the Sunset water system are described in the State of Wyoming, Department of Environmental Quality, Water Quality Rules and Regulations Chapter 12. Section 9(b)(i) identifies that a one-well system is acceptable with finished water storage equal to twice the maximum day demand. Section 13(a)(i)(A) identifies that small water systems with average day demand less than 50,000 gallons shall provide storage volume equal to the average day demand. Section 13(D) identifies that storage is not required where two wells are available and the lower capacity well can provide maximum hour demand, or fire flow, whichever is greater.

The Sunset water system will be most economically supplied from the City of Newcastle water system. Because the City operates a multiple well system, the storage requirement applicable to Sunset is the average day demand. The present population requires a minimum storage volume of 11,600 gallons. At the projected 2033 population, minimum storage volume increases to 16,000. This data was summarized in Table 2-3 of this report.

The Newcastle water system tank No.3 will provide adequate storage to meet the District needs. The existing tank No.3 has a total capacity of 373,000 gallons. Because of this the Sunset District requires no additional water storage facilities at this time.
5.1.2 Transmission and Distribution

By making a connection to the Newcastle system at Newcastle Tank #3, the pressures within the district boundary would range from about 124 psi to 175 psi.

Refer to Figure 1-1, for the map of the proposed Sunset Water System.

Transmitting

To supply water from Newcastle Tank #3 to the District boundary we recommend the installation of a 6” Class 150 PVC water line. The proposed 6” PVC transmission main would be routed approximately as shown on Figure 1-1. The route would take it across property owned by The State of Wyoming, Kenneth and Joyce Avery, Jerry Varner, and James Piana. Right-of-way and access easements will be required for the routing of the transmission main.

The portion of the proposed system that runs along Musser Road (a County road) would also be considered part of the transmission system. This portion of the system could possibly be extended in the future to serve other homes outside of the current district or possibly make an additional inter-tie to the City if the City system ever expands into the area. It is recommended that this part of the system be constructed of 6” Class 200 PVC because of the higher pressures in the portion system. This line should be constructed within the road right-of-way.

Distribution

The proposed distribution system would be made up of 4” Class 200 PVC and be routed as shown in Figure 1-1. The higher rated pipe is used because of the higher pressures in the system. We recommend that the district uses the higher strength pipe in the system and regulates the pressures at each service connection with a service line pressure-reducing valve.

Because of geographical constraints (a deep and steep ravine) the distribution system is not looped between Yucca Circle and Mariposa Circle. Although it is best to have a looped system a flushing program can be implemented on the dead end lines.
6 PREFERRED ALTERNATIVE CONCEPTUAL DESIGN & COST

6.1 Water Supply and Storage

There are no water supply alternatives planned for the Sunset water system. The water system will be supplied from existing City of Newcastle wells, without modification.

No additional water storage facilities are recommended for the Sunset District at this time. The Newcastle water system tank No.3 will provide adequate storage to meet the District needs.

6.2 Transmission & Distribution

Transmission

The follow table provides the cost estimate data for the proposed Sunset Water System Transmission Lines as discussed in Section 5.
### Table 6-1
Proposed Sunset System Transmission Lines – Cost estimate

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>TOTAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install new 8&quot; Water Transmission Main</td>
<td>LF</td>
<td>10,500</td>
<td>$16</td>
<td>$168,000</td>
</tr>
<tr>
<td>2</td>
<td>Install 8&quot; Water Valves</td>
<td>EA</td>
<td>6</td>
<td>$1,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>3</td>
<td>Tees, Bends, Etc.</td>
<td>EA</td>
<td>3</td>
<td>$525</td>
<td>$1,575</td>
</tr>
<tr>
<td>4</td>
<td>Fire Hydrant Assembly/Blow Offs</td>
<td>EA</td>
<td>4</td>
<td>$2,000</td>
<td>$8,000</td>
</tr>
<tr>
<td>5</td>
<td>AV/AR Valves and Vaults</td>
<td>EA</td>
<td>1</td>
<td>$2,625</td>
<td>$2,625</td>
</tr>
<tr>
<td>6</td>
<td>Connect to Tank #3</td>
<td>LS</td>
<td>1</td>
<td>$3,150</td>
<td>$3,150</td>
</tr>
<tr>
<td>7</td>
<td>Vault and Meter</td>
<td>LS</td>
<td>1</td>
<td>$21,000</td>
<td>$21,000</td>
</tr>
<tr>
<td>8</td>
<td>Pressure Reducing Valve and Vault</td>
<td>LS</td>
<td>1</td>
<td>$10,500</td>
<td>$10,500</td>
</tr>
<tr>
<td>9</td>
<td>Seeding</td>
<td>AC</td>
<td>13</td>
<td>$700</td>
<td>$9,100</td>
</tr>
<tr>
<td>10</td>
<td>R&amp;R Road surfacing</td>
<td>SY</td>
<td>580</td>
<td>$2</td>
<td>$1,160</td>
</tr>
<tr>
<td>11</td>
<td>Bonds and Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$25,000</td>
<td>$25,000</td>
</tr>
</tbody>
</table>

Construction Subtotal = $256,110
Construction Engineering (10%) = $25,611
Construction Subtotal = $281,721
Contingencies (15%) = $42,258

Total Construction Costs = $323,979

**NON CONSTRUCTION COSTS**

<table>
<thead>
<tr>
<th>NO.</th>
<th>COST</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Final Designs and Specification</td>
<td>$25,000</td>
</tr>
<tr>
<td>2</td>
<td>Permitting</td>
<td>$2,500</td>
</tr>
<tr>
<td>3</td>
<td>Legal Fees</td>
<td>$3,600</td>
</tr>
<tr>
<td>4</td>
<td>Acquisition of Property and Right of Way</td>
<td>$20,000</td>
</tr>
<tr>
<td>5</td>
<td>Cost of Funding (.5% loan origination fee and the rest Admin expenses)</td>
<td>$10,500</td>
</tr>
</tbody>
</table>

Total Non-Construction Costs = $61,600

Total Estimated Transmission Portion Project Cost = $385,579

USE $386,000.00
Distribution

The follow table provides the cost estimate data for the proposed Sunset Water System Distribution Lines.

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
<th>TOTAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install New 6&quot; Class 200 Water Main</td>
<td>LF</td>
<td>5900</td>
<td>$16</td>
<td>$94,400</td>
</tr>
<tr>
<td>2</td>
<td>Install 6&quot; Water Valves</td>
<td>EA</td>
<td>8</td>
<td>$1,000</td>
<td>$8,000</td>
</tr>
<tr>
<td>3</td>
<td>Fire Hydrant Assembly/Blow Offs</td>
<td>EA</td>
<td>7</td>
<td>$2,000</td>
<td>$14,000</td>
</tr>
<tr>
<td>4</td>
<td>Tees, Bends, Etc.</td>
<td>EA</td>
<td>7</td>
<td>$525</td>
<td>$3,675</td>
</tr>
<tr>
<td>5</td>
<td>Service Connections Complete</td>
<td>EA</td>
<td>36</td>
<td>$1,260</td>
<td>$45,360</td>
</tr>
<tr>
<td>6</td>
<td>Seeding</td>
<td>AC</td>
<td>4.8</td>
<td>$700</td>
<td>$3,360</td>
</tr>
<tr>
<td>7</td>
<td>R&amp;R Road surfacing</td>
<td>SY</td>
<td>3380</td>
<td>$2</td>
<td>$6,760</td>
</tr>
<tr>
<td>8</td>
<td>Bonds and Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$18,000</td>
<td>$18,000</td>
</tr>
</tbody>
</table>

Construction Subtotal = $ 193,555

Construction Engineering (10%) = $ 19,356

Construction Subtotal = $ 212,911

Contingencies (15%) = $ 31,937

Total Construction Costs = $ 244,847

NON CONSTRUCTION COSTS

1 Final Designs and Specification $ 19,000
2 Permitting $ 1,900
3 Legal Fees $ 2,500
4 Acquisition of Property and Right of Way $ 5,000
5 Cost of Funding (.5% loan origination fee and the rest Admin expenses) $ 7,000

Total Non-Construction Costs = $ 35,400

TOTAL ESTIMATED DISTRIBUTION PORTION PROJECT COST = $ 280,247

USE $280,000.00
Total Sunset System

The follow table provides the combined cost estimate data for the proposed Sunset Water System.

Table 6-3
Proposed Sunset Water System – Cost estimate

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
<th>TOTAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6” CLASS 150 WATER LINE</td>
<td>LF</td>
<td>10500</td>
<td>$16.00</td>
<td>$168,000</td>
</tr>
<tr>
<td>2</td>
<td>4” CLASS 200 WATER LINE</td>
<td>LF</td>
<td>5900</td>
<td>$16.00</td>
<td>$94,400</td>
</tr>
<tr>
<td>3</td>
<td>6” WATER VALVES</td>
<td>EA</td>
<td>6</td>
<td>$1,000.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>4</td>
<td>4” WATER VALVES</td>
<td>EA</td>
<td>8</td>
<td>$1,000.00</td>
<td>$8,000</td>
</tr>
<tr>
<td>5</td>
<td>TEES, BENDS, ETC</td>
<td>EA</td>
<td>10</td>
<td>$525.00</td>
<td>$5,250</td>
</tr>
<tr>
<td>6</td>
<td>BLOW OFFS</td>
<td>EA</td>
<td>11</td>
<td>$2,000.00</td>
<td>$22,000</td>
</tr>
<tr>
<td>7</td>
<td>AV/AR VALVES AND VAULTS</td>
<td>EA</td>
<td>1</td>
<td>$2,625.00</td>
<td>$2,625</td>
</tr>
<tr>
<td>8</td>
<td>CONNECT TO TANK # 3</td>
<td>LS</td>
<td>1</td>
<td>$3,150.00</td>
<td>$3,150</td>
</tr>
<tr>
<td>9</td>
<td>VAULT AND METER</td>
<td>LS</td>
<td>1</td>
<td>$21,000.00</td>
<td>$21,000</td>
</tr>
<tr>
<td>10</td>
<td>Pressure Reducing Valve and Vault</td>
<td>LS</td>
<td>1</td>
<td>$10,500.00</td>
<td>$10,500</td>
</tr>
<tr>
<td>11</td>
<td>Service Connections Complete</td>
<td>EA</td>
<td>36</td>
<td>$1,260.00</td>
<td>$45,360</td>
</tr>
<tr>
<td>12</td>
<td>Seeding</td>
<td>AC</td>
<td>17.8</td>
<td>$700.00</td>
<td>$12,460</td>
</tr>
<tr>
<td>13</td>
<td>R&amp;R Road surfacing</td>
<td>SY</td>
<td>3960</td>
<td>$2.00</td>
<td>$7,920</td>
</tr>
<tr>
<td>14</td>
<td>Bonds and Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$43,000</td>
<td>$43,000</td>
</tr>
</tbody>
</table>

Construction Subtotal = $449,665
Construction Engineering (10%) = $44,967
Construction Subtotal = $494,632
Contingencies (15%) = $74,195

Total Construction Costs = $568,826

NON CONSTRUCTION COSTS
1 Final Designs and Specification $44,000
2 Permitting $4,400
3 Legal Fees $6,100
4 Acquisition of Property and Right of Way $25,000
5 Cost of Funding (.5% loan origination fee and the rest Admin expenses) $17,500

Total Non-Construction Costs = $97,000

TOTAL ESTIMATED PROJECT COST = $665,826

USE $666,000.00
7 ECONOMIC ANALYSIS AND PROJECT FINANCING

This section presents a recommended financial plan that is designed to allow the Sunset District to construct the recommended new water system. The financial plan assumes that the terms and availability of the outside funding will be as described in the following sub-sections. These assumptions are based on discussions and previous dealings with funding agencies including the Wyoming Water Development Commission (WWDC), The State Lands and Investment Board (WSLIB), the USDA Rural Development (RUS), and the Wyoming Department of Environmental Quality (WDEQ).

7.1 Funding Agencies

Wyoming Water Development Commission (WWDC)

- 50% Grant funding is available for new wells, tanks, and transmission lines.

U. S. Dept. of Agriculture, Rural Development, Rural Utilities Services (RUS)

- Based on the Medium Household income (HMI) for the Newcastle area, the district is eligible for RUS assistance of up to 55% grant funding of the total eligible project costs (All portions of the project are eligible).

- RUS loans are required to receive RUS grant funding. RUS loans are listed at the current rate of 4.75% for 20 years. The loans are however adjustable in regards to term lengths. These determinations are decided during the funding process.

- The RUS does require that the district be indebted up to the maximum determined they can payback prior to determining the amounts to be granted.

Office of State Lands and Investments (WSLIB)

- 50% grant funding is available for all water projects.

- Loans are available from the WSLIB a current rate of 6% for 30 years.

- Grants are becoming difficult to obtain from the WSLIB unless it is an extreme situation.

Wyoming Department of Environmental Quality, Abandoned Mine Land Division (AML)

- All of Weston County is eligible for AML Grant funding.
• Funding applications submitted in year 2004 is for fiscal year 2006
• Applications submitted to the WSLIB for funding are forwarded to the AML. No separate application is required.

Drinking Water State Revolving (Loan) Fund (DWSRF)

• The Sunset District is eligible to receive funding through the DWSRF.
• The DWSRF loan current interest rate is 2.5% for 20 years.
• Sunset Ranch Water District is currently ranked 101 on the DWSRF Intended Use Plan.

7.2 Estimated Fee Impact to Users

We have met with the USDA-RUS representative in Casper (Kaylyn H. Nerby) and discussed the possible grant funding available to the district. Rural Utility Services (RUS) funding is available for all elements of the proposed Sunset Water System. RUS funding is determined on the basis of ability to pay back loans. The RUS partially determines the ability to pay back by looking at the rates of comparable water systems in the area and throughout the state.

Tables 7-1 and 7-2 summarize the New Castle area existing water districts and districts throughout the State of Wyoming with respect to the number of taps served and the rates charged. The cut off for the total taps served was 60. The data was taken from The Wyoming Water Development Commission, 2002 Water System Survey Report. It can be seen from the data that $40.00 per month is a good estimate for comparable water system rates.

Table 7-1
New Castle Area Water Systems

<table>
<thead>
<tr>
<th>District</th>
<th># Service Connections</th>
<th>Average Billing Rate ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambria</td>
<td>52</td>
<td>$ 40.00</td>
</tr>
<tr>
<td>Salt Creek/Blacktail</td>
<td>148</td>
<td>$ 25.00</td>
</tr>
<tr>
<td>West End/Oil Creek</td>
<td>77</td>
<td>$ 55.00</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>92</strong></td>
<td><strong>$ 40.00</strong></td>
</tr>
</tbody>
</table>
During the actual process of trying to obtain funds from the RUS, it was determined that the RUS will require the District to be indebted to a degree that the monthly bills will be approximately $60.00 (based on 36 users).

The District has negotiated with the RUS for a loan at a rate of 4.5% for 30 years. The District has also negotiated with the RUS for a Grant in the amount of $126,500.00. Based on this RUS Grant, the RUS loan rate, a maximum $60.00 a month user fee, the estimated O&M costs, and Water purchase costs from the City of Newcastle, it was estimated that the District could be indebted for about $215,500.00 (See Table 7-3).
Table 7-3
Fee Impact to Users

<table>
<thead>
<tr>
<th>Item</th>
<th>Loan Amount</th>
<th>Annual Cost to District</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Loan Term 4.5% for 30 years)</td>
<td></td>
</tr>
<tr>
<td>System Component</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission Mains</td>
<td>$129,750</td>
<td>$7,966</td>
</tr>
<tr>
<td>Distribution Mains</td>
<td>$85,750</td>
<td>$5,264</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$215,500</strong></td>
<td><strong>$13,230</strong></td>
</tr>
<tr>
<td>O&amp;M</td>
<td>$6,000</td>
<td></td>
</tr>
<tr>
<td>Base Water Purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(36 users @ 10,000 gal/user @ $1.5/1000 Gallon)</td>
<td>$6,480</td>
<td></td>
</tr>
<tr>
<td>Short Lived Assets</td>
<td>$200</td>
<td></td>
</tr>
<tr>
<td><strong>Total Annual Cost to District Members</strong></td>
<td><strong>$25,910</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Total Monthly Cost to District Members**
(based on 36 current taps)  $60

7.3 Funding Plan

The following financing scenario (Table 7-4) assumes 50% grant funding from the WWDC for the Transmission portion of the project, 50% grant funding from the WSLIB for the eligible distribution portion of the project, and grant and loan funding in the amounts as discussed in the preceding section. The RUS funding also requires an applicant contribution upfront as part of their funding agreement.
Table 7-4  
Proposed Project Financing

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (2006 $)</th>
<th>WWDC Grant</th>
<th>WSLIB Grant</th>
<th>Applicant Contribution Required by RUS</th>
<th>RUS Grant</th>
<th>RUS Loan 4.5% rate Total Project (30 yr Term)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunset Water System</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Transmission</td>
<td>$386,000</td>
<td>$193,000</td>
<td></td>
<td>$4,000</td>
<td>$63,250</td>
<td>$125,750</td>
</tr>
<tr>
<td>Water Distribution</td>
<td>$280,000</td>
<td></td>
<td>$139,000</td>
<td>$4,000</td>
<td>$63,250</td>
<td>$73,750</td>
</tr>
<tr>
<td><strong>TOTAL PROJECT COSTS</strong></td>
<td>$666,000</td>
<td>$193,500</td>
<td>$139,000</td>
<td>$8,000</td>
<td>$126,500</td>
<td>$199,500</td>
</tr>
<tr>
<td>Percent of Total Project Costs</td>
<td>100%</td>
<td>29%</td>
<td>21%</td>
<td>1%</td>
<td>19%</td>
<td>30%</td>
</tr>
</tbody>
</table>

### 7.4 Equivalent Dwelling Units

One EDU is equivalent to a typical family home served by a single ¾-inch connection to the water system. Presently, the Sunset service area will serve only single-family homes so each planned connection will be considered as 1 EDU. The district is currently estimated at 36 EDUs. Assuming the projected growth occurs, the service area will increase to 42 EDUs by 2015 and 51 EDUs by 2033. This can be seen graphically on Figure 2-3 of this report.
8 ENVIRONMENTAL REVIEW

Environmental Review Process

The State environmental review process requires USDA, Rural Utilities Service (RUS) and Drinking Water State Revolving Fund (SRF) loan applicants to send a letter to the agencies listed as Federal and State Contacts for Environmental Issues. Letters and maps were sent to the agencies requesting them to review the project recommendations (as discussed in this report) for compliance with environmental issues under the agency’s jurisdiction and authority.

The Environmental Report (ER) for the proposed water system was completed by Dan Coughlin with Midwest Assistance Program, Inc. (MAP). The ER is on file with the Wyoming Department of Environmental Quality, Water Quality Division, SRF Coordination Office. (Brian Mark – Supervisor).

A copy of the ER is included in Appendix C.

9 PERMITTING

Permitting will be required as described for the following State and Federal Agencies.

➢ Department of Environmental Quality

A DEQ Permit to Construct will be required for:

- All Construction of the new water mains – Both Transmission and Distribution

The project will disturb one or more acres. Therefore a “Storm Water Associated with Construction Activities” Permit will be required. There is a general permit established for this purpose. The sponsor or general contractor must file a Notice of Intent 30 days prior to construction to be covered under the permit.

➢ Wyoming Game and Fish Department

The WGFD requires no permits but recommended construction be done between July 1st and November 1st to reduce possible impacts to wintering and reproducing wildlife, as well as to minimize potential conflicts with hunters.

➢ Department of the Army Corps of Engineers
There are no wetlands or waters of the U.S. within the proposed project boundary. However, there are two jurisdictional wetlands close to the proposed project area. **As long as the two wetlands are avoided Department of the Army authorization is not required for any activities associated with construction of the proposed Sunset water supply system.**

- **Wyoming Department of State Parks and Cultural Resources – State Historic Preservation Office**

  Prior to ground disturbing activity in areas outside of the existing street and utility right-of-ways, an on-site cultural resource survey meeting the Secretary of Interior’s Standards for Archaeology and Historic Preservation (48FR44716) should be conducted.

  The SHPO project control number for the Sunset Pipeline Project is #1103TLG044.
10 REFERENCES


APPENDIX A

SUPPORT LETTERS FROM LOCAL GOVERNMENTAL AGENCIES
January 12, 2004

Mike Besson, Director
Wyoming Water Development
Herschler Building
Cheyenne, Wyoming 82002

Subject: Cambria Canyon Water District

Dear Mike

Corky Stetson with Stetson Engineering contacted me today to write a letter as to the stance of the City of Newcastle on the Project. I have discussed the Project with the Water Committee and the Council as a whole in the past. However at that time, we were asked if we would be interested in supplying them water or taking water from them.

The Council felt that with the location of the District and the amount of undeveloped land in the area it would be impossible to service. The discussion was that although they may have only 35 taps today the future growth was virtually unlimited. The City from time to time has had request to supply areas outside the city with water and we presently do supply some areas. However we are very careful with users money in our water funds not to take on areas that are undeveloped that may grow to a point which may require the city users to supplement this area by raising every ones rates. As a part of this the other concern is using public money for private development.
We understand that in all instances some Growth may occur. An example of this is Sunset Ranch Water District, which the WWDC has recommended for funding. This District has a proximity to town, current density of users and defined area for future development that the Council felt comfortable with and recommended that we may be able to service. The same can be said of our connection with Salt Creek District, Cambria Water District and a future connection to West end Water District.

We were also asked if we would use water from this District if it was available. I feel that at this time the City has more than an adequate supply and with the help of the WWDC we have been able to increase the available water from our wells to the point we have adequate supply for considerable future growth. The connection we have with Salt Creek has solved their supply needs and should handle there needs for the future also.

I believe there is no one in the City that would not like to see everyone in the county have water. However the city has an obligation to its users to be very careful with our water and funds in our water account to protect current users while being prepared for grout in our service area.

Sincerely,

[Signature]

Robert C. Hartley, PE
City Engineer

cc: Salt Creek Water District
    Newcastle City Council
21 April 2004

Mr. Brad Miskimins, Grant Manager
Mineral Royalty Grant Program
122 West 25th Street
Cheyenne, WY 82002-0600

Dear Mr. Miskimins:

The Newcastle City Council voted during their regular meeting on Monday, April 19, 2004 to support the Sunset Ranch Water District project. The City of Newcastle reviewed the project and application and supports the project. Please accept this letter of support on behalf of the Sunset Ranch Water District project.

Please contact us if you have any questions or concerns.

Sincerely,

Ed Wagoner, Mayor
City of Newcastle

Cc: Dorla Sackett, Sunset Ranch District Secretary
March 2, 2004

To Whom It May Concern:

The Weston County Commissioners took action at their meeting on March 2, 2004, to support the Sunset Ranch Water District water project. The project’s goal is to obtain potable water for the residents in the district who currently haul water from the Newcastle area.

The scope of the project is to construct a new transmission and distribution system to provide water to the approximate 95 persons in the district from Newcastle Tank 3. The total cost of the project is anticipated to be around $713,000.00

Sincerely,

WESTON COUNTY COMMISSIONERS

Ted Ertman
Chairman
APPENDIX B

WATERCAD OUTPUT
# Steady State Analysis

## Pipe Report

<table>
<thead>
<tr>
<th>Link Label</th>
<th>Length (ft)</th>
<th>Diameter (in)</th>
<th>Material</th>
<th>Roughness</th>
<th>Discharge (gpm)</th>
<th>Velocity (ft/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-123</td>
<td>449.00</td>
<td>2</td>
<td>PVC</td>
<td>130.0</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>P-1</td>
<td>119.00</td>
<td>4</td>
<td>PVC</td>
<td>130.0</td>
<td>-3.90</td>
<td>0.10</td>
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<td>971.00</td>
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<td>PVC</td>
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<td>5.13</td>
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<td>333.00</td>
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<td>PVC</td>
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<td>0.30</td>
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<tr>
<td>P-19</td>
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<td>11.70</td>
<td>0.30</td>
</tr>
<tr>
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<td>4</td>
<td>PVC</td>
<td>130.0</td>
<td>11.70</td>
<td>0.30</td>
</tr>
<tr>
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# Project Inventory

**Title:** SUNSET RANCH WATER DISTRICT  
**Project Engineer:** DGM  
**Project Date:** 08/14/03  
**Comments:**

## Liquid Characteristics

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## Pipe Inventory

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- 6 in: 7,221.00 ft  
- 8 in: 9,928.00 ft
APPENDIX C

ENVIRONMENTAL REPORT
ENVIROMENTAL REPORT

SUNSET RANCH WATER DISTRICT

PROPOSED NEW WATER SYSTEM

WESTON COUNTY, WYOMING

NOVEMBER 2004

Prepared by:

Dan Coughlin
Rural Development Specialist
Midwest Assistance Program, Inc.
P. O. Box 1350, Casper, WY 82601
(307) 265-0855
danmap@qwest.net
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<td>U.S. Army Corps of Engineers, Map “Sunset Water Supply District 200340269 – No permit required (Exhibit 1) which is part of Exhibit 5.1.5 of this report.</td>
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<td>Location map of the Newcastle City Landfill</td>
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<td>6.0.4</td>
<td>Aerial Photo showing route or proposed transmission main, District &amp; Lots and Photo Key</td>
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<td>6.0.6</td>
<td>Montana Plant Field Guide</td>
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INTRODUCTION

The Sunset Ranch Water District is NE of the City of Newcastle in Weston County, Wyoming, 0.7 miles north of the intersection of Musser Road with US 85. Currently, residents supply their own water, at their own cost from domestic wells supplemented by hauling water. Domestic wells in this area are, for the most part, non-potable. The residents of the district seek to construct a community water system owned and operated by the district. The Madison Formation Aquifer which has been developed by the City of Newcastle and other entities in the area and would be an excellent source supply for these residents as well.

The Wyoming Water Development Commission (WWDC) provides funding in the form of grants and loans to communities throughout the state for development of new water systems and for improvements of existing water systems. The district, formed in 1978, is currently the subject of a Level II Feasibility Study by the Wyoming Water Development Commission. The author will draw on the text of that study in this report and reference data, maps, drawings and figures contained in the study.
1.0 PURPOSE AND NEED FOR THE PROJECT

1.1 Project Description

The proposed project will consist of an inter-tie to the Newcastle, WY water system at Newcastle Tank No. 3 north of the district near the State of Wyoming Honor Farm. There will be no improvements to the Newcastle wells as part of this project. No additional storage will be constructed. The improvements will be an 8 inch PVC transmission main routed approximately as shown in Exhibit 6.0.5 of the Sunset Ranch Level II study. Right of way and access agreements will be needed. The transmission line will end near the district boundary. From there a distribution system will be constructed, as shown in Exhibit 6.0.5, in the roadways of 6 inch Class 200 PVC to handle higher water pressures that will occur in that portion of the system.

1.2 Purpose and need for the project

The residents of Sunset Ranch Water District currently get their water from domestic wells which are, for the most part, non-potable. Because of the unavailability of good quality water locally, many residents haul their drinking water from the City of Newcastle. Not all residents have the capability of hauling their own water and must contract that service with those that have the necessary equipment. The Madison Formation Aquifer which has been developed by the City of Newcastle and other entities in the area would be an excellent source supply for these residents as well.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

In addition to the proposed action, one other alternatives, or options, were presented in the Level II Study (Stetson January 2004).

Alternative 1  No Action  This alternative would only continue the problems of water supply for the district and is considered unacceptable.

Alternative 2  Existing Wells  Existing wells are not considered available for us in a public water system (Stetson January 2004).

Alternative 3  Connection to the existing water supply of the Town of Newcastle. This alternative would consist of tying into the existing town water supply at Newcastle Tank No. 3 north of the district near the State of Wyoming Honor Farm, transporting water through an 8 inch main to the district boundary. A distribution system of 6 inch mains will be constructed within the district in existing right of ways.
3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

3.1 Land Use

Under all of the alternatives, land use would be the same, although the no action alternative could slow full development of lots within the district. According the Weston County Assessors office there is no zoning ordinance in Weston County Wyoming. The district boundary is the same as the subdivision boundary. The average lot size is 2.9 acres. The use is primarily low density residential with accessory agricultural uses. The route of the transmission line will be through undeveloped grass/sagebrush land and low density forest. The route chosen will require the removal a very few trees. Of the estimated potential of 51 lots 37 lots have currently been developed. (Exhibit 6.0.5)

3.1.2 Affected Environment/Environmental Consequences

Affects to the environment caused by installation of transmission and distribution lines will be temporary and limited to the construction period. Upon completion of construction, excavations will be back-filled, compacted and the roadways returned to their original condition. Materials needed for bedding the distribution lines will be imported from outside the District boundaries. Disturbances during construction to install necessary equipment will be short term.

The Natural Resources Conservation Service (NCRS) states there are no important farmlands, prime forest or rangelands, or formally classified lands within the project boundary. However, NRCS recommends a revegetation plan be developed for the areas disturbed by construction along the transmission line route. They suggest that the plan be reviewed by land owners for their concurrence. (Exhibit 5.0.5 )

3.1.3 Mitigation:

Whenever possible, travel on roadways during construction activities should be routed to those roads that aren’t currently disturbed. Any detours out of right-of-ways should be designed to avoid undue damage to adjacent lands. Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction.

3.2 FLOODPLAINS

3.2.1 Affected Environment

The affected environment is contained within the boundaries of the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District and the transmission line route (Figure 1.1)
3.2.2 Environmental Consequences

There are no floodplains in the project area. The area of influence is along a plateau above the flood plains of all water ways in the area. The area is unmapped by the Federal Emergency Management Agency (FEMA) (map reference 56025C2014D)

3.2.3 Mitigation

Materials excavated during construction must not be placed in natural drainage channels. Disturbed areas must be reclaimed and returned to their pre-construction state or better, if the opportunity exists.

3.3 WETLANDS

3.3.1 Affected Environment

The affected environment is contained within the boundaries of the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District and the transmission line route (Figure 1.1)

3.3.2 Environmental Consequences

The Department of the Army, Corps of Engineers (Corps), regulates the placement of dredged and fill material into the wetlands and other waters of the United States. In its response to the scoping letter (Exhibit 5.1.5), the Wyoming Regulatory Office indicated that, based on information provided to them, there are no wetlands or waters of the U.S. within the project area. However, there are two jurisdictional wetlands close to the project area. (Exhibit 1 of Exhibit 5.1.5.) These wetlands are not within the proposed transmission pipeline route. Therefore, as long as these wetlands are avoided, it has been determined that the Department of Army authorization is not required for any activities associated with construction of the proposed water supply system. (Exhibit 5..1.5)

3.3.3 Mitigation

Materials excavated during construction should not be placed in natural drainage channels. Disturbed areas should be reclaimed and returned to their pre-construction state or better, if the opportunity exists. All disturbed areas must be re-seeded with native, adaptive plants and returned to their pre-construction state.
3.4 CULTURAL RESOURCES

3.4.1 Affected Environment

The affected environment is the area contained within the boundary of the Sunset Ranch Water District. The Wyoming Department of State Parks and Cultural Resources State Historic Preservation Office letter of November 14, 2003 stated that prior to any ground disturbing activity, an on-site cultural resources survey meeting the Secretary of Interior’s Standards for Archaeology and Historic Preservation (48FR44716) should be conducted and adverse impacts to any significant cultural resource sites must be mitigated. The survey and any necessary mitigation measures must be conducted by a professionally qualified archeologist or historian. A report detailing the results of these efforts must be reviewed by SHPO staff prior to our commenting on the project’s effects on cultural resource sites. (Exhibit 5.0.7)

3.4.2 Environmental Consequences

There are some stone structures of unknown cultural value near the area of influence of the transmission main and some within lots in the district. It does not appear that construction will affect these sites.

3.4.3 Mitigation

All construction work is to be done within the area of influence and in existing roadways as shown in Exhibit 6.0.4. Prior to any ground disturbing activity, an on-site cultural resources survey meeting the Secretary of Interior’s Standards for Archaeology and Historic Preservation (48FR44716) should be conducted and adverse impacts to any significant cultural resource sites must be mitigated. The survey and any necessary mitigation measures must be conducted by a professionally qualified archeologist or historian. A report detailing the results of these efforts must be reviewed by SHPO staff prior to allow them to comment on the project’s effects on cultural resource sites. If archaeological/cultural resources are uncovered during construction of the distribution system, work must be halted immediately and SHPO and RD/RUS must be contacted. Work must not be resumed until clearance has been issued by these agencies.

3.5 BIOLOGICAL RESOURCES

3.5.1 Affected Environment

The affected environment is contained within the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District.
3.5.2 Environmental Consequences

Threatened and Endangered Species: The December 5, 2003 letter of the United States Department of Interior Fish and Wildlife Service (Exhibit 5.0.2) listed the Bald Eagle, Black footed ferret, Ute ladies'-tresses as Threatened and Endangered Species that could be encountered on the project site. Information on the Migratory Bird Treaty Act, list of migratory birds and information about riparian and wetland preservation, in accordance with the Clean Water Act were also provided.

According to the Montana Plant Field Guide, Ute Ladies’ Tresses (Spiranthes diluvialis) occur in “Meandered wetlands and swales in broad, open valleys, at margins with calcareous carbonate accumulation.” (Exhibit 6.0.6) In a December 14, 2004 phone consultation, Clark McClung, Supervisor, Range Conservation, USFS, Douglas WY Ranger District, reported that the plant requires subirrigation. He believes that there are no Utes Ladies Tresses in the project area.

The December 1, 2003 letter from the Wyoming Game and Fish Department commented that the proposed project crosses state land that is used by hunters in the fall, deer and turkey in the winter, and is likely used for both fawning by deer and nesting by wild turkeys in the spring. (Exhibit 5.1.3)

Fish and Wildlife Resources

Bald Eagle: A field survey did not reveal any Bald Eagle nests within one mile of the area of influence.

Black Footed Ferret: A field survey did not reveal any prairie dog towns that may be affected.

Ute ladies’-tresses: The habitat of the project area is not sufficiently wet to support this species.

Vegetation The predominant vegetation is sagebrush, grass and sparse Ponderosa pine stand in the area of influence of the proposed construction. A small number of trees may need to be removed and reseeding should restore the vegetation.

Mitigation Construction activities, except as previously noted, must be limited to existing roadways. Disturbance to roadside vegetation is expected to be minimal but must be reclaimed upon completion of the project. Construction should be completed between July 1 and November 1, if possible, to reduce impacts to wintering and reproducing wildlife, as well as to minimize potential conflicts with hunters. (Exhibit 5.1.3)
3.6 WATER QUALITY ISSUES.

3.6.1 Affected Environment

The affected environment is contained within the boundaries of the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District.

3.6.2 Environmental Consequences

In the November 17, 2003 letter (Exhibit 5.0.9) of the Wyoming Department of Environmental Quality, Air Quality Division, no adverse air quality impacts associated with the installation of the proposed water lines were anticipated, with the possible exception of dust problems during construction. Good dust management practices should allow the construction to comply with Wyoming Air Quality Standards & Regulations, Chapter 3, Section 2(f).

The Wyoming Department of Environment Quality (DEQ), Water Quality Division (WQD) regulates construction, installation or modification of water systems and cooperates with the Corps of Engineers in the administration of Section 401 of the Clean Water Act.

WQD advised, in their November 12, 2003 letter (Exhibit 5.1.1), that there are three WQD permits that may apply to this project. Any or all of them may apply to this project depending on the eventual scope of the project. These are Temporary Discharge Permit under NPDS, Storm Water Associated with Construction Activities, Permit to Construct and Section 404, US Army Corp of Engineers.

3.6.3 Mitigation

Contractors must obtain all applicable WQD permits and employ best management practices. Usage and storage of fuel and other petroleum products used to service construction equipment must be done in a manner that avoids spillage on the ground and/or into drainage ways.

3.7 SOCIO-ECONOMIC/ENVIRONMENTAL JUSTICE

3.7.1 Affected Environment

The affected environment is contained within the boundaries of the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District.
3.7.2 Socio-economic Information

The District is a rural community. Residents of the District are the primary beneficiaries of the proposed project. Development of a central water system will improve their quality of life. No known business or industrial expansion is expected as a result of the project.

3.7.3 Environmental Justice Considerations

When analyzing census data for the area, it is difficult to pinpoint data specific to the Sunset Ranch Water District area. The census information available from the U.S. Census Bureau American FactFinder, Census 2000 Summary File 3, Matrix P53 of TM-P063 (Exhibit 6.0.2) covers Newcastle, Wyoming and closely related rural areas close to the town limits. The census data associated with TM-P063, Census Tract 9513, Weston County, Wyoming shows a 1999 Median Household Income of $31,125. The proposed project will improve the quality of life for residents without placing an undue burden on their financial resources. It is believed that many residents are currently paying more for potable water than they would with the central water system that is being proposed.

3.7.4 Mitigation

No mitigation measures are required for socio-economic or environmental justice issues in the proposed project area.

3.8 MISCELLANEOUS ISSUES

3.8.1 Affected environment

The affected environment is contained within the boundaries of the area of influence of the transmission line construction and the boundaries of the Sunset Ranch Water District.

3.8.2 Environmental Consequences

Air Quality

Only minor impacts to air quality are expected as a result of the proposed project. Exhaust fumes and dust are expected during construction, but no long-term adverse impacts are anticipated.
Transportation

The project area can be accessed from US Hwy 85 at two locations, Musser Road about 1/3 of a mile south of the District Boundary and the Wyoming Honor Farm Road on the north end of the project (Newcastle Tank # 3). No adverse effect on traffic is expected.

Noise

The major source of noise will be during construction of the project. This noise will be temporary and no long-term adverse impacts will occur.

Solid Waste Management

Solid waste resulting from the project is expected to consist of normal construction debris and must be disposed of in the approved landfill operated by the City of Newcastle. (Exhibit 6.0.3)

3.8.3 Mitigation

Dust suppression through dampening of roads subject to heavy equipment traffic during construction must be implemented. Solid waste accumulated as a result of the construction process must be contained in covered containers on site and removed to an approved landfill upon completion of the project. Impacts from noise can be alleviated if construction work, especially that done close to residences, is done during normal working hours. Impacts to air quality are expected to be minor and temporary and no mitigation is required.

4.0 SUMMARY OF MITIGATION

Land Use – Whenever possible, travel on roadways during construction activities should be routed to those roads that aren’t currently disturbed. Any detours out of right-of-ways should be designed to avoid undue damage to adjacent lands. Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction.

Flood Plains - Materials excavated during construction should not be placed in natural drainage channels. Disturbed areas should be reclaimed and returned to their pre-construction state or better, if the opportunity exists.

Wetlands - Materials excavated during construction should not be placed in natural drainage channels. Disturbed areas should be reclaimed and returned to their pre-
construction state or better, if the opportunity exists. All disturbed areas must be re-seeded with native, adaptive plants and returned to their pre-construction state.

**Cultural Resources** – All construction work is to be done within the area of influence and in existing roadways as shown in Exhibit 6.0.4. Prior to any ground disturbing activity, an on-site cultural resources survey meeting the Secretary of Interior’s Standards for Archaeology and Historic Preservation (48FR44716) should be conducted and adverse impacts to any significant cultural resource sites must be mitigated. The survey and any necessary mitigation measures must be conducted by a professionally qualified archeologist or historian. A report detailing the results of these efforts must be reviewed by SHPO staff prior to allow them to comment on the project’s effects on cultural resource sites. If archaeological/cultural resources are uncovered during construction of the distribution system, work must be halted immediately and SHPO and RD/RUS must be contacted. Work must not be resumed until clearance has been issued by these agencies.

**Biological Resources** - Construction activities, except as previously noted, must be limited to existing roadways. Disturbance to roadside vegetation is expected to be minimal but must be reclaimed upon completion of the project. Construction should be completed between July 1 and November 1, if possible, to reduce impacts to wintering and reproducing wildlife, as well as to minimize potential conflicts with hunters. (Exhibit 5.1.3)

**Water Quality Issues** - Contractors must obtain all applicable WQD permits and employ best management practices. Usage and storage of fuel and other petroleum products used to service construction equipment must be done in a manner that avoids spillage on the ground and/or into drainage ways.

**Socio-economic/environmental justice issues** - No mitigation measures are required or needed for socio-economic or environmental justice issues in the proposed project area.

**Miscellaneous Issues** - Dust suppression through dampening of roads subject to heavy equipment traffic during construction must be implemented. Solid waste accumulated as a result of the construction process must be contained in covered containers on site and removed to an approved landfill upon completion of the project. Impacts from noise can be alleviated if construction work, especially that done close to residences, is done during normal working hours. Impacts to air quality are expected to be minor and temporary and no mitigation is required.
5.0  CORRESPONDENCE and COORDINATION

Initial consultation letters requesting comments relating to environmental and archaeological concerns which may be affected by the proposed action were sent to a variety of state and federal agencies. These letters were sent by Stetson Engineering Inc., PO Box 1836, Riverton, WY 82501 in conjunction with the WWDC Level II study dated January 2004.

Agencies to which requests for environmental review were sent (July 12, 1999)

Mike Long, State Supervisor
U.S. Fish and Wildlife Service
Ecological Services
4000 Airport Parkway
Cheyenne, WY 82001

Ed Burton, State Conservationist
USDA-NRCS
Federal Bldg.
100 East B Street, Room 3124
Casper, WY 82601
307-261-6453

Bill Hill, Field Manager
BLM Wyoming
Newcastle Field Office
1101 Washington Boulevard
Newcastle, WY 82701-2972
Phone: 307-746-6600

Wendy Bredehoft
Director of the Division of Cultural Resources
Wyoming State Historic Preservation Office
2301 Central Ave.
Barrett Bldg. 3rd Floor
Cheyenne, WY 82002

Darla Potter
DEQ/Air Quality Division
Herschler Bldg. 4-W
122 West 25th Street
Cheyenne, WY 82002

Barbara Sahl
DEQ/Water Quality Division
Herschler Bldg. 4-W
Cheyenne, WY 82002

Tom Collins
Habitat Protection Program
Wyoming Game & Fish Department
5400 Bishop Boulevard
Cheyenne, WY 82006

Matt Bilodeau
U.S. Corps of Engineers
2232 Dell Range Boulevard
Cheyenne, WY 82009
307-772-2300

Clark McClung, Supervisor
Range Conservation
USFS
Douglas WY Ranger District
2250 E. Richards St., Douglas, WY 82633
307-358-4690, FAX 307-358-3072
CORRESPONDENCE and COORDINATION EXHIBITS

5.0.1 Letter to U.S. Fish and Wildlife Service
5.0.2 U.S. Fish and Wildlife Service response
5.0.3 Letter to Bureau of Land Management Wyoming
5.0.4 Letter to U.S. Department of Agriculture, Natural Resource Conservation Service
5.0.5 U.S. Department of Agriculture, Natural Resource Conservation Service response
5.0.6 Letter to Wyoming State Historical Preservation Office
5.0.7 Wyoming State Historical Preservation Office response
5.0.8 Letter to Department of Environmental Quality/ Air Quality Division
5.0.9 Department of Environmental Quality/ Air Quality Division response
5.1.0 Letter to Department of Environmental Quality / Water Quality Division
5.1.1 Department of Environmental Quality / Water Quality Division response
5.1.2 Letter to Wyoming Game & Fish Department
5.1.3 Wyoming Game & Fish Department response
5.1.4 U.S. Army Corps of Engineers
5.1.5 U.S. Army Corps of Engineers response
5.1.6 Montana Plant Field Guide

References


6.0 MAPS

6.0.1 U.S. Army Corps of Engineers, Map “Sunset Water Supply District 200340269 – No permit required (Exhibit 1) which is part of Exhibit 5.1.5 of this report.

6.0.2 U.S. Census Bureau American FactFinder Census Tract Map

6.0.3 Location map of the Newcastle City Landfill

6.0.4 Aerial Photo showing route or proposed transmission main, District & Lots and Photo Key

6.0.5 Photos
October 31, 2003

Mike Long, State Supervisor
U.S. Fish and Wildlife Service
Ecological Services
4000 Airport Parkway
Cheyenne, WY 82001
307-772-2374

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project's area of potential effect for all construction activities. A description of the work involved follows:

Refer to Sunset District Exhibit 1

Transmission

To supply water from Newcastle Tank #3 to the District boundary we recommend the installation of an 8" PVC water line. The proposed 8" PVC transmission main and area of interest would be routed approximately as shown on Exhibit 1. The route would take it across property owned by The State of Wyoming, Michael and Denise McGinty, Kenneth and Joyce Avery, Jerry Varner, and James Piana. Right-of-way and access easements will be required for the routing of the transmission main.

Most of the route is cross-country and not along existing roadways.

Distribution

The proposed distribution system would be made up of 6" PVC and will be routed within the District boundaries as shown in Exhibit 1. Because of geographical constraints (a deep and steep ravine) the distribution system is not looped between Yucca Circle and Mariposa Circle.

All the lines constructed within the District Boundary shall be built in the road right-of-ways.
The proposed project does not represent a "major construction activity" as defined in 50 CFR 402.02. (Major construction activity is a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act [NEPA, 42 U.S.C.]) We request a list of any federally-listed or proposed threatened or endangered species and designated or proposed critical habitats that may be present in the project area. In addition, please advise us of any present concerns you may have related to possible effects of the project described above on such species or critical habitat, as well as any other wildlife concerns.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

David G. Myers, P.E.
Project Engineer

Encl:
In Reply Refer To:  
ES-61411/W.39/WY7803

Mr. David G. Myers, P.E.  
Stetson Engineering, Inc.  
107 S. Broadway, Suite 205  
P.O. Box 1836  
Riverton, WY 82501

Dear Mr. Myers:

Thank you for your letter and enclosed map of October 31, 2003, received in the Wyoming Field Office on November 5. In your letter you included the project site map for the Sunset Water District's new water supply system occurring northwest of the town of Newcastle in Weston County, Wyoming. According to your letter, the proposed project involves the installation of an 8" PVC transmission main and a distribution system made up of 6" PVC. The 8" PVC water line would run from the Newcastle Tank #3 to the District boundary, crossing property owned by The State of Wyoming, Michael and Denise McGinty, Kenneth and Joyce Avery, Jerry Varner, and James Piana. This route is not along existing roadways. The proposed 6" PVC distribution system is to be routed within the District boundaries and built in the road right-of-ways.

In accordance with Endangered Species Act (Act), we are providing you with a list of threatened, endangered, and proposed species that could be encountered on your project site. We are providing you with information about the Migratory Bird Treaty Act, and have enclosed a list of migratory birds of high federal interest in Wyoming. We are also supplying you with information about riparian area and wetland preservation, in accordance with the Clean Water Act.

### Threatened and Endangered Species

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<td><em>Haliaeetus leucocephalus</em></td>
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<td>Black-footed ferret</td>
<td>Endangered</td>
<td>Prairie dog towns</td>
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<td><em>Mustela nigripes</em></td>
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<tr>
<td>Ute ladies'-tresses</td>
<td>Threatened</td>
<td>Seasonally moist soils and wet meadows of drainages below 7000 feet</td>
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<td><em>Spiranthes diluvialis</em></td>
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</tbody>
</table>
**Bald eagle**: While habitat loss still remains a threat to the bald eagle's full recovery, most experts agree that its recovery to date is encouraging. Adult eagles establish life-long pair bonds and build huge nests in the tops of large trees near rivers, lakes, marshes, or other wetland areas. Although bald eagles may range over great distances, they usually return to nest within 100 miles of where they were fledged. During winter, bald eagles gather at night to roost in large mature trees, usually in secluded locations that offer protection from harsh weather. Bald eagles often return to use the same nest and winter roost year after year.

In order to reduce potential adverse effects to the bald eagle, a disturbance-free buffer zone of 1 mile should be maintained around eagle nests and winter roost sites. Activity within 1 mile of an eagle nest or roost may disturb the eagles and result in take. If a disturbance-free buffer zone of 1 mile is not practicable, then the activity should be conducted outside of February 15 through August 15 to protect nesting birds and November 1 through April 15 to protect roosting birds.

**Black-footed ferret**: Black-footed ferrets may be affected if prairie dog towns are impacted. If black-tailed prairie dog (*Cynomys ludovicianus*) towns or complexes greater than 79 acres or white-tailed prairie dog (*Cynomys leucurus*) towns or complexes greater than 200 acres will be disturbed, surveys for ferrets are recommended in order to determine if the action will result in an adverse effect to the species. Surveys are recommended even if only a portion of the town or complex will be disturbed. According to the *Black-Footed Ferret Survey Guidelines* (USFWS 1989), a prairie dog complex consists of two or more neighboring prairie dog towns less than 7 km (4.3 miles) from each other. If a field check indicates that prairie dog towns may be affected, you should contact this office for guidance on ferret surveys.

**Ute ladies'-tresses**: Ute ladies'-tresses is a perennial, terrestrial orchid with stems 8 to 20 inches tall, and white or ivory flowers clustered into a spike arrangement at the top of the stem. *Spiranthes* blooms from late July through August, however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October. *Spiranthes* is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams where it colonizes early successional point bars or sandy edges. The elevation range of known occurrences is 4,200 to 7,000 feet in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Soils where *Spiranthes* have been found typically range from fine silt/sand, to gravels and cobbles, as well as to highly organic and peaty soil types. *Spiranthes* is not found in heavy or tight clay soils or in extremely saline or alkaline soils. *Spiranthes* seems intolerant of shade and small scattered groups are found primarily in areas where vegetation is relatively open. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. The Service does not maintain a list of "qualified" surveyors but can refer those wishing to become familiar with the orchid to experts who can provide training or services.

**Migratory Birds**

Please ensure that protection for migratory birds, including eagles and other raptors, is incorporated into your project plan pursuant to the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703 and Bald and Golden Eagle Protection Act (BG EPA), 16 U.S.C. 668. The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and
does not require intent to be proven. Section 703 of the Act states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing.

Work that could lead to the take of a migratory bird including an eagle, their young, eggs, or nests (for example, if you are going to erect new well sites, roads, or power lines in the vicinity of a nest), should be coordinated with our office before any actions are taken. Removal or destruction of such nests, or causing abandonment of a nest could constitute violation of one or both of the above statutes. Removal of any active migratory bird nest or nest tree is prohibited. Permits for nest manipulation, including removal or relocation may, under certain circumstances, be issued for inactive nests only. For golden eagles, inactive nest permits are limited to activities involving resource extraction or human health and safety. Mitigation, as determined by the local Service field office, may be required for loss of these nests. No permits will be issued for an active nest of any migratory bird species, unless removal of an active nest is necessary for reasons of human health and safety. Therefore, if nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in project planning. We have enclosed a list of Migratory Birds of High Federal Interest for your review.

The Service recommends surveys within 1-mile of the project area to identify important raptor areas such as nest and/or roost sites. Surveys should be conducted during the appropriate time of year in order to observe active courtship, nesting or roosting.

The Service has withdrawn the proposal to list the mountain plover and we will no longer be reviewing project impacts to this species under the Act. We do however, encourage the Bureau and their applicants to continue providing protection for this species as it remains protected under the Migratory Bird Treaty Act (16 U.S.C. 703) and as a sensitive species.

Wetlands/Riparian Areas

Based on the aerial map you provided, the project area is predominantly sagebrush habitat. However, if wetlands and/or riparian areas (ephemeral drainages) may be destroyed or degraded by the proposed action, those wetlands in the project area should be inventoried and fully described in terms of their functions and values. Acreage of wetlands, by type, should be disclosed and specific actions should be outlined to avoid, minimize, and compensate for all unavoidable wetland impacts.

As stated in your letter, routing of the transmission main will transverse state and private property. The analysis of project impacts must assess direct impacts of the project, as well as those impacts that are interrelated to or interdependent with the proposed action. Impacts to listed species on non-Federal lands must be evaluated along with such impacts on Federal lands. Any measures that are ultimately required to avoid or reduce impacts to listed species will apply to Federal as well as non-Federal lands.
Thank you for your efforts to ensure the conservation of listed species, migratory birds and critical wildlife habitats in Wyoming. Please keep our office informed about project developments. If you have any questions please contact Andrea Gray at our office at (307) 772-2374, ext 37.

Sincerely,

[Signature]

Brian T. Kelly  
Field Supervisor  
Wyoming Field Office

Enclosures (2)

cc:  WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (T. Collins)  
     WGFD, Nongame Coordinator, Lander, WY (B. Oakleaf)
November 4, 2003

Bill Hill, Field Manager
BLM Wyoming
Newcastle Field Office
1101 Washington Boulevard
Newcastle, WY 82701-2972
Phone: 307.746.6600

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the USDA, Rural Utilities Service (RUS) or Drinking Water State Revolving Fund (SRF) in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project's area of potential effect for all construction activities. A description of the work involved follows:

Refer to Sunset District Exhibit 1

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Most of the route is cross-country and not along existing roadways.

Distribution

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All the lines constructed within the District Boundary shall be built in the road right-of-ways.
As shown on the enclosed map, some of the construction may take place ion owned lands. Although the submittal of a special use permit application at this time would be premature, we are seeking information on environmental effects from the project as an input to the RUS’ or SRF’s decision making process. We request your review of this project for potential impacts to officially designated areas within the lands under your jurisdiction, and any recommendations you may have to mitigate or avoid these effects. We would also appreciate receiving any information regarding additional review requirements that your agency may have.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

[Signature]

David G. Myers, P.E.
Project Engineer

Encl:
October 31, 2003

Ed Burton, State Conservationist
USDA-NRCS
Federal Bldg.
100 East B Street, Room 3124
Casper, WY 82601
307-261-6453

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant to the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project's area of potential effect for all construction activities. A description of the work involved follows:

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All the lines constructed within the District Boundary shall be built in the road right-of-ways.
We are requesting information on the possible effects of the proposed project on important farmland and prime rangeland and any recommendations you may have to minimize these effects. We also seek your assessment of the compatibility of the proposed project with State and local government or any private programs and policies to protect important farmland.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

David G. Myers, P.E.
Project Engineer

Encl:
Stetson Engineering, Inc.
107 S. Broadway, Suite 205
P.O. Box 1836
Riverton, Wyoming 82501

Dear Mr. Meyers,

The NRCS has reviewed the Sunset Water District New Water Supply System. There is no prime farmland or rangeland being affected by the project. In regards to the distribution, we have no comments or concerns.

In regards to transmission line we have a few comments. All we received was an aerial photo showing the proposed line and it is difficult to tell what the topography of the area is like. This is important to us in reviewing any potential problems with erosion due to traversing steep slopes and/or streams or draws with the pipeline. We have a concern as to erosion control from both wind and water, both during construction and after construction. We recommend that an erosion control plan be developed and approved prior to the start of any construction. We also recommend that a revegetation plan be developed for the area of disturbance during construction and reviewed with the land owners for their concurrence. This would ensure that the area is revegetated to the land owner’s satisfaction and would control any potential erosion problems. If you need assistance with the revegetation plan, please contact the local NRCS office in Newcastle.

If you have any questions, or need to discuss this comment with us, please contact Doug Gasseling, Conservation Agronomist, Cheyenne, Wyoming, at 307-772-2015, ext. 116.

Sincerely,

[Signature]

LINCOLN “ED” BURTON
State Conservationist
October 31, 2003

Wendy Bredelhoft
Director of the Division of Cultural Resources
Wyoming State Historic Preservation Office
2301 Central Ave.
Barrett Bldg. 3rd Floor
Cheyenne, WY 82002
307-777-7013

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project’s area of potential effect for all construction activities. A description of the work involved follows:

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All the lines constructed within the District Boundary shall be built in the road right-of-ways.

The WWDC requests the assistance of your office in identifying historic properties that are listed or eligible for listing on the National Register of Historic Places and that may be affected by the project. Please provide any recommendations you may have to mitigate or avoid these impacts to properties that may be affected.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

[Signature]
David G. Myers, P.E.
Project Engineer

Encl:
November 14, 2003

Mr. David G. Myers, P.E.
Stetson Engineering, Inc.
107 S. Broadway, Suite 205
P.O. Box 1836
Riverton, WY 82501

RE: Sunset Water District New Water Supply System, Newcastle (SHPO File # 1103TLG044)

Dear Mr. Myers:

Our staff has received information concerning the aforementioned project. Thank you for giving us the opportunity to comment.

A file search by our staff on 11/13/03 for T45N, R61W, Sec. 15, 16, 21, 22 shows that no known sites are located within the proposed project boundary. The area has not yet been surveyed for cultural resources. Prior to any ground disturbing activity, an on-site cultural resource survey meeting the Secretary of Interior's Standards for Archaeology and Historic Preservation (48FR44716) should be conducted and adverse impacts to any significant cultural resource sites must be mitigated. The survey and any necessary mitigation measures must be conducted by a professionally qualified archeologist or historian. A report detailing the results of these efforts must be reviewed by SHPO staff prior to our commenting on the project's effects on cultural resource sites.

Please refer to SHPO project control number #1103TLG044 on any future correspondence dealing with this project. If you have any questions, contact me at 307/777-6311.

Sincerely,

Mary M. Hopkins
Judy Wolf
Review and Compliance Program Manager

26

Dave Freudenthal, Governor
Phil Noble, Director
October 31, 2003

Darla Potter
DEQ/Air Quality Division
Herschler Bldg. 4-W
122 West 25th Street
Cheyenne, WY 82002

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project’s area of potential effect for all construction activities. A description of the work involved follows:

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All the lines constructed within the District Boundary shall be built in the road right-of-ways.
The WWDC requests that your agency review the proposed project for any activities that may occur in the project area which fall under the jurisdiction of your agency. Please provide any permit requirements that your agency may have regarding activities related to the proposed project as well as, any recommendations you may have to mitigate or avoid these impacts.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

David G. Myers, P.E.
Project Engineer

Encl:
November 17, 2003

Mr. David G. Myers, P.E.
Project Engineer
Stetson Engineering, Inc.
P.O. Box 1836
Riverton, WY 82501

RE: New Water Supply System - Sunset Water District

Dear Mr. Myers:

The Air Quality Division has reviewed your letter dated October 31, 2003 and the associated project area map regarding the new water supply system for the Sunset Water District located NE of Newcastle in Weston County, Wyoming. The Wyoming Air Quality Division does not anticipate any adverse air quality impacts associated with the installation of the proposed water lines, with the exception of possible dust problems during construction. Environmental planning for the water line construction phase should include effective dust control measures such as the application of water along haul roads and compaction, mulching, and reseeding during the post construction phase to reduce wind blown dust off of exposed acreage. Good dust management practices should allow you to comply with the Wyoming Air Quality Standards & Regulations, Chapter 3, Section 2(f). For your convenience, the Wyoming Air Quality Standards & Regulations are available to download electronically by Chapter. You can find rules on the Air Quality link at the following website: http://deq.state.wy.us.

If you have any questions regarding this matter, please feel free to contact our office.

Sincerely,

Michael D. Warren
District Engineer
Air Quality Division
October 31, 2003

Barbara Sahl
DEQ/Water Quality Division
Herschler Bldg. 4-W
122 West 25th Street
Cheyenne, WY 82002

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant to the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project’s area of potential effect for all construction activities. A description of the work involved follows:

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The WWDC requests that your agency review the proposed project for any activities that may occur in the project area which fall under the jurisdiction of the your agency. Please provide any permit requirements that your agency may have regarding activities related to the proposed project as well as, any recommendations you may have to mitigate or avoid these impacts.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

David G. Myers, P.E.
Project Engineer

Encl:
November 12, 2003

David G. Myers  
Stetson Engineering, Inc.  
P.O. Box 1836  
Riverton, WY 82501

re: Sunset Water District New Water Supply System

Dear Mr. Myers:

I received a request for an agency review of the proposed project for activities that may fall under the Department of Environmental Quality Water Quality Division’s (WQD) jurisdiction.

There are three WQD permits that may apply to this project. Any or all of them may apply depending on the eventual scope of the projects.

- **Temporary Discharge Permit.** Any discharges to “waters of the state” must be permitted under the National Pollutant Discharge Elimination System (NPDES) program. This program is part of the federal Clean Water Act, but is administered by the WQD. Coverage is required for discharges from cofferdam dewatering, discharges from hydrostatic pipeline testing, or discharge of other waste waters to waters of the state. For clarification waters of the state include rivers, streams, dry draws, wetlands, lakes, reservoirs and even stock ponds. The type of activity proposed can most likely be covered under the general permit for temporary discharges. This permit will require some sampling and will incorporate effluent limits for any constituents of concern. Roland Peterson (307-777-7090) can provide additional information.

- **Storm Water Associated with Construction Activities.** This permit is required any time a project results in clearing, grading, or otherwise disturbing one or more acres. The disturbed area does not need to be contiguous. The permit is required for surface disturbances associated with construction of the project, access roads, construction of wetland mitigation sites, borrow and stockpiling areas, equipment staging and maintenance areas and any other disturbed areas associated with construction. A general permit has been established for this
purpose and either the project sponsor or general contractor is responsible for filing a Notice of Intent (NOI) and complying with the provisions of the general permit. The NOI should be filed no later than 30 days prior to the start of construction activity. Please contact Barb Sahl at 307-777-7570.

☐ **Permit to Construct.** Any time a public water or waste water system is constructed, installed, or modified a permit to construct is required. The program is handled out of our Sheridan office for the Northeast portion of the State. Please contact Rick Estes at 307-672-6457 for more detailed information.

☐ **Section 404.** While not a state permit, this project may require a section 404 permit from the US Army Corps of Engineers. Any time work occurs within waters of the US a 404 permit may be required. Please contact the Corps (307-772-2300) for specific information regarding jurisdiction and requirements.

These are the permits most likely to affect this project. Also, every effort to prevent erosion of any kind should be taken. Any sediment taken away due to runoff and collection by the storm drainage system can affect the water quality of the receiving water. If you have any questions please contact the persons listed above or me at 307-777-7588.

Sincerely,

Jeremy Lyon  
Environmental Senior Analyst  
Water Quality Division

d:\spcw\c\grantappl2003\sunset_water.wpd
October 31, 2003

Tom Collins  
Habitat Protection Program  
Wyoming Game & Fish Dept.  
5400 Bishop Blvd.  
Cheyenne, WY 82006

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project's area of potential effect for all construction activities. A description of the work involved follows:

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The WWDC requests that your agency review the proposed project for any activities that may occur in the project area which fall under the jurisdiction of your agency. Please provide any permit requirements that your agency may have regarding activities related to the proposed project as well as, any recommendations you may have to mitigate or avoid these impacts.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

David G. Myers, P.E.
Project Engineer

Encl:
WER 10720  
Stetson Engineering, Inc.  
Wyoming Water Development Commission  
Sunset Water District New Water Supply System  
Weston County

David G. Myers, P.E.  
Project Engineer  
Stetson Engineering, Inc.  
107 S. Broadway, Suite 205  
P.O. Box 1836  
Riverton, WY 82501

Dear Mr. Myers:

The staff of the Wyoming Game and Fish Department has reviewed the proposed new water system for the Sunset Water District. We offer the following comments.

The proposed project crosses state land that is used by hunters in the fall, deer and turkeys in the winter, and is likely used for both fawning by deer and nesting by wild turkeys in the spring. As such, we recommend construction be completed between July 1 and November 1 if possible to reduce impacts to wintering and reproducing wildlife, as well as to minimize potential conflicts with hunters. We have no other terrestrial or aquatic concerns with this project.

Thank you for the opportunity to comment.

Sincerely,

BILL WICHERS
DEPUTY DIRECTOR

BW:TC:as
cc: USFWS
October 31, 2003

Matt Bilodeau
Cheyenne Regulatory Office
U.S. Army Corps of Engineers
2232 Dell Range Blvd, Suite 210
Cheyenne, WY 82009
307-772-2300

Re: Sunset Water District New Water Supply System

The Wyoming Water Development Commission (WWDC) is funding a study which will, in part, perform an environmental review pursuant the National Environmental Policy Act for the [USDA, Rural Utilities Service (RUS)] or [Drinking Water State Revolving Fund (SRF)] in order to assess the environmental impacts of the proposed new water system for the Sunset Water District. The new system is being proposed to provide water to residential users that currently have to haul their water. Enclosed is a map that depicts the proposed project’s area of potential effect for all construction activities. A description of the work involved follows:

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The WWDC requests that your office review the proposed project for any activities that may occur in the project area, which fall under the jurisdiction of the Corps. Please provide any permit requirements that your agency may have regarding activities related to the proposed project as well as, any recommendations you may have to mitigate or avoid these impacts.

We would appreciate a response within 30 days. If you need further information or wish to discuss the project, please contact me at 1-866-240-0337.

Thank you,
Stetson Engineering, Inc.

[Signature]

David G. Myers, P.E.
Project Engineer

Encl:
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMaha DISTRICT
WYOMING REGULATORY OFFICE
2232 DELL RANGE, BLVD., SUITE 210
CHEYENNE, WYOMING 82009-4942

December 5, 2003

Wyoming Regulatory Office

Mr. Mike Szuma
Sunset Water District
6 Mariposa Circle
Newcastle, Wyoming 82701

Dear Mr. Szuma:

This is in response to a letter dated October 31, 2003 (received on November 6, 2003), submitted by Mr. David Myers, P.E., of Stetson Engineering, Inc. on your behalf. In his letter, Mr. Myers requested a jurisdictional determination from the U.S. Army Corps of Engineers (Corps) concerning the proposed expansion of the Sunset Water District's water supply system. The project includes a new water transmission pipeline from Newcastle Tank #3 to the Sunset Ranch Subdivision and a distribution system with the subdivision. The project is located in Sections 15, 16, 21 and 22, Township 45 North, Range 61 West, Weston County, Wyoming.

The U.S. Army Corps of Engineers regulates the placement of dredged and fill material into wetlands and other waters of the United States as authorized primarily by Section 404 of the Clean Water Act (33 U.S.C. 1344). The term "waters of the United States" has been broadly defined by statute, regulation, and judicial interpretation to include all waters that were, are, or could be used in interstate commerce such as rivers, streams (including ephemeral streams), reservoirs, and lakes as well as wetlands adjacent to those areas. Wetlands are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are characterized by growth of vegetation such as bulrush, cattails, rushes, sedges, and willows.


Based on the information provided by Mr. Myers on October 31, 2003, the U.S. Fish and Wildlife Service's National Wetland Inventory Map, and the U.S. Geological Survey's 7.5-minute map for the Newcastle quadrangle, our staff compiled a map depicting the approximate location of the proposed water supply system (Exhibit 1). Exhibit 1 indicates that there are no wetlands or waters of the U.S. within the project area. However, there are two jurisdictional wetlands close to the project area. Their positions, relative to the proposed water supply system, are included on Exhibit 1. The wetlands are not within the proposed transmission pipeline. Therefore, as long as the two wetlands are avoided, it has been determined that Department of the Army authorization is not required for any activities associated with construction of the proposed
Water supply system. Please note that construction of access roads or the use of machinery such as bulldozers, trenchers, or front end loaders that result in redistribution or stockpiling of material in waters of the United States would constitute a discharge of fill material and Department of the Army authorization would be required. If the scope of the project or location of the water lines change, additional review by our office could be required. Any regulated activities that do not comply with applicable nationwide permits will be considered unauthorized and all responsible parties will be subject to appropriate enforcement action.

The determination that a Corps permit is not required does not eliminate the requirement that you obtain any other applicable federal, state, tribal, or local permits that may be required.

Thank you for your interest in cooperating with the requirements of the U.S. Army Corps of Engineers regulatory program. If you have any questions regarding this determination, please contact Mr. Michael Burgan in our office at (307) 772-2300 and reference file No. 200340269.

Sincerely,

Matthew A. Bilodeau
Program Manager
Wyoming Regulatory Office

Enclosure

Copy Furnished:

✓ David Myers, P.E. (w/enclosure)
Project Engineer
Stetson Engineering, Inc.
P.O. Box 1836
Riverton, Wyoming 82501

Jeremy Lyon (wo/enclosure)
Wyoming Department of
Environmental Quality
Water Quality Division
122 West 25th Street
Cheyenne, Wyoming 82002
Exhibit 1

Sunset Water Supply District
200340269 - No permit required
Sunset Water Supply District
200340269 - No permit required
Universe: Households
Current Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data
Weston County, Wyoming by Census Tract

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, non-sampling error, and definitions see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

Source: U.S. Census Bureau, Census 2000 Summary File 3, Matrix P53.
Newcastle City Landfill
355 Old Highway 85, Newcastle, WY 82701
(307) 746-4677
map | driving directions | save

Appears in the Categories:
Government Offices, Landfills & Transfer Stations
Dotted Line (----) indicates general orientation of proposed pipe installations (not exact location)

Photos

EXHIBIT 6.0.5
Dotted Line (----) indicates general orientation of proposed pipe installations (not exact location)
Dotted Line (----) indicates general orientation of proposed pipe installations (not exact location)
Spiranthes diluvialis

Ute Ladies' Tresses (Orchidaceae)

Status

**Heritage Program Status and Ranks**
- Species of Concern
- Global Rank: G2
- State Rank: S2

**Agency Status**
- USFWS: LT
- USFS:
- BLM: WATCH
**Descriptions**

**General Description**
Ute Ladies' Tresses is a perennial orchid with usually 1 stem that is 20-50 cm tall and arising from tuberously thickened roots. Its narrow leaves are 1 cm wide, can reach 28 cm long, are longest at their base, and persist during flowering. The inflorescence consists of few to many white or ivory flowers clustered in a spike of 3-rank spirals at the top of the stem. The sepals and petals are ascending or perpendicular to the stem. The lateral sepals often spread abruptly from the base of the flower, and sepals are free or only slightly connate at the base. The lip petal is somewhat constricted at the median.

**Phenology**
Flowering in August-early September.

**Similar Species**
S. DILUVIALIS is intermediate between its putative progenitors, S. ROMANZOFFIANA and S. MAGNIFICAMPORUM; the latter is not known from Montana. S. DILUVIALIS is distinguished from S. ROMANZOFFIANA by its whitish, stout, ringent (gaping at the mouth) flowers, by its lip petal being exposed in lateral view, and by its sepals being free or connate at the base for a short distance rather than fused to form a hood above the lip.

**Additional Media**
Illustration

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**Habitat**

**Habitat Description**
Meandered wetlands and swales in broad, open valleys, at margins with calcareous carbonate accumulation.

**USFWS Wetland Indicator Values**
This information is currently unavailable. The data are in the process of being migrated from a different database. If you need this information please call (406) 444-3380.
Global Distribution
SPIRANTHES DILUVIALIS occurs in three general areas of the interior western United States where it is sparse and highly restricted on the landscape: (1) near the base of the e. slope of the Rocky Mountains and intermontane valleys in nc. and c. Colorado, eastcentral Idaho, sw. Montana, and ec. and se. Wyoming; also downstream in w. Nebraska; (2) the Uinta Basin and elsewhere in the upper Colorado River drainage of e. Utah; and (3) near the w. base of the Wasatch Mountains and elsewhere in the e. Great Basin of w. UT (historically in e. Nevada); also disjunct in the Okanogan Highlands of Washington. Counties of distribution include Colorado: Clear Creek, Jefferson, Boulder, and Larimer cos., possibly in Moffat County too. Utah: Daggett, Garfield, Wayne, Utah, Salt Lake, Weber and Toole cos. Nevada: Lincoln county (historical record), Montana: Beaverhead, Gallatin, Jefferson, and Madison cos. Idaho: Bonneville, Jefferson cos., Wyoming: Converse, Goshen, Laramie and Niobrara cos., Nebraska: Sioux County, and Washington: Okanogan Co.

Known Occurrences in Montana: 12

Montana Counties of Occurrences
may include unmappable occurrences.
Beaverhead, Broadwater, Gallatin, Jefferson, Madison

Managed Areas (Number of Occurrences)
one element occurrence may be in multiple managed areas
PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE) (10)
STATE TRUST LAND (3)

References


Global plant information is from NatureServe: An authoritative source for information on the plants, animals, and ecological communities of the United States and Canada. NatureServe Explorer is a product of NatureServe and its network of natural heritage member programs.

Data Source: BIOTICS® Database Last Updated: October 11, 2004