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1 INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

1.1 Introduction

Wright Water and Sewer District (WWSD) applied to the Wyoming Water Development Commission for funding to complete a Level II Study in relation to the construction and testing of a new water supply well designated as RJ-7. WWSD had completed a Level I Study identifying the need for an additional well in order to meet maximum day demand pumping capacity\(^1\). WWDC conducted an engineer procurement process and awarded the Level II Study to Stetson Engineering, Inc. of Gillette in June 2010.

The RJ-7 test well was constructed to a depth of 3,005 feet into the Fort Union aquifer within the WWSD service area, centered on the Town of Wright, about 35 miles south of Gillette (Figure 1-1). RJ-7 when completed will be the sixth operating well in the WWSD public water system, bringing the instantaneous source capacity to 1,800 gallons per minute (gpm). The test well, as detailed below, has been rated at 300 gpm, and produces groundwater of similar quality as the five existing wells (RJ-2 through RJ-6).

The project was conducted as a Level II Study in order to evaluate drilling technology and well construction types that could be used. The City of Gillette and one Gillette-area subdivision had recently constructed similar wells as RJ-7 using the reverse-rotary drilling method and an artificially filter-packed screen. The Level II Study included an evaluation of the drilling and completion methods, which was subsequently used as a basis for the design and construction of the RJ-7 test well. The principal finding of this evaluation was to construct the RJ-7 well using direct-rotary drilling and to complete the well using a liner-screen, without artificial filter pack.

During design of the RJ-7 test well, consideration was also given to future dewatering of the aquifer and interference pumping effects caused by the WWSD wells. It was found that declines in static water level in the wells favored that pump settings be as deep as possible; otherwise over time declining static water levels could decrease capacity. Although these considerations did not substantially alter the design of the RJ-7 test well, the Level II Study was used as a means to assess if deeper sandstone beds were present, and how much water was contributed through the screens of the RJ-7 well. These data together would provide useful information for the WWSD to plan future wells.

The Level II Study also evaluated and identified infrastructure alternatives needed to complete and connect the new RJ-7 well into the existing system.

---

\(^1\) Wright Master Plan Level I Study (Dec 2009) report by Stetson Engineering, Inc. for Wyoming Water Development Commission and Wright Water and Sewer District.
1.2 Summary of Recommendations

1.2.1 Well

- The RJ-7 well is recommended for a pumping capacity of 300 gpm, an annual volume up to 350 acre-feet, and pump setting of approximately 1,160 feet below ground. Typical pumping water level will range from 875 to 935 feet. A means to measure water level should be included in the completion. A slow start pumping system is recommended to avoid excessive pumping at start-up and to protect the borehole from destabilization.

- Spinner flow meter data show that 10% or less of production in the well is produced below 2,500 feet. Future well constructions may consider limiting the well depth as a cost savings to the project.

- Deep Fort Union sandstones were not identified between 3,000 to 4,000 feet below ground. Although there may be sandstone present at greater depth, it does not make a viable aquifer target due to yield and well-construction considerations. Further investigation of deep sandstone by WWSD does not appear to be warranted based on the RJ-7 data.

- Monitoring of sand content is recommended based on the RJ-7 data and the well construction. A direct measurement of sand content using a Rossum Sand Tester in the well building is a very low cost option that should be considered. WWSD may be able to identify certain conditions that result in incipient sand production, which in turn could be useful information for managing the wellfield.

- Future well constructions should reconsider a filter pack design, as there is potential that WWSD wells will become destabilized when they are run for longer durations. The RJ-7 data may indicate that sand production could become a concern for WWSD after prolonged pumping.

1.2.2 Storage

Future storage facilities should be constructed on the RJ-7 site. The site has already been purchased and sized for two-one million gallon storage tanks. A subsurface investigation has also been completed for the foundation recommendations. The future tanks are recommended to be elevated tanks to match the existing system pressures and not contain unusable storage.

1.2.3 Treatment

A new gas chlorination treatment facility should be completed on the RJ-7 site. The chlorination facility should be completed with the completion of RJ-7 well and the
transmission mains. The facility is needed to allow the District to take the existing treatment facility off line and complete essential repairs.

1.2.4 Transmission

New transmission mains will be required to connect the new RJ-7 well into the existing system. Both Raw water and potable water transmission mains are need to provide flexibility in the system to be able to treat water from either the existing or new treatment facility and to be able to isolate the tanks for repairs and rehabilitation when needed. The following transmission mains will be required.

Potable Water

- The new treatment Facility and Southern Tank should be connected to the existing potable water system at two locations. The first section should be a 12-inch PVC main installed parallel to the new raw water transmission main to a point about 280 feet east of the raw water connection on Melicia Drive. At this point it will connect to the existing 12-inch PVC potable water transmission main. The second section should also be a 12-inch PVC main and should connect to the existing 12-inch main about 2,100 feet to the east on Duffy Road. The total length of this 12-inch PVC is approximately 5,900 lineal feet.

Raw Water

- The RJ-7 well should be connected to the existing raw water system with an 8-inch PVC line at a point on Melicia Drive between RJ-6 and RJ-5 wells. Connection at this point will allow the supply from RJ-5, RJ-6, & RJ-7 to be treated and put into the system either at the existing chlorination and storage location or at the location of the new chlorination and storage. The supply from all three wells will be required to maintain the system when the existing tank and or the existing treatment facility are off line for repair. The total length of this 8-inch PVC is approximately 4,275 lineal feet.

- The raw water transmission main between RJ-5 and the existing treatment facility must be upsized from 8-inch PVC to 12-inch PVC. The total length of this 12-inch PVC is approximately 2,450 lineal feet.

1.2.5 Easements

Existing permanent easements and right-of-ways have already been obtained by the WWSD for the line and are discussed in more detail in Section 4 of this Study Report.
1.2.6 SCADA

The Wright Water and Sewer District’s current telemetry system is unable to have remote terminal units added to it. The system is restricted due to the age of the controllers and the DOS based software application. The system will need to be upgraded to add the new RJ-7 well, treatment facility, and storage tank. The telemetry system should be designed to be expandable to include future additions to the water system including wells RJ-8 & RJ-9, and include a second southern storage tank on the RJ-7 site.

1.2.7 RJ-3

Because of the age and condition of the RJ-3 Pumphouse and vault facility the WWSD has determined that upgrades are required at this time. Complete upgrade of the facility will include removing all of the existing above ground and underground infrastructure and installing a new above ground pump control facility.

The current RJ-3 facility is a combination of Electrical Pump Control above ground and all other piping, well control, and metering done in an underground vault. Because of the dangers of underground facilities and the increasing enclosed space regulations, the District is removing all these structures during the upgrade.

The WWSD is also going to install a new pump into the well because the current pump has reduced in capacity to a point where it is not economical for the District to use. The cost of the new pump is not included in the estimates contained in this report because it has been determined by the WWDC to be non-eligible for funding.
2 WELL CONSTRUCTION AND TESTING

The RJ-7 test well was constructed during 2011. This section presents information on the project design, construction, and testing.

2.1 Site Selection

The 1.46-acre drill site was purchased by WWSD prior to the Level II Study. WWSD acquired a site large enough for construction of the test well and a location for a water supply storage tank. The site is located where shown on Figure 2-1 in relation to existing WWSD wells. The site provides a minimum offset distance from other WWSD wells of 4,000 feet or greater.

2.2 Permitting

2.2.1 SEO

WWSD applied for and obtained a water right permit for the RJ-7 well from the State Engineer’s Office (SEO). The SEO issued permit number UW 186050 with a maximum rate of 500 gallons per minute (gpm) and annual volume of 500 acre-feet (af). The permit requires that discharge from the well be metered and that annual well performance tests be submitted to the SEO (Appendix A).

2.2.2 DEQ

Permit-to-Construct

The Department of Environmental Quality issued Permit to Construct No. 10-412 (Appendix A). This permit applies to the well construction and testing, as completed under the Level II Study. A second permit will be required for the completion phase work (pump, controls, building, power, etc.). A Certificate of Completion for the well construction phase, as completed under Permit No. 10-412 will be submitted to DEQ with this Level II Study Report.

Pumping Test Discharge Permit

The contractor for the well construction project was responsible for obtaining a permit to dispose of pumping test discharge water. The contractor obtained a permit from DEQ under the Wyoming Pollutant Discharge Elimination System with authorization number WYG720272. There was no observed discharge to a surface water, as the discharge was directed to an ephemeral drainage and completely infiltrated the soil.
Figure 2-1
Well Location Map
2.3 Well Design

A design report was prepared for the RJ-7 construction project\textsuperscript{2}. This report also served as the Testing and Development Plan for the Level II Study. It was submitted to both DEQ and WWDC for review and approval. Part of the design process evaluated completion types and drilling methods. These evaluations are excerpted here from the design report.

2.3.1 Completion Type

Artificial sand filter pack used as a formation stabilizer is common in formations like the Fort Union. The City of Gillette has recently replaced seven wells with artificial filter pack wells. One of the considerations for the Level II Study was the use of an artificial filter pack for the RJ-7 well.

There are no aquifer formation data that would indicate greater cementation occurs, that sand is coarser, or that other factors would render the formation more stable in Wright as compared to Gillette. However, WWSD does not experience sand production from any of their existing wells. WWSD reports that storage tanks, when cleaned, are found to be sand free, with a very thin coating of silt or clay sized particles at most. Nor does WWSD find sand in waterlines when a repair is made. Given this historical data, which has been collected over more than 20 years of well operation, the Fort Union appears to have greater stability, at least under the pumping regimes of WWSD, than in the Gillette area.

There is a considerable increase in construction cost for artificial filter pack wells in comparison to the traditional design used by the WWSD wells. The cost difference may be on the order of a factor of 1.5 to 2 greater for an artificial filter pack well. Given the historical data for sand production from the WWSD wells and these cost factors, the RJ-7 design does not use an artificial filter pack. The least cost completion type is that used on prior WWSD wells. This design sets liner screens in the well, with cement baskets above each screen, which are used to prevent the sloughing of mudstone into the screen intervals.

2.3.2 Drilling Method

A comparison of reverse- and direct-rotary drilling was made to assess which of these two methods was best suited to the construction of the RJ-7 well project. Data from the RJ-6 construction was used to represent a rotary-drilled well. Data from City of Gillette well S-20 was used to represent a well drilled by the reverse-rotary method. Both wells produce groundwater from the Fort Union aquifer (primarily the upper).

\textsuperscript{2} Design Report and Testing and Development Plan, Wright Water & Sewer District, Well RJ-7 (Sep. 2010) report by Western Groundwater Services, LLC for Wyoming Water Development Commission and Stetson Engineering, Inc.
**Well Data**

The RJ-6 well was completed with a liner screen assembly set into an open borehole. There is a total of 195 feet of screen located between 1230 feet and 2454 feet below ground. The Gillette S-20 well was completed with pipe size screen surrounded by a sand filter pack. There is 270 feet of screen set between 1,000 and 1,716 feet below ground. The filter pack sand (16-30 mesh) is between 0.55 and 0.75 mm. Aquifer transmissivity determined by constant-rate pump testing for the pumping wells has been estimated as 174 square feet per day (ft²/d) for the RJ-6 well and 165 ft²/d for the S-20 well. Table 2-1 provides a summary of well data.

**TABLE 2-1**

**WELL DATA SUMMARY**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Well RJ-6</th>
<th>Well S-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Depth (ft bgs)</td>
<td>2762</td>
<td>1850</td>
</tr>
<tr>
<td>Screen Length (ft)</td>
<td>195</td>
<td>270</td>
</tr>
<tr>
<td>Top of Screen (ft bgs)</td>
<td>1230</td>
<td>1000</td>
</tr>
<tr>
<td>Bottom of Screen (ft bgs)</td>
<td>2454</td>
<td>1716</td>
</tr>
<tr>
<td>Aperture (in)</td>
<td>0.015</td>
<td>0.020</td>
</tr>
<tr>
<td>Filter Pack Size (US Mesh)</td>
<td>None</td>
<td>16-30</td>
</tr>
<tr>
<td>Screen Diameter (in)</td>
<td>5.5</td>
<td>12.75</td>
</tr>
<tr>
<td>Borehole Diameter (in)</td>
<td>7.875</td>
<td>20.0</td>
</tr>
<tr>
<td>Annulus</td>
<td>1.1875</td>
<td>3.625</td>
</tr>
<tr>
<td>Transmissivity (ft²/d)</td>
<td>174</td>
<td>165</td>
</tr>
</tbody>
</table>

**Step-Rate Pumping Test Analysis**

Both wells were tested according to procedures for a step-rate pumping test. Figure 2-2 provides analysis plots. The specific drawdown plot shown on Figure 2-2 was used to estimate turbulent and linear head loss parameters. Only two data points could be used for the RJ-6 well, whereas all three data points were available for the Gillette S-20 well. These data sets are rather limited and expected to have greater interpretational error potential.

The Gillette S-20 well is shown to have significantly lower head losses than the RJ-6 well, and would be considered a more efficient water well. Although the turbulent head loss parameter is slightly larger (cf. 0.0009 ft/gpm² v. 0.0007 ft/gpm²), the linear head loss is substantially lower (cf. 0.3985 ft/gpm v. 0.6158 ft/gpm). The linear head loss includes the effect of aquifer drawdown and also well losses that are proportional to flow rate. Some of the differences in these test parameters could be due to differences in how the tests were run, although the results favor the Gillette S-20 well as the better of the two.
Well RJ-6
Step Rate Pumping Test Analysis

Gillette Well S-20
Step Rate Pumping Test Analysis

Specific Drawdown Regressions
Wright RJ-6 and Gillette S-20 Wells

Figure 2-2
Comparison of Turbulent Losses
Skin Factor Analysis

Skin factor is a term derived from the petroleum industry, referring to the condition of the borehole wall where it could be damaged or stimulated by drilling. A negative skin factor indicates stimulation, whereas a positive value indicates damage. Values normally will range from a low of -5 to a high of 25.

Skin factor was determined for the RJ-6 and S-20 wells using the method of Kruseman and de Ridder for recovery tests\(^3\). This method is based on radial flow to a well in a confined aquifer, and uses the Cooper – Jacob expansion of the Theis formula. Figure 2-3 illustrates the recovery phase data, and a few of the method data inputs.

The method assumes there is no turbulent flow into the well during the pumping phase. Given this assumption, skin factor was computed with and without turbulent head losses. The turbulent head loss was removed based on the step-rate pumping test analysis described above (i.e., \(CQ^2\) was subtracted from the maximum drawdown where \(C\) is the turbulent head loss parameter (slope) and \(Q\) is discharge rate). Results for the analysis are provided in Table 2-2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Well RJ-6</th>
<th>Well S-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmissivity (ft(^2)/d)</td>
<td>174</td>
<td>165</td>
</tr>
<tr>
<td>Pumping Duration (days)</td>
<td>2.89</td>
<td>1.21</td>
</tr>
<tr>
<td>Well Radius (ft)</td>
<td>0.33</td>
<td>0.83</td>
</tr>
<tr>
<td>Storativity (tp+ti)/ti'</td>
<td>1E-05</td>
<td>1E-05</td>
</tr>
<tr>
<td>Extrapolated Drawdown (s'w, ft)</td>
<td>1.04E+09</td>
<td>6.52E+07</td>
</tr>
<tr>
<td>Maximum Drawdown (sw(tp), ft)</td>
<td>700</td>
<td>550</td>
</tr>
<tr>
<td>Discharge (gpm)</td>
<td>563</td>
<td>372</td>
</tr>
<tr>
<td>Skin Factor (with turbulent losses)</td>
<td>-1.9</td>
<td>-2.7</td>
</tr>
<tr>
<td>Maximum Drawdown Alt. (sw(tp), ft)(^A)</td>
<td>442</td>
<td>262</td>
</tr>
<tr>
<td>Skin Factor (without turbulent losses)</td>
<td>-3.7</td>
<td>-4.4</td>
</tr>
</tbody>
</table>

\(^A\) Drawdowns were reduced by amount attributed to turbulent head losses.

Figure 2-3
Comparison of Skin Factors
The analysis results indicate that both wells are apparently stimulated, as skin factors are negative. These values are dependent on the storativity, which was assumed as 1E-5 for both wells. It is likely that actual skin factors are greater than those listed in Table 2-2, as the values are indicating substantial stimulation of the borehole, which would not be expected for either well. A greater storativity would reduce the skin factor values.

The analysis does, however, provide a useful comparison of the relative damage of the two wells. According to skin factors, the Gillette S-20 well is shown to be the better of the two wells. Significantly smaller skin factors are determined for the S-20 well in comparison to the RJ-6 well.

It is also noteworthy that the S-20 well has greater specific capacity than the RJ-6 well, even though aquifer transmissivity is determined to be slightly lower at the S-20 well (cf. 0.94 gpm/ft v. 0.72 gpm/ft). In combination, the analysis of well damage indicates the S-20 well is a more efficient construction than the RJ-6 well. Drilling method is one of several factors that contributes to this finding.

Cost Data

The cost for well construction was also compared between reverse- and direct-rotary drilling methods. The basis for cost data was the design for the RJ-7 well that uses a liner screen, similar to the RJ-6 construction, and several other WWSD wells.

A modification was made to the design for the reverse-rotary drilled well, as this method normally uses a minimum diameter of 12-1/4 inches. In order to accommodate this larger borehole size, intermediate casing was increased to 13-3/8 inch diameter, and the liner screens were increased to 10-3/4 inch diameter. These are substantial increases, as the direct-rotary drilled well uses a 10-3/4 inch diameter intermediate casing and a 5-1/2 inch diameter liner screen assembly.

Cost for construction by direct-rotary has an estimated total of $539,000. Construction using reverse-rotary has an estimated total cost of $856,000. An additional 40 hours of development time was allocated to direct-rotary drilling as a means to improve well efficiency. On a footage basis, and inclusive of pump testing, the well costs are estimated at $180/ft for direct and $285/ft for reverse. These data show reverse-rotary is substantially more expensive than direct-rotary, primarily due to the large minimum borehole size used with the reverse equipment.

Drilling Method Conclusions

With respect to well hydraulics, reverse-rotary as compared here to direct-rotary, was found to result in a more efficient and higher capacity well. It is not clear if this difference is due to the drilling method or to development procedures, personnel skill, and other factors (e.g., choice of mud additives). Reverse-rotary drillers can be more
skilled as they are routinely working on larger, more expensive well projects. Borehole wall coring and permeability testing may provide greater insight to a drilling method evaluation.

With respect to cost data and the RJ-7 design, direct-rotary was found to provide a large cost advantage over reverse-rotary. Given this advantage, a direct-rotary drilling method was allowed in the RJ-7 specifications. Additional development hours were included in the project to possibly improve the hydraulic performance of the well.

2.4 Bidding and Contractor Award

Contractors were prequalified to bid the RJ-7 well construction project during September 2010. A total of six contractors submitted and all were prequalified. The project was bid and awarded during March 2011. Three bids were received. Weston Engineering, Inc. of Upton, Wyoming was the lowest bidder and was awarded the project.

Table 2-3 provides the bid and actual fees paid to the contractor. WWDC eligible well construction costs were determined to be $559,854. A 33% share of these costs is $184,752. Geophysical logging, pump testing, and work to explore the lower borehole section (3,000 – 4,000 feet) had a cost of $164,996.

### Table 2-3
CONTRACTOR BID AND ACTUAL FEES PAID

<table>
<thead>
<tr>
<th>Activity</th>
<th>Bid Qty</th>
<th>Unit</th>
<th>Unit Rate</th>
<th>Bid Total</th>
<th>Act Qty</th>
<th>Invoice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization/Demobilization</td>
<td>1</td>
<td>LS</td>
<td>$63,480</td>
<td>$63,480</td>
<td>1</td>
<td>$63,480</td>
</tr>
<tr>
<td>Surface Casing</td>
<td>200</td>
<td>LF</td>
<td>$220</td>
<td>$44,000</td>
<td>92</td>
<td>$20,240</td>
</tr>
<tr>
<td>Intermediate Casing</td>
<td>1100</td>
<td>LF</td>
<td>$143</td>
<td>$157,300</td>
<td>1230</td>
<td>$175,890</td>
</tr>
<tr>
<td>Liner Borehole</td>
<td>2500</td>
<td>LF</td>
<td>$38</td>
<td>$95,000</td>
<td>2777</td>
<td>$105,526</td>
</tr>
<tr>
<td>Open Borehole Wireline</td>
<td>1</td>
<td>LS</td>
<td>$10,280</td>
<td>$10,280</td>
<td>1</td>
<td>$10,280</td>
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<tr>
<td>Isolation Packer</td>
<td>1</td>
<td>LS</td>
<td>$43,000</td>
<td>$43,000</td>
<td>1</td>
<td>$43,000</td>
</tr>
<tr>
<td>Water Sampling thru Packer</td>
<td>36</td>
<td>HR</td>
<td>$325</td>
<td>$11,700</td>
<td>34</td>
<td>$11,050</td>
</tr>
<tr>
<td>Borehole Plugging</td>
<td>1</td>
<td>LS</td>
<td>$14,800</td>
<td>$14,800</td>
<td>1</td>
<td>$14,800</td>
</tr>
<tr>
<td>Liner Casing</td>
<td>1420</td>
<td>LF</td>
<td>$35</td>
<td>$49,700</td>
<td>1445</td>
<td>$50,575</td>
</tr>
<tr>
<td>Liner Screen</td>
<td>280</td>
<td>LF</td>
<td>$218</td>
<td>$61,118</td>
<td>355</td>
<td>$77,489</td>
</tr>
<tr>
<td>Liner Hanger</td>
<td>1</td>
<td>EA</td>
<td>$16,450</td>
<td>$16,450</td>
<td>1</td>
<td>$16,450</td>
</tr>
<tr>
<td>Development</td>
<td>96</td>
<td>HR</td>
<td>$550</td>
<td>$52,800</td>
<td>65</td>
<td>$36,750</td>
</tr>
<tr>
<td>Temporary Pumping System</td>
<td>1</td>
<td>LS</td>
<td>$29,500</td>
<td>$29,500</td>
<td>1</td>
<td>$29,500</td>
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<tr>
<td>Pumping Test Hourly</td>
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<td>HR</td>
<td>$165</td>
<td>$28,710</td>
<td>172</td>
<td>$28,380</td>
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<td>$36,940</td>
<td>1</td>
<td>$36,940</td>
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<td>Disinfection</td>
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<td>LS</td>
<td>$5,500</td>
<td>$5,500</td>
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<tr>
<td>Stand-by Time</td>
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<td>HR</td>
<td>$275</td>
<td>$6,600</td>
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<td></td>
<td></td>
<td></td>
<td>$726,878</td>
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<td>$724,850</td>
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</tbody>
</table>

LS – lump sum; LF – linear foot; HR – hourly
2.5 Well Construction and Development

The as-built construction log is provided on Figure 2-4. A history of hole report and additional well logs plotted at larger scale are included in Appendix B. Construction of the upper borehole for the intermediate casing was problematic for the contractor due to lost circulation in the Wyodak coal seams. With two crews working 24-hours per day, a total of 28 days were spent to drill for and set 1,230 feet of intermediate casing. The intermediate casing was cemented in two stages using a tremie pipe rather than a staging tool.

The liner borehole also was drilled with difficulty, but primarily due to a moderately slow penetration rate, and hydration of formation clay minerals. The degree of washout of these fine-grained rocks appears severe, and may be indicative of poor quality drilling mud that did not protect the clays from hydration. There were common tight intervals encountered that were worked repeatedly in order to obtain the wireline logs and prepare the borehole for completion.

The well design utilized a liner screen assembly hung from a Turntec Mfg. liner hanger. A cement basket was set at the top of each screen interval with a centralizer. Each screen interval used individual screen lengths from five to 20 feet (ten at 20-feet, five at 15-feet, five at 10-feet, and six at 5-feet). Screens and liner casing were joined primarily by welding. Centralizers were located at approximately one per 80 feet on both casing and screens. Table 2-4 provides a listing of the screen intervals.

<table>
<thead>
<tr>
<th>TOP</th>
<th>BOTTOM</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1270</td>
<td>1335</td>
<td>65</td>
</tr>
<tr>
<td>1355</td>
<td>1370</td>
<td>15</td>
</tr>
<tr>
<td>1384</td>
<td>1414</td>
<td>30</td>
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<tr>
<td>1434</td>
<td>1474</td>
<td>40</td>
</tr>
<tr>
<td>1625</td>
<td>1665</td>
<td>40</td>
</tr>
<tr>
<td>1774</td>
<td>1794</td>
<td>20</td>
</tr>
<tr>
<td>2062</td>
<td>2092</td>
<td>30</td>
</tr>
<tr>
<td>2175</td>
<td>2200</td>
<td>25</td>
</tr>
<tr>
<td>2374</td>
<td>2424</td>
<td>50</td>
</tr>
<tr>
<td>2590</td>
<td>2600</td>
<td>10</td>
</tr>
<tr>
<td>2894</td>
<td>2924</td>
<td>30</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>355</td>
</tr>
</tbody>
</table>

Well development was completed by first displacing drilling mud from the well. Jetting with water was subsequently completed in the screen intervals for approximately 18
hours. The majority of development work consisted of air-lift pumping from above and within the screen intervals. The maximum depth of the drill tools during air-lift pumping was about 1800 feet below ground. Air lift pumping rates were intermittently in the range from 300 to 500 gpm. After the initial period of air development, a surfactant/dispersant chemical solution was applied by tremie pipe into the screen intervals. Air development was then resumed after a contact period of about four to six hours.

2.5.1 Video Inspection Log

On December 15, 2011, the contractor obtained a video log of the RJ-7 well to verify the well construction. A DVD copy of the log is secured to the back cover of the report. This log was included in the final cased hole logging item of the project bid. Collection of this log was not observed by the engineer, but was reviewed to assess if the well was constructed as specified.

The video log review identified that possibly 206 feet of screen was misplaced in the well. A comparison of specified screen intervals and the screen intervals identified from the video log is provided in Table 2-5. A graphic log comparing the specified and video log screen intervals is provided in Appendix B. As shown, the video log data indicate that ten of 11 screen intervals were set 17 to 30 feet shallower than was specified.

<table>
<thead>
<tr>
<th>Specified Screen Intervals (feet below ground surface)</th>
<th>As-Built Screen Intervals from Video (feet below ground surface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>Bottom</td>
</tr>
<tr>
<td>1270</td>
<td>1335</td>
</tr>
<tr>
<td>1355</td>
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<tr>
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<tr>
<td>1625</td>
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<td>2374</td>
<td>2424</td>
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<tr>
<td>2590</td>
<td>2600</td>
</tr>
<tr>
<td>2894</td>
<td>2924</td>
</tr>
</tbody>
</table>

The contractor was issued a letter indicating the deficiency of screen placement, and responded by claiming the video log depths were incorrect and that additional logs may be collected to confirm screen locations. The contractor proceeded to collect additional wireline logs from the well on March 15, 2012. The engineer was not invited to witness the log collection and was unaware of the types of logs being run, as such, the accuracy...
of these logs has not been confirmed. For unknown reasons, the confirmation logs did not include a video rerun to remedy the apparently faulty depths reported in the initial video.

The confirmation logs included natural gamma, casing collar locator, and acoustic bond with variable density. These log data where interpreted by the project’s geologist and found to show the screens were correctly located with the exception of the second to deepest screen, which is set from 2631 to 2645 feet (specification: 2590 to 2600 feet) and may be adjacent to a slightly deeper sandstone interval than was targeted in the screen specifications. An annotated version of the confirmation logs showing the interpreted screen intervals based on the variable density plot is provided in Appendix B.

Because the engineer was not present at the time of confirmation logging, there remains uncertainty as to the accuracy of the screen placements. For this reason, screen diagrams presented in the report are showing the specified intervals. Future downhole work that depends on screen location should include verification logging.
Figure 2-4
As-Built Well Construction Log
2.6 Borehole Geology

2.6.1 Stratigraphy

The geologic setting for the RJ-7 well is illustrated on Figures 2-5 and 2-6. The well site is located about 12 miles west of where the Fort Union is exposed at the surface, which is coincident with the coal mine area. Groundwater recharge to the sandstone beds which are produced in the RJ-7 well probably occurs from 12 to 30 miles to the east.

The contact of the Wasatch and Fort Union Formations was identified to coincide with the top of the Wyodak coal at about 880 feet below ground. For this project, the Fort Union was not differentiated into its members, as they are not clearly defined (Figure 2-6). It is certain the borehole penetrates at least the upper two members (Tongue River and Lebo), but the contact between them could be located at several different depths. It is not clear as to whether or not the borehole penetrated the lower Tullock Member. Although some thin coal beds were encountered in the deeper borehole section, the rocks were primarily mudstones, more characteristic of the Lebo. The Lance Formation was estimated to occur at a depth of about 4,500 feet at the RJ-7 well site based on local petroleum well logs, although these data were not highly certain as most offset wells identified the Fox Hills Formation and below.

2.6.2 Lithology

Three principal rock types make up the majority of the Fort Union in the RJ-7 well: 1) mudstone; 2) sandstone; and 3) coal. Mudstone is the most voluminous of the rock types. These rocks are thinly laminated but do not exhibit fissility, except in some deeper beds. Coal beds are rare once below the Wyodak coal seams. The coal quality ranges from brown lignitic material to clean vitreous black coal. Coal occurs commonly as laminations within mudstone intervals and sparsely in thin beds.

Sandstones are very fine to fine grained and can include finer silt fractions of the same mineralogy. These beds are delineated primarily by the caliper and resistivity wireline logs. The caliper log exhibits a much truer borehole through the sandstones, while the resistivity logs are deflected to higher values. The natural gamma and spontaneous potential logs also deflect through sandstone beds (to the left), but do not delineate the zone thicknesses as clearly. The sandstone occurring from about 2,175 to 2,200 feet provides an excellent example of these wireline log responses (Appendix B, Field Log).
Figure 2-5
Surface Geology Map

Map was extracted from Figure 4 of Bartos, T. T. and K. M. Ogle (2002) U.S. Geological Survey Water-Resources Investigations Report 02-4045.
<table>
<thead>
<tr>
<th>E RAT H EM</th>
<th>S YST EM</th>
<th>S ERIE S</th>
<th>S TRATIGRAPHIC UNIT</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Eocene</td>
<td>Wasatch Formation</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Kingsbury Member¹</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Lake de Smet coal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Felix coal</td>
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<td></td>
<td></td>
<td>Roland coal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wyodak-Anderson coal zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wall coal</td>
</tr>
<tr>
<td></td>
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<td>Knobloch coal zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sawyer coal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Terret coal</td>
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<td>Anderson (Dietz 1, 2, and 3) coal</td>
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<td>Calvert coal</td>
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<td></td>
<td></td>
<td>Nance coal</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Flowers-Goodale coal</td>
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<td></td>
<td></td>
<td></td>
<td>--or--</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Sawyer coal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lay Creek coal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>King coal</td>
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</tbody>
</table>

¹ Wasatch Formation not subdivided into members in study area (eastern Powder River Basin).
² Defined as the Lebo Shale Member of the Fort Union Formation in Montana.

Illustration was extracted from Figure 3 of Bartos, T. T. and K. M. Ogle (2002) U.S. Geological Survey Water-Resources Investigations Report 02-4045.

Figure 2-6
Stratigraphic Column
Figure 2-7 illustrates Fort Union sandstone as seen under a polarizing microscope. The upper sample photos (A, B) are of sandstone cuttings from the RJ-7 well. The lower photos (C – F) are of samples collected at a rock outcrop about 18 miles east of the RJ-7 well. These photos indicate the sandstone is primarily grains of sub-angular quartz and feldspar, and that the grain size of individual beds can be highly variable. The outcrop photos show high porosity estimated at about 30%. There is very little visible cementation in the rocks, although they are well lithified. What cement is present appears to be iron oxide.

Sandstone in the RJ-7 well was commonly cemented by kaolinite, a clay mineral weathering product of feldspar. It appears that this cement could be more important at depth than iron oxides. It is also likely that iron cements, where present, have dissolved and precipitated locally as pyrite, as the groundwater environment is reducing, and pyritized sandstone is commonly observed, but of low volume.

2.6.3 Spinner Flow Meter Logging

After completion of pump testing, a spinner flow meter log was run in the RJ-7 well to estimate the flow contribution through the individual screen intervals. A large-scale plot of these logs is provided in Appendix B. Three logs were run in the downward direction at logging speeds of 30-, 60-, and 90-feet per minute (ft/min) while the well was being pumped at a rate of 125 gpm. Pumping rate was metered and steady throughout the logging work.

Figure 2-8 presents a spinner flow meter response plot. This plot is prepared by selecting discrete depths below the screen intervals and plotting a point for each logging speed. The data at a given depth should plot on a straight line with a slope dependent on the logging tool, and which is invariant to logging speed. As shown, the data are noisy, but have been visually fit with lines of equal slope. The distance between the lines on the horizontal axis is used to determine a flow contribution for each screen. The flow contribution for each screen was also estimated by evaluating the 90 ft/min logging data down the well. The difference in measured flow velocity from above to below a screen was used to determine the percent contribution of the screen. Table 2-6 presents these analysis results.
A. Drill cuttings of loose sand, 1290 - 1330 ft. Grain surfaces are intensely fractured. Plain light (40X)

B. Same image as (A) but taken using crossed polarized light. The grains are a mixture of potassium feldspar and quartz (low birefringence). Some of the quartz grains are chert or microcrystalline. (40X)

C. Sample #1 from outcrop location. Much finer grained than (A). Hand sample was light gray. Blue epoxy is filling the natural porosity of the sample. Plain light (40X).

D. Close up photo of (C) illustrates grain contacts. Cementation is very limited. Hand sample was well lithified but friable. Plain light (400X)

E. Sample #2 from outcrop location. Similar grain size as (A). Hand sample was rusty colored, well lithified, but friable. Plain light (40X)

F. Close up photo of (E) illustrates grain contacts and presumed iron hydroxide cement. Plain light (400X)

Figure 2-7
Microscope Photos of Formation Material
Figure 2-8
Spinner Flow Meter Response Plot
TABLE 2-6
SPINNER FLOW METERING RESULTS

<table>
<thead>
<tr>
<th>Log Depth</th>
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<td>Screen Interval</td>
</tr>
<tr>
<td>From Spinner Response</td>
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<tr>
<td>From 90 ft/min Log</td>
</tr>
<tr>
<td>Difference</td>
</tr>
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</tr>
<tr>
<td>9%</td>
</tr>
<tr>
<td>-5%</td>
</tr>
</tbody>
</table>

A This interval may be misplaced to 2631-2645 feet (see Table 2-5)

Spinner flow meter data indicate that two of the screens are producing little if any water into the well. One of these is a 10-foot screen specified from 2,590 to 2,600 feet that is possibly misplaced (Table 2-5); the other is a 40-foot screen in the upper part of the well, located from 1,434 to 1,474 feet. Spinner flow meter data otherwise show screens to be producing at varying percentages up to a maximum of 22%. The upper sandstone complex from 1,240 to 1,474 feet is producing about 35% of the total flow. The largest individual production of 22% occurs from a coarsening upward (cf. gamma log trend) sandstone at 1,774 to 1,794 feet that appears to be the lower part of a channel. It is overlain and underlain by moderately thick sections of mudstone with some coal beds. There is only 4% to 10% of the flow being produced below 2,425 feet. This occurrence may be attributed to low production or possibly to misplaced screens, as discussed above. It may be reasonable based on these data to assess the cost savings of building future wells shallower than the RJ-7 2,500 ft depth equivalent, particularly considering that water quality may also decline with depth.

2.6.4 Lower Borehole

Wireline logging data for the lower borehole section extending from 3,000 to 4,000 feet do not indicate there are any sandstone targets for future well constructions. In fact, the section appears to be substantially devoid of sandstone channels and crevasse-splay deposits, as are characteristic of the Fort Union aquifer.

The primary reason for exploring the lower borehole interval was to identify if deeper sandstones were present. Under these circumstances, it could be feasible to build a future well that would have a deeper pump chamber by eliminating some of the upper
sandstone bodies. This lost yield would in turn be recaptured by developing deeper sandstone strata. Such a condition was shown not to exist by the RJ-7 borehole. At this time, it is concluded that future WWSD wells will need to fully develop the upper sandstones in order to achieve maximum capacity.

There does not appear to be any compelling reasons for WWSD to consider a drilling project that will extend to the Lance Formation, such as in relation to a future well. Although the RJ-7 borehole was terminated prior to the Lance, and there remains some possibility of deeper sandstone in the Tulluck Member, the Tullock is not a noted large producer of groundwater. Furthermore, if Tulluck sandstone was to be developed, it is most likely the well construction would be required to be cased and cemented through the upper Fort Union aquifer. The production potential of such a well would therefore be substantially reduced and most likely unappealing to WWSD.

2.7 Hydraulic Testing

Two pumping tests were included in the project. A step-rate pumping test was conducted on September 21, 2011 starting at 12:30 PM and lasting four hours. The step-rate test was run at four sequentially increasing pumping rates, with each rate held constant for a one-hour period. A constant-rate test was conducted on October 5, 2011 starting at 11:00 AM. The pumping period of this test lasted for seven days.

Temporary pumping equipment used for the test was furnished by the contractor. A submersible test pump was set to a depth of approximately 1,200 feet. An instrument tube was set with the pump to a depth of 1,179 feet. Discharge was routed off the well site using flexible hose, and then flowed overland.

Water level data were collected in the RJ-7 well at one-minute intervals from September 21, 2011 to October 19, 2011. Water-level data were also collected at the RJ-3 and RJ-5 wells but at much lower frequency. These data were collected using In-Situ Level Troll 700 pressure transducers and data loggers. Discharge rate from the RJ-7 well was measured using a Siemens FUP1010 portable ultra-sonic flow meter with data logging capability. These data were also recorded at one-minute intervals.

2.7.1 Step-Rate Pumping Test

A hydrograph plot for the step-rate pumping test showing data collected in the RJ-7 well is provided on Figure 2-9. The initial static water level in the well measured prior to any testing was 582 feet below ground level. The four steps of the test were run at average pumping rates of 103-, 196-, 287-, and 404-gpm. Maximum drawdown measured at the end of the fourth step was 327 feet. Twenty-four hours after the pump was shut off, there was a residual drawdown of 4.6 feet remaining.

Plots used to analyze the step-rate pumping test data are shown on Figure 2-10. The drawdown data follow a typical pattern for a pumping well (Figure 2-10A). Noise in these data is attributed to the electrical system of the pump. As shown on Figure 2-
10B, the specific capacity increased during the test, which is opposite of a normal response to pumping when pumping rate is increased. At the end of the fourth step when pumping at 404 gpm, specific capacity was 1.4 gpm/ft. This response may be attributed to continued well development occurring during the test or hydraulic gradients in the aquifer. Because these data are not trending normally (negative slope), a turbulent head loss coefficient was not estimated.

Projection of drawdown based on the step-rate test data was used to determine a pumping rate for the constant-rate test. The data indicated that a pumping rate of 300 to 325 gpm would be unlikely to overdraw the well in the seven day pumping period. This test rate was estimated to allow for enough available drawdown to withstand a flow limiting boundary condition response, should that occur. It was also considered the most useful test rate for evaluating sand content in the discharge, as it corresponded closely to the well target rate of 300 gpm.
Step Rate Pumping Test
Well RJ-7

Constant Rate Pumping Test
Well RJ-7

Wells RJ-3 and RJ-5

Figure 2-9
Pumping Test Hydrographs
Figure 2-10
Step Rate Pumping Test Plots
2.7.2 Constant-Rate Pumping Test

A hydrograph plot for the constant-rate pumping test is provided on Figure 2-9. Static water level in the well prior to testing was 587 feet below ground level. The pumping period of the test lasted 168 hours (7.00 days) at an average rate of 306 gpm. At the end of the pumping period, maximum drawdown was 340 feet, resulting in a specific capacity of 0.90 gpm/ft. Specific capacity after one hour of pumping was 1.4 gpm/ft. After seven days of recovery, residual drawdown in the RJ-7 well was 27.5 feet.

Analysis plots for the constant-rate test are provided on Figure 2-11. The test data show a short-term period of wellbore storage effects, that is deemed over after about 10-minutes of pumping. From 10 to 700 minutes, the data are exhibiting an infinite aquifer radial flow response. After 700 minutes, the slope of the drawdown trend is increasing, reflecting a flow limiting boundary condition response. This boundary response is also shown by the increase in the derivative values, and also by the recovery plot between dimensionless time values of 2 and 10.

Aquifer transmissivity was estimated by straight line fits to both pumping and recovery phase data. The values determined were 275 and 265 ft²/d, respectively. The lower of these two values was used in subsequent analyses. Other hydraulic parameters were estimated by fitting a confined aquifer model to the well response data⁴. The parameters were estimated sequentially as follows:

- Storativity was estimated based on the response to pumping observed in the RJ-3 well (Figure 2-9). The storativity value of the model was adjusted to achieve a 0.1 ft drawdown at the location of RJ-3 at the end of pumping, as no drawdown was observed at this location (offset distance of 6,400 feet). A storativity of 0.0006 was determined, which is reasonable for the Fort Union aquifer.

- Skin factor, which reflects damage to the wellbore adjacent to the screens, was determined by adjusting the model onto the test data in the interval from 10 to 700 minutes of pumping. A slight negative skin factor of -0.25 was determined indicating formation adjacent to the screens was stimulated by development. This low skin factor is indicating that damage to the formation at the well is probably minimal, which is also supported by the production of formation sand that occurred during development.

- The boundary condition response was subsequently incorporated into the model as a single linear boundary. This type of boundary is justified by the doubling of slope observed (1.98X) after 700 minutes of pumping. A doubling of the slope can be shown by well hydraulics mathematics to correspond to a single linear no-flow boundary. The boundary offset was adjusted to visually match the model to the test data after 700 minutes of pumping. An offset distance of 600 feet was

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⁴ Hydraulic analysis and modeling was completed using AQTESOLV©.
determined. This value physically indicates that sandstone bodies connected to the well may exhibit at least partial limitation in hydraulic capacity at a distance of 600 feet from the RJ-7 well.
Figure 2-11

Constant Rate Pumping Test Plots

Straight Line Fit to Drawdown

Horner Recovery with Straight Line Fit

Confined Aquifer Model Fit

Well storage

Skin Factor

Boundary

Drawdown - □
Derivative - +
Overall, the model fit to test data is visually good and follows the important trends of the test data. The increasing derivative is matched closely, which is important for use of the model to estimate drawdown during longer pumping periods. The recovery data are slightly underestimated by the model, which means the model may underestimate overall drawdown when the well is operated with a cyclical pumping schedule. The underestimation, however, is very slight. The model accuracy is of course limited to the trends that can be observed in the pumping test data; changes to these trends such as during longer pumping times or due to future groundwater development would not be captured.

2.7.3 Design Capacity

The hydraulic model developed from the constant-rate test was subsequently used to formulate a recommendation for the permanent pumping equipment of the RJ-7 well. In applying the model, a maximum drawdown of approximately 375 feet was imposed. This drawdown was developed by assuming a static water level of 600 feet and pump setting of 1,160 feet. Sixty-six percent, or two thirds, of this water column equates to 375 feet, and was deemed available for pumping drawdown. The remaining 33%, or 185 feet, was left for pump submergence and future declines in pumping water level. Other factors considered in developing a rate estimate are that 1) the formation could be destabilized by prolonged pumping with larger drawdown; and 2) the target rate for the RJ-7 well from the Level I Master Plan is 300 gpm.

Figure 2-12A provides plots used to assess well capacity based on continuous pumping from the RJ-7 well. As shown, a rate of 400 gpm is clearly a short-term rate that could dewater the well to the pump intake with prolonged pumping. The rate of 300 gpm, while substantially exceeding the imposed maximum drawdown, would likely not dewater the well within the normal uses of WWSD. Rates of 250 and 235 gpm appear to be sustainable for very long-term pumping periods, much greater than would be realized in the public water system.

When considering cyclical pumping of 12 hours per day, the rate of 300 gpm is shown to be satisfactory (Figure 2-12B). Based on these modeling data and the target rate for the RJ-7 well, a design capacity of 300 gpm is recommended. The monitoring that is completed by WWSD can be used to assess if at any future time this rate becomes excessive.

The hydraulic model was also used to assess the annual volume of water that could be pumped from the well. In this application (no plots shown), pumping was simulated for a five-year period at a constant-rate. The same maximum drawdown of 375 feet was imposed. A rate of 215 gpm was determined to be the maximum rate, achieving the maximum drawdown at the end of the five-year period. This rate equates to 347 acre-feet per year (af/yr), or with slight rounding, 350 acre-feet per year.
A. CONTINUOUS PUMPING

Model includes single linear no-flow boundary offset 600 feet from pumping well.

B. CYCLICAL PUMPING

12 hrs/day at 300 gpm
In summary, the RJ-7 well capacity is recommended at 300 gpm and a maximum annual volume of 350 acre-feet, with a pump setting at 1,160 feet below ground level. This rate and volume are within the RJ-7 water right maximums (500 gpm, 500 af/yr). Based on cyclical pumping, pumping water level is estimated to range from 875 to 935 feet below ground level. A slow start pumping system is recommended in order to avoid initial high discharges and possibly destabilization of the formation, with associated sand production.

2.7.4 Interference Drawdown

Measurements of water level at the RJ-3 and RJ-5 wells were made during the RJ-7 pumping tests in order to acquire data on interference effects in the Fort Union aquifer at Wright. These data, shown on Figure 2-9, indicated there was no response to pumping of the RJ-7 well. RJ-5 data were dominated by the operation of this well during testing. The RJ-3 data indicated no drawdown effect and provide a reliable measure as this well was off-line throughout the testing period.

It can also be observed that RJ-3 was not responding to operation of other WWSD wells. The same can be said for the RJ-7 well. These observations are favorable as they indicate that interference drawdown effects among the WWSD wells appear minimal. One explanation for these observations is that although the wells are producing from the aquifer at similar depths, the sandstone bodies do not have strong hydraulic connection from well to well.

The hydraulic model developed from the RJ-7 constant-rate test indirectly illustrates a likely lack of hydraulic connection among the sandstone bodies. Figure 2-13A shows the drawdown versus time at three distances relevant to the WWSD wells. These curves were developed based on water production of 350 acre-feet in a one year period. Interference drawdown effects are estimated to be moderately large, ranging from 35 feet at a distance of 10,000 feet to 75 feet at a distance of 4,000 feet. These are considered maximums based on the model parameters. Figure 2-13B shows results from the same modeling analysis, but with drawdown plotted versus distance based on the conditions after 365 days of pumping. Because the modeling results are largely dissimilar to field observations, the continuous aquifer condition of the model is deemed incorrect; the actual groundwater system is most likely exhibiting discontinuities.

Although the field data are favorable, it will still behoove WWSD to conduct vigilant monitoring for interference effects and consider interference drawdown when locating future wells. This monitoring will also serve to assess declining static water levels at the individual wells, as described in the Level I Master Plan. These monitoring data when compiled over long-term periods could be useful for source of supply planning.
A. TIME-DRAWDOWN

Model includes aquifer boundary at 600 ft.

Results shown for 350 af of production.

B. DISTANCE-DRAWDOWN

Model includes aquifer boundary at 600 ft.

Results shown for 350 af of production and time of 365 days.
2.8 Water Quality

Water quality data were obtained from samples collected during pump testing in the completed RJ-7 well. Field parameters and sand content were measured periodically throughout testing.

A Midpoint Sample was collected during step number three of the step-rate pumping test. At this time, about 31,000 gallons had been pumped from the well. An Endpoint Sample was collected during the constant-rate pumping test after a pumping period of 118 hours (10/10/11 9:00 AM), at which time total production from the well was about 2,200,000 gallons. This sample was collected early due to concerns of pump failure, which had already occurred once in the project. The Midpoint and Endpoint Samples were analyzed by Inter-Mountain Laboratories, Inc. of Sheridan.

At the end of the constant-rate test recovery period, the pump was restarted for spinner flow meter logging and a water sample was conveniently collected for microbiological analysis to assess well plugging potential. At the time of collection of this sample, about 9,100 gallons (est. 1.6 well volumes) had been purged. This sample was evaluated using the BART© method to assess heterotrophic, slime-forming, iron-related, and sulfate-reducing bacteria.

Prior to the RJ-7 well completion, a water sample was obtained from the lower borehole. This sample was collected by air-lifting with an isolation packer set at a depth of 3055 feet. The borehole at this time was producing from below the packer to the total depth of about 4,000 feet. Air-lift pumping at 20 to 30 gpm was completed for 34 hours prior to sampling. This sample was submitted to Energy Laboratories, Inc. of Gillette. A portion of the same sample was submitted at a later date to Inter-Mountain Laboratories, Inc. for analysis of radionuclides.

Table 2-7 inventories the samples collected. Appendix C provides the analytical laboratory reports.

Table 2-7
WATER QUALITY SAMPLES

<table>
<thead>
<tr>
<th>Sample Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Parameters</td>
<td>Periodically</td>
</tr>
<tr>
<td>Lower Borehole Sample</td>
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</tr>
<tr>
<td>Midpoint Sample</td>
<td>9/21/2011 3:00 PM</td>
</tr>
<tr>
<td>Endpoint Sample</td>
<td>10/10/2011 9:00 AM</td>
</tr>
<tr>
<td>BART© Sample</td>
<td>10/19/2011 12:10 PM</td>
</tr>
</tbody>
</table>
2.8.1 Field Parameters

Water quality field parameters were measured using calibrated portable instruments manufactured by Oakton (specific conductance) and Hanna (temperature, pH, oxidation-reduction potential). Samples were collected as grabs from a tap located at the wellhead during pump testing (field parameters were not measured for the lower borehole sample). Field parameter data were measured immediately after sampling. These data are provided in Appendix C.

Midpoint Sample

At the time of collection of the Midpoint Sample (9/21/11, 3:00 PM), field parameters were generally stable (Appendix C). Specific conductance was approximately 460 microSiemens per centimeter (µS/cm), which is lower than was found to occur after longer pumping periods. The pH was also lower in comparison to the pH established at longer pumping times. Redox potential was slightly greater. Based on iron and manganese data (see below), it appears the well was producing a substantially different water quality than after longer pumping times. It is possible that some of the mudstone and coal strata that are not screened were yielding flow into the well, which subsequently was sealed off at the cement baskets.

Based on these data, the Midpoint Sample is not considered representative of the RJ-7 well aquifer water quality. It is not uncommon to find that the Midpoint Sample is unrepresentative of the aquifer, due to factors noted above and also residual impacts from drilling and construction of the well. For these reasons, WWDC may consider altering the sample collection protocol used on Level II studies on a case-by-case basis.

Endpoint Sample

Figure 2-14 provides time history plots of the field data as collected during the constant-rate test. At the start of pumping, these data are similar to those obtained in relation to the Midpoint Sample. The data values eventually reach stable values with prolonged pumping, and were generally stable at the time of collection of the Endpoint Sample (10/10/11, 9:00 AM). Specific conductance and pH are moderately stable after about one to two days of pumping. Temperature does not appear stable until about five days after pumping. Redox potential may not have stabilized, but this parameter is highly sensitive to exposure to the atmosphere. Based on these data, the Endpoint Sample is considered to be representative of the water quality that will be produced from the RJ-7 well when it is put into service.

One of the factors possibly influencing these data is the depth-average nature of the sample. The sample collected is a composite of several sandstone bodies. The contributions to the well from each sandstone may be varying with prolonged pumping, which can affect the field parameter data.
2.8.2 Sand Content

Sand content of the RJ-7 discharge was monitored throughout the constant-rate test using a Rossum Sand Tester. Because the well design does not stabilize the formation, sand production could occur as drawdown increases during the test. At some point, it is possible that the borehole could become destabilized and produce sand into the well.

Sand content is plotted on Figure 2-14. The results were excellent up until the last sample collected on the seventh day of pumping. At this time, essentially non-detect sand concentrations shot up to 5.5 parts per million volume (ppm-v)\(^5\). This result strongly suggests that the borehole became unstable after the prolonged pumping period. It is not known if the event was episodic or if sand production would be consistently measured thereafter, had pumping continued.

It is anticipated that RJ-7 will produce a sand-free discharge after the initial startup, however, sand production could increase with prolonged pumping. Monitoring of sand occurrence by inspection of tanks, waterlines during main repairs, or by direct measurement may provide useful information for operation of the RJ-7 well and other WWSD wells. Early pump failures can also be an indirect measure of sand production.

The present well design utilized by WWSD is likely the least expensive option. However, WWSD should reconsider the filter pack design for future wells. This far superior well construction stabilizes the formation, preventing sand entry. It is a more difficult completion and therefore has more dependency on contractor skill. It is important the sand pack fully surround the screens. While the existing wells could undergo destabilization and become sand producers in the future, a properly constructed filter pack well will withstand the additional seepage forces. In addition to the conventional filter pack well design, a channel pack screen option may be considered. A life-cycle cost analysis could be used to discriminate between the two types of well construction.

\(^5\) Sand content is measured with respect to the volume of sand per volume of water, rather than weight. For example, 1 ppm-v indicates that one gallon of sand is produced per every million gallons of water pumped.
Figure 2-14
Water Quality Field Parameter Plots
2.8.3 Analytical Parameters

Lower Borehole Sample

The lower borehole water sample was highly turbid when collected. There appeared to be some drilling additives present in the sample. As such, preservatives were not added in the field. The sample was transported to the laboratory where it was filtered through a 0.45 micrometer (µm) membrane filter. Energy Laboratories, Inc. returned the radionuclide sample bottles, however, claiming they could not be reasonably filtered (labor intensive and costly). As the radionuclides have a 6-month holding time, these samples were allowed to settle for approximately 60 days. They were then decanted and sent to Inter-Mountain Laboratories, Inc., where they were filtered through a 0.45 µm membrane filter and analyzed.

The lower borehole water quality sample is made difficult to interpret by the depth integration and also by the possibility for mudstone and coal strata to contribute flow into the borehole. Water production from these strata types may have dominated the sample quality as there was limited sandstone present in the section. Nevertheless, the data that were collected indicate potentially important findings, as follows: 1) fluoride occurred at 4.4 milligrams per liter (mg/L) which exceeds the EPA Maximum Contaminant Level (MCL), and is a noted contaminant of the lower Fort Union and upper Cretaceous formations; 2) total dissolved solids was measured at 1,800 mg/L, an unacceptable level for public water systems; and 3) arsenic, measured at 14 micrograms per liter (µg/L) slightly exceeded the MCL (10 µg/L). Water quality of the lower borehole was overall poor with respect to use in a public water system.

Midpoint Sample

The Midpoint Sample is very similar to the Endpoint Sample with respect to the majority of parameters measured. In particular, it is a sodium-bicarbonate water, as is typical of the Fort Union aquifer. The outstanding results of this sample, however, are the iron and manganese concentrations, which are very high. Iron was measured at 12.6 mg/L and manganese was measured at 0.26 mg/L. The secondary standards for these parameters are 0.3 mg/L and 0.05 mg/L, respectively.

These concentrations were most likely derived from coal strata contributing to the well at this time, but which were later isolated by natural seals. The samples were visually clear, and particulate is not considered a source of these results. Grass at the discharge point and the motor wire used for the pump were coated with rust, indicating substantial water production with high iron concentrations occurred. Fortunately, these high levels dissipated, as shown by the Endpoint Sample.

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6 Well casing as a source of iron could also be a plausible explanation.
Endpoint Sample

As noted above, field parameters were generally stable at the time of collection of the Endpoint Sample. It is expected that long-term water production from the RJ-7 well will produce groundwater most similar to these sampling results. The water quality data support full compliance with primary drinking water standards. No additional treatment, other than disinfection, is required or warranted for aesthetic purposes.

The sample was coliform positive, but negative for \textit{E. Coli}. This result is most likely due to contamination through exposure of the water to the pumping system. This sample is not a microbiological compliance sample. The compliance sample will be collected after the well is fully completed, but prior to when it is put into service. The RJ-7 well will be disinfected prior to this time. There is no known source of coliform bacteria to the deep confined aquifer of the RJ-7 well.

Fluoride was measured at 1.1 mg/L, well below the MCL and nearly optimal for dental concerns. Radium 226 + 228 was measured at 2.1 picoCuries per liter (pCi/L), which is less than half the MCL, but is noticeably higher than in the RJ-6 well (Table 2-8). There were no organic contaminants detected in the sample.

Dissolved iron was measured at 0.34 mg/L, whereas, dissolved manganese was measured at 0.03 mg/L. These levels are substantially reduced from the Midpoint Sample, and similar to those produced in other WWSD wells. There would be extremely limited or no fixture staining expected at these concentrations. The Langlier index of 0.25 indicates a very slight tendency for scale formation. The hardness measured at 34 mg/L as calcium carbonate falls into the ‘Soft’ category. A sodium concentration of 105 mg/L is typically identified as a concern to individuals on low sodium diets.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>RJ-7 (Endpoint Sample)</th>
<th>RJ-6 (12/8/2005)\textsuperscript{A}</th>
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<tr>
<td>Total Dissolved Solids (mg/L)</td>
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<td>297</td>
</tr>
<tr>
<td>Alkalinity, Total (mg/L as CaCO\textsubscript{3})</td>
<td>207</td>
<td>226</td>
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<tr>
<td>Sodium (mg/L)</td>
<td>105</td>
<td>97</td>
</tr>
<tr>
<td>Fluoride (mg/L)</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Iron (mg/L)</td>
<td>0.34</td>
<td>0.32</td>
</tr>
<tr>
<td>Manganese (mg/L)</td>
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<td>0.03</td>
</tr>
<tr>
<td>Radium 226 + 228 (pCi/L)</td>
<td>2.1</td>
<td>0.5</td>
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</tbody>
</table>

\textsuperscript{A} RJ-6 Well Project Report, April 2006.

mg/L – milligrams per liter; pCi/L – picoCuries per liter; CaCO\textsubscript{3} – calcium carbonate.
2.8.4 Microbiological Parameters

The BART© method was developed by Droycon Biocepts, Inc. It provides a means to assess the occurrence of selected bacteria in water. The four most common bacteria types that can result in well biofouling were measured in a sample from the RJ-7 well. The results of the analysis are provided in Appendix C.

The data indicate that the RJ-7 aquifer has prolific populations of anaerobic bacteria, which is not uncommon for the Fort Union. Similar results would be anticipated for the other WWSD wells. These results indicate a plugging risk exists, but as WWSD is not realizing plugging in their other wells, the condition must be slow to develop. Anaerobic bacteria are known to be much slower to form biofilms and plug a well. Introduction of oxygen by excessive pumping and large drawdown is known to increase plugging risk under these conditions.

2.9 Summary of Recommendations

- The RJ-7 well is recommended for a pumping capacity of 300 gpm, an annual volume up to 350 acre-feet, and pump setting of approximately 1,160 feet below ground. Typical pumping water level will range from 875 to 935 feet. A means to measure water level should be included in the completion. A slow start pumping system is recommended to avoid excessive pumping at start-up and to protect the borehole from destabilization.

- Screens set into the RJ-7 well were found to be misplaced when reviewed on the video log of the well (attached DVD). Additional wireline logs collected by the contractor were subsequently interpreted to indicate the screen placements were generally correct. However, because the engineer was not present when these additional wireline logs were collected, there is uncertainty as to the accuracy of the logs. Consequently, it is recommended that future down-hole work dependent on screen locations conduct verification logging beforehand.

- Spinner flow meter data show that 10% or less of production in the well is produced below 2,500 feet. This finding could be influenced by screen placement, or by non-production from the deeper sandstone beds. Future well constructions may consider limiting the well depth as a cost savings to the project.

- Deep Fort Union sandstones were not identified between 3,000 to 4,000 feet below ground. Although there may be sandstone present at greater depth, it does not make a viable aquifer target due to yield and well-construction considerations. Further investigation of deep sandstone by WWSD does not appear to be warranted based on the RJ-7 data.

- Monitoring of sand content is recommended based on the RJ-7 data and the well construction. A direct measurement of sand content using a Rossum Sand
Tester in the well building is a very low cost option that should be considered. WWSD may be able to identify certain conditions that result in incipient sand production, which in turn could be useful information for managing the wellfield.

- Future well constructions should reconsider a filter pack design, as there is potential that WWSD wells will become destabilized when they are run for longer durations. The RJ-7 data may indicate that sand production could become a concern for WWSD after prolonged pumping.
3 PREFERRED ALTERNATIVES ANALYSIS AND CONCEPTUAL LEVEL COSTS

3.1 Water Supply

The only alternative considered with respect to water supply was a new well, as determined from the Level I study. The goal of the well was to increase the available supply to the District and its users. The well was drilled during this Study and is recommended to be completed and put on line. This will provide an increase of approximately 300 gpm to the system supply.

During design of the RJ-7 test well, consideration was also given to future dewatering of the aquifer and interference pumping effects caused by the WWSD wells. It was found that declines in static water level in the wells favored that pump settings be as deep as possible; otherwise over time declining static water levels could decrease capacity. Although these considerations did not substantially alter the design of the RJ-7 test well, the Level II Study was used as a means to assess if deeper sandstone beds were present, and how much water was contributed through the screens of the RJ-7 well. These data together would provide useful information for the WWSD to plan future wells. The estimated cost to complete the well and control building is summarized in following Table.

Table 3-1
RJ-7 Completion Preliminary Construction 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>
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<td>2</td>
<td>Permitting and Mitigation</td>
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<tr>
<td>3</td>
<td>Acquisition of Access and Right of Ways</td>
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<table>
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<th>NO.</th>
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<th>QUANTITY</th>
<th>UNIT PRICE</th>
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TOTAL ESTIMATED PROJECT COST = $ 702,248
3.2 Storage Requirements

3.2.1 Existing Storage and Conditions

The current WWSD storage facilities consist of a 500,000 gallon (0.5 MG) welded steel storage tank constructed in 1976 and a 1,000,000 gallon (1 MG) welded steel storage tank constructed in 1981. Both tanks were last fully painted in May 2004. A snorkel inspection and cleaning was performed in September 2010. The inspection noted that both tanks had some severe blistering of the paint on the interior walls and columns with areas of pitting and rust. The 1 MG tank was reported to be in the worst condition.

The tanks were scheduled by the District for a rehabilitation project. The project was scheduled to take the tanks off line one at a time after the summer demand season. The work began in September 2011. When the 1MG tank was drained several other problems were discovered. First, none of the isolation valves would fully close. To shut off the flow, blind flanges had to be bolted to the inlet and outlet risers. Once the blind flanges were bolted on it was determined that the riser pipes were full of several pinholes and had to be spot welded to plug them off temporarily.

When the bottom of the tank was cleaned it was determined that the paint on the floor also showed blistering in several hundred spots. When the painters began sandblasting the floor to prepare for repainting it was determined that the tank floor was actually rusted through at the blister locations.
The walls and columns of the tank were painted where the work could be completed but the tank cannot be filled and put back on line until at least temporary repairs are made to the floor. A project is currently underway to make the temporary repairs this spring. The District must make temporary repairs because they cannot maintain adequate supply to the users with only the 0.5 MG tank on line. The planned temporary repairs to the tank floor will include installing 3-inches of washed sand on the existing floor then fabricating a new ¼-inch thick welded steel floor on the sand and welding the perimeter to the existing wall. The cost for this repair will be approximately $100,000.00 not including any painting. These temporary repairs need to be completed before summer demands begin on the system. Investigations of the tanks by a representative from Advance Tank also revealed that the floor support under the center column is also inadequate and will need to be replaced.

The District is also having a difficult time maintaining their disinfection requirements. They are not getting adequate contact time without the proper amount of storage. The WWSD tanks are an integral part of their disinfection system. All raw water is brought to the treatment building on the tank site. The treated water must go through the tanks to get into the transmission and distribution system. There is no direct connection from the treatment building to the distribution system.

Based on the condition of the riser pipes, valves, and tank floor it is very likely that the piping under the tanks is in poor condition and has reached its useful life. HDR Engineering, Inc. and the WWSD have determined that the tanks need to be completely taken off line and major repairs made to both the tanks. Also, all the site piping and valves under and around the tanks need to be completely replaced.

3.2.2 New Storage

Location for new storage was discussed in the Level I Study and recommended at the site of the new RJ-7 well (See Figure 3-1). The site was purchased by the WWSD prior to construction of the well and was sized to accommodate two future storage tanks of a planned 1,000,000 gallons each. The site was chosen because of the existing topography in the area and to provide increased supply to the southern end of the District. This is where most of the future expansion of the Town of Wright and the rural users is projected to occur.

Much of the area in the southern portion of the Town of Wright (and south of the corporate limits) has been subdivided and slated to attract numerous industrial facilities. These facilities are support vendors and contractors to the energy industries in the area. Industrial facilities historically are high users of water. When determined needed, and constructed, the southern tank, herein called the RJ-7 Storage Tank, will support these higher demands without negatively impacting the majority of the District user population.
A Tank size of 1 MG was used for used for cost estimating for a future project. Because of the topography of the area, either elevated tanks or standpipes would be required to match the high water level (HWL) of the existing tanks. The hill at RJ-7 site is approximately 28 to 30 feet lower than the finished floor elevation of the existing tanks. If a stand pipe is used the tank could contain almost 900,000 gallons of unusable storage. Because of this, HDR Engineering recommends that an elevated tank would be a more logical choice when constructed on the site. The tank would have a HWL matching the existing tanks and be in the same pressure zone. Geotechnical investigations were conducted on the proposed site for the tanks and the geotechnical findings are discussed in Section 9 of this study report. The estimated cost to complete an Elevated Tank is summarized in following Table.

<table>
<thead>
<tr>
<th>Non Construction Costs</th>
<th>Unit Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Preparation of Final Designs</td>
<td>$167,650</td>
</tr>
<tr>
<td>and Specifications</td>
<td></td>
</tr>
<tr>
<td>2 Permitting and Mitigation</td>
<td>$15,000</td>
</tr>
<tr>
<td>3 Acquisition of Access and</td>
<td>$1,000</td>
</tr>
<tr>
<td>Right of Ways</td>
<td></td>
</tr>
<tr>
<td>4 Legal fees</td>
<td>$3,000</td>
</tr>
<tr>
<td><strong>Total Pre-Construction Costs</strong></td>
<td><strong>$186,650</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction Costs</th>
<th>Unit Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mobilization</td>
<td>$163,000</td>
</tr>
<tr>
<td>2 Contract Bond</td>
<td>$13,500</td>
</tr>
<tr>
<td>3 Install 1 Million Gallon</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Elevated Water Tank</td>
<td></td>
</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
<td><strong>$1,676,500</strong></td>
</tr>
<tr>
<td><strong>Construction Engineering Level</strong></td>
<td><strong>$167,650</strong></td>
</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
<td><strong>$1,844,150</strong></td>
</tr>
<tr>
<td><strong>Contingencies (15%)</strong></td>
<td><strong>$276,623</strong></td>
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<tr>
<td><strong>Total Construction Costs</strong></td>
<td><strong>$2,120,773</strong></td>
</tr>
<tr>
<td><strong>Total Estimated Project Cost</strong></td>
<td><strong>$2,307,423</strong></td>
</tr>
</tbody>
</table>
3.3 Treatment Facilities

3.3.1 Existing Treatment Facilities and Conditions

The WWSD currently uses a chlorine gas system to treat their water. The treatment facility treats the water from all the current wells, RJ-2, RJ-3, RJ-4, RJ-5, & RJ-6. The treatment building structure itself is in good shape but after some investigations it was determined that the parts of the facility are in need of some immediate repairs. The underground piping under and around the treatment facility is in the same poor condition as the piping under the tanks. The piping and valves are at the end of their useful life.

When the District attempted to take the 0.5 MG tank off line for inspection and maintenance it was found that because of the condition of the valves they could no longer treat the water and get it into the 1 MG tank. It had to go through the 0.5 MG tank. The District dug up the connections to make a temporary by pass and discovered that the site piping is in need of replacement and the manifold coming into the treatment building is undersized to properly serve all the wells. The addition of well RJ-7 will make the existing situation even worse.

HDR Engineering, Inc. and the WWSD have determined that the District will need to take the treatment facility off line to make the necessary repairs, but cannot do so until a new facility is installed into the system.

3.3.2 New Treatment Facilities

A new gas chlorination treatment facility is recommended at the RJ-7 site. See Figure 3-1 for a preliminary location. Once the facility has been constructed the District will have the ability to take the existing treatment facility off line. With the construction of the transmission lines as discussed in section 3.4.1 the District will be able to treat the water from RJ-5, RJ-6, and RJ-7, and put the supply into the system. The treatment facility needs to be constructed to provide for supply from the RJ-5, RJ-6, RJ-7, and the future southern wells RJ-8 and RJ-9. Wells RJ-8 and RJ-9 are discussed in the Level I Study Report. The estimated cost to complete the new Treatment Facility is summarized in following Table.
### Table 3-3
New Treatment Facility Construction Cost Estimate

#### NON CONSTRUCTION COSTS

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation of Final Designs and Specification</td>
<td></td>
<td></td>
<td>$21,017</td>
</tr>
<tr>
<td>2</td>
<td>Permitting and Mitigation</td>
<td></td>
<td></td>
<td>$10,000</td>
</tr>
<tr>
<td>3</td>
<td>Acquisition of Access and Right of Ways</td>
<td></td>
<td></td>
<td>$1,000</td>
</tr>
<tr>
<td>4</td>
<td>Legal fees</td>
<td></td>
<td></td>
<td>$2,000</td>
</tr>
</tbody>
</table>

**Total Pre-Construction Costs** = $34,017

#### CONSTRUCTION COSTS

<table>
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<tr>
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<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>Contract Bond</td>
<td>LS</td>
<td>1</td>
<td>$170.00</td>
</tr>
<tr>
<td>3</td>
<td>Excavation, Earthwork, and Seeding</td>
<td>LS</td>
<td>1</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>4</td>
<td>Install Chlorination Building</td>
<td>LS</td>
<td>1</td>
<td>$190,000.00</td>
</tr>
</tbody>
</table>

**Construction Subtotal** = $210,170

**Construction Engineering (Level III only 10%)** = $21,017

**Construction Subtotal** = $231,187

**Contingencies (15%)** = $34,678

**Total Construction Costs** = $265,865

**TOTAL ESTIMATED PROJECT COST** = $299,882
3.4 Transmission

The recommended transmission lines were laid out to provide the District with the best overall use of the existing system and the new well and proposed tank. See Figures 3-1 and 3-2 for a visual description of the proposed new transmission mains. The new mains will consist of both raw water and potable water transmission. Both are needed to provide the flexibility in the system to be able to treat water from either the existing or new treatment facility and to be able to isolate the tanks for repairs and rehabilitation when needed.

3.4.1 Raw Water Transmission

The new RJ-7 well will be connected to both the new treatment facility, and the existing treatment facility. To connect RJ-7 well to the existing treatment facility it is recommended that a new 8-inch PVC raw water transmission main be installed from the new RJ-7 site and control building to the existing 8-inch raw water main on Melicia Drive as shown on Figure 3-2. Existing permanent easements and right-of-ways have already been obtained by the WWSD for the line and are discussed in more detail in Section 4 of this Study Report.

The raw water main in Melicia Drive connects between the RJ-5 and RJ-6 wells. Raw water goes from RJ-6 to RJ-5 and from there to the existing treatment facility. When the RJ-6 line was installed it was sized for the anticipated additional flow from RJ-7 well. However, the line between RJ-5 and the treatment facility is currently undersized to accommodate the flow from all three wells. The line needs to be increased to a 12-inch PVC line. Upgrades to the piping on the RJ-5 site will also be required to allow the flows to be redirected towards the RJ-7 site.

Making the connection at Melicia Drive will also allow the wells RJ-5 and RJ-6 to be redirected to the RJ-7 site and the new southern treatment facility and new tank.

Where the transmission mains come together at Melicia Drive, we recommend that the pipes be manifolded together in an above ground control building to ensure the Districts ability to control the directional flows. The connection could also be completed in an underground vault but because of the increased enclosed space entry regulations we recommend against it. The District is also currently trying to eliminate all underground facilities.
3.4.2 Potable Water Transmission

The new treatment Facility and Southern Tank should be connected to the existing Wright water system at two locations. The first section should be a 12-inch PVC main installed parallel the new raw water transmission main to a point about 280 feet east of the raw water connection on Melicia Drive. At this point it will connect to the existing 12-inch PVC potable water transmission main. The second section should also be a 12-inch PVC main and should connect to the existing 12-inch main about 2,100 feet to the east on Duffy Road. This will create a loop in the system and as reported in the Level I Study will help increase fire pressures and flows in the southern part of the WWSD. The estimated cost to complete the new Raw Water and Potable Water Transmission Mains is summarized in Table 3-4. Table 3-5 also provides a combined cost estimate for Supply, Storage, Treatment, and Transmission (combined Tables 3-1 through 3-4).

Table 3-4
New Raw and Potable Transmission Mains Construction Cost Estimate

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
<th>TOTAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of Final Designs and Specification</td>
<td></td>
<td></td>
<td>$ 69,660</td>
<td></td>
</tr>
<tr>
<td>Permitting and Mitigation</td>
<td></td>
<td></td>
<td>$ 55,000</td>
<td></td>
</tr>
<tr>
<td>Acquisition of Access and Right of Ways</td>
<td></td>
<td></td>
<td>$ 18,000</td>
<td></td>
</tr>
<tr>
<td>Legal fees</td>
<td></td>
<td></td>
<td>$  5,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total Pre-Construction Costs</strong></td>
<td></td>
<td></td>
<td>$ 147,660</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
<th>TOTAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
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<td>$ 72,000</td>
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<tr>
<td>Construction Signing and Traffic Control</td>
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<td>$ 3,500.00</td>
<td>$ 3,500</td>
</tr>
<tr>
<td>Contract Bond</td>
<td>LS</td>
<td>1</td>
<td>$ 7,330.00</td>
<td>$ 7,330</td>
</tr>
<tr>
<td>Excavation, Earthwork, and Seeding</td>
<td>LS</td>
<td>1</td>
<td>$ 33,650.00</td>
<td>$ 33,650</td>
</tr>
<tr>
<td>Install 12&quot; Watermain and Appurtenances (Potable)</td>
<td>LF</td>
<td>5900</td>
<td>$ 48.70</td>
<td>$ 287,330</td>
</tr>
<tr>
<td>Remove 8&quot; Watermain and Replace with 12&quot; Watermain (Raw)</td>
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<td>2450</td>
<td>$ 41.00</td>
<td>$ 100,450</td>
</tr>
<tr>
<td>Install 8&quot; Watermain and Appurtenances (Replacement)</td>
<td>LF</td>
<td>4275</td>
<td>$ 41.60</td>
<td>$ 177,840</td>
</tr>
<tr>
<td>Connect to Existing Water Line</td>
<td>EA</td>
<td>6</td>
<td>$ 1,500.00</td>
<td>$ 9,000</td>
</tr>
<tr>
<td>Install Test Station</td>
<td>EA</td>
<td>11</td>
<td>$ 500.00</td>
<td>$ 5,500</td>
</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
<td></td>
<td></td>
<td>$ 696,600</td>
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<tr>
<td><strong>Construction Engineering (Level III only 10%)</strong></td>
<td></td>
<td></td>
<td>$ 69,660</td>
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</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
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<td></td>
<td>$ 766,260</td>
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</tr>
<tr>
<td><strong>Contingencies (15%)</strong></td>
<td></td>
<td></td>
<td>$ 114,939</td>
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</tr>
<tr>
<td><strong>Total Construction Costs</strong></td>
<td></td>
<td></td>
<td>$ 881,199</td>
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</table>

**TOTAL ESTIMATED PROJECT COST = $1,028,859**
Table 3-4  
Supply, Storage Treatment, and Transmission Construction Cost Estimate

**NON CONSTRUCTION COSTS**

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$306,477</td>
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<td>2</td>
<td>Permitting and Mitigation</td>
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<td></td>
<td>$110,000</td>
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<tr>
<td>3</td>
<td>Acquisition of Access and Right of Ways</td>
<td></td>
<td></td>
<td>$30,000</td>
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<tr>
<td>4</td>
<td>Legal fees</td>
<td></td>
<td></td>
<td>$15,000</td>
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</table>

**Total Pre-Construction Costs =** $461,477

<table>
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<th>UNIT</th>
<th>QUANTITY</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization</td>
<td>LS</td>
<td>1</td>
<td>$300,000</td>
</tr>
<tr>
<td>2</td>
<td>Construction Signing and Traffic Control</td>
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<td>1</td>
<td>$3,500</td>
</tr>
<tr>
<td>3</td>
<td>Contract Bond</td>
<td>LS</td>
<td>1</td>
<td>$25,000</td>
</tr>
<tr>
<td>4</td>
<td>Excavation, Earthwork, and Seeding</td>
<td>LS</td>
<td>1</td>
<td>$48,650</td>
</tr>
<tr>
<td>5</td>
<td>Install 12&quot; Watermain and Appurtenances</td>
<td>LF</td>
<td>5900</td>
<td>$49</td>
</tr>
<tr>
<td>6</td>
<td>Remove 8&quot; Watermain and Replace with 12&quot; Watermain</td>
<td>LF</td>
<td>2450</td>
<td>$41</td>
</tr>
<tr>
<td>7</td>
<td>Install 8&quot; Watermain and Appurtenances</td>
<td>LF</td>
<td>4275</td>
<td>$42</td>
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<tr>
<td>8</td>
<td>Install 6&quot; Waterline and Appurtenances</td>
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<td>200</td>
<td>$53</td>
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<tr>
<td>9</td>
<td>Connect to Existing Water Line</td>
<td>EA</td>
<td>6</td>
<td>$1,500</td>
</tr>
<tr>
<td>10</td>
<td>Install Chain Link Site Fencing and Gates</td>
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<tr>
<td>11</td>
<td>Well Completion</td>
<td>LS</td>
<td>1</td>
<td>$195,000</td>
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<tr>
<td>12</td>
<td>Install Outlet Structure and 4&quot; PVC Drain Line</td>
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<td>1</td>
<td>$10,900</td>
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<tr>
<td>13</td>
<td>Install Control Building</td>
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<td>14</td>
<td>Install Chlorination Building</td>
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<td>1</td>
<td>$190,000</td>
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<tr>
<td>15</td>
<td>Install Test Station</td>
<td>EA</td>
<td>11</td>
<td>$500</td>
</tr>
<tr>
<td>16</td>
<td>Install Site Power</td>
<td>LS</td>
<td>1</td>
<td>$33,000</td>
</tr>
<tr>
<td>17</td>
<td>Install 1 Million Gallon Elevated Water Tank</td>
<td>LS</td>
<td>1</td>
<td>$1,500,000</td>
</tr>
</tbody>
</table>

| **Construction Subtotal =** | $3,064,770 |
| **Construction Engineering (Level III only 10%) =** | $306,477 |
| **Construction Subtotal =** | $3,371,247 |
| **Contingencies (15%) =** | $505,687 |

**Total Construction Costs =** $3,876,934

**TOTAL ESTIMATED PROJECT COST =** $4,338,411
3.5 SCADA

The Wright Water and Sewer District’s current telemetry system is unable to have remote terminal units added to it. The system is restricted due to the age of the controllers and the DOS based software application. The system will need to be upgraded to add the new RJ-7 well, treatment facility, and storage tank. The telemetry system should be designed to be expandable to include future additions to the water system including wells RJ-8 & RJ-9, and include a second southern storage tank on the RJ-7 site. See Figure 3-3 for a layout of the proposed SCADA locations.

When the System is upgraded the WWSD should also consider adding the wastewater components of the WWSD. Although the components added to the SCADA system for the wastewater will not be eligible for assistance from the WWDC the cost saving of completing it at one time would be beneficial to the District. The estimated cost to complete the new SCADA System is summarized in following Table.

<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>
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<td></td>
<td></td>
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<td>2</td>
<td>Permitting and Mitigation</td>
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<td></td>
<td>$ 1,200</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Acquisition of Access and Right of Ways</td>
<td></td>
<td></td>
<td>$ -</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Legal fees</td>
<td></td>
<td></td>
<td>$ 1,000</td>
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</tbody>
</table>

Total Pre-Construction Costs = $ 24,200

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<th>TOTAL PRICE</th>
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<tr>
<td>1</td>
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<td>2</td>
<td>Well SCADA</td>
<td>EA</td>
<td>6</td>
<td>$ 10,000.00</td>
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</tr>
<tr>
<td>3</td>
<td>Tank SCADA</td>
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<td>$ 12,000.00</td>
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<td>4</td>
<td>Chlorination System SCADA</td>
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<td>2</td>
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<td>5</td>
<td>Lift Station SCADA</td>
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<td>6</td>
<td>Sewer Lagoon SCADA</td>
<td>EA</td>
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<td>$ 14,000.00</td>
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</table>

Construction Subtotal = $ 220,000

Construction Engineering (Level III only 10%) = $ 22,000

Construction Subtotal = $ 242,000

Contingencies (15%) = $ 36,300

Total Construction Costs = $ 278,300

TOTAL ESTIMATED PROJECT COST = $ 302,500
3.6 RJ-3 Pumphouse

The current RJ-3 facility is a combination of Electrical Pump Control above ground and all other piping, well control, and metering done in an underground vault. Because of the dangers of underground facilities and the increasing enclosed space regulations, the District is removing all these structures when upgrading is required. Because of the age and condition of the facility the WWSD has determined that upgrades are required at this time. Complete upgrade of the facility will include removing all of the existing above ground and underground infrastructure and installing a new above ground pump control facility. The WWSD is also going to install a new pump into the well because the current pump has reduced in capacity to a point where it is not economical for the District to use. The cost of the new pump is not included in the estimates contained in this section because it has been determined by the WWDC to be non-eligible for funding. The estimated cost to complete the new RJ-3 Pumphouse Facility is summarized in following Table.

Table 3-6
RJ-3 Pumphouse Construction Cost Estimate

<table>
<thead>
<tr>
<th>NON CONSTRUCTION COSTS</th>
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</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Permitting and Mitigation</td>
<td>$1,200</td>
</tr>
<tr>
<td>Acquisition of Access and Right of Ways</td>
<td>$</td>
</tr>
<tr>
<td>Legal fees</td>
<td>$1,000</td>
</tr>
<tr>
<td><strong>Total Pre-Construction Costs</strong></td>
<td><strong>$23,218</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONSTRUCTION COSTS</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
<td>$10,000</td>
</tr>
<tr>
<td>Contract Bond</td>
<td>$5,000</td>
</tr>
<tr>
<td>Remove Existing Pump Control Building</td>
<td>$15,000</td>
</tr>
<tr>
<td>Remove Concrete Flatwork</td>
<td>$12,00</td>
</tr>
<tr>
<td>Remove Existing Concrete Vault and Equipment</td>
<td>$8,000</td>
</tr>
<tr>
<td>Remove Existing Chainlink Fence</td>
<td>$20.00</td>
</tr>
<tr>
<td>Install Chainlink Fence and Gate</td>
<td>$45.00</td>
</tr>
<tr>
<td>Install Control Building</td>
<td>$140,000</td>
</tr>
<tr>
<td>Install Outlet Structure and 4&quot; PVC Drain Line</td>
<td>$10,000</td>
</tr>
<tr>
<td>Install 6&quot; Watermain with Fittings</td>
<td>$48.00</td>
</tr>
<tr>
<td>Connect to Well</td>
<td>$3,000</td>
</tr>
<tr>
<td>Connect to Existing Waterline</td>
<td>$1,500</td>
</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
<td><strong>$210,180</strong></td>
</tr>
<tr>
<td><strong>Construction Engineering (Level III only 10%)</strong></td>
<td><strong>$21,018</strong></td>
</tr>
<tr>
<td><strong>Construction Subtotal</strong></td>
<td><strong>$231,198</strong></td>
</tr>
<tr>
<td><strong>Contingencies (15%)</strong></td>
<td><strong>$34,680</strong></td>
</tr>
<tr>
<td><strong>Total Construction Costs</strong></td>
<td><strong>$265,878</strong></td>
</tr>
</tbody>
</table>

**TOTAL ESTIMATED PROJECT COST = $289,096**
4 WATER SYSTEM FINANCING

The WWSD is a financially self supporting system. To ensure this, the WWSD periodically reviews its rate structure. The last assessment was completed in August 2011 and the next is planned for July-August 2012. The intent of this review is to be able to plan and implement a rate plan that will capture not only the cost of service but also plan for and begin to capture upcoming capital expenditures.

The District’s current user charge system is intended to distribute the cost of water service based on the demand the customer places on the District’s water system. All customers are charged monthly fixed service charges based on their tap size and a commodity charge based on their usage per 1,000 gallons. The current water rates and tap fees are summarized in Tables 4-1 and 4-2 respectively.

<table>
<thead>
<tr>
<th>Tap size</th>
<th>Min Monthly</th>
<th>Min Gallons</th>
<th>Additional per 1,000 gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 &quot;</td>
<td>$13.00</td>
<td>9,000</td>
<td>$2.40</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$21.50</td>
<td>12,000</td>
<td>$2.40</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>$52.00</td>
<td>27,000</td>
<td>$2.40</td>
</tr>
<tr>
<td>2&quot;</td>
<td>$78.00</td>
<td>40,500</td>
<td>$2.40</td>
</tr>
<tr>
<td>3&quot;</td>
<td>$190.00</td>
<td>99,000</td>
<td>$2.40</td>
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<tr>
<td>4&quot;</td>
<td>$312.00</td>
<td>162,000</td>
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</tr>
<tr>
<td>6&quot;</td>
<td>$1,325.00</td>
<td>382,000</td>
<td>$2.40</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Tap size</th>
<th>Tap Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4 &quot;</td>
<td>$1,600</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$2,100</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>$6,500</td>
</tr>
<tr>
<td>2&quot;</td>
<td>$9,500</td>
</tr>
<tr>
<td>3&quot;</td>
<td>$15,000</td>
</tr>
<tr>
<td>4&quot;</td>
<td>$22,000</td>
</tr>
<tr>
<td>6&quot;</td>
<td>$40,000</td>
</tr>
</tbody>
</table>
Several years of the District financials were summarized in the Level I Study and showed that the WWSD is a financially stable entity. Table 4.1 summarizes the last fiscal year (2011) and the projected 2012 budget. It can be seen from the data that the WWSD is well run and is still a financially stable facility.

### Table 4-1
WWSD Revenues vs Expenditures

<table>
<thead>
<tr>
<th></th>
<th>Actual 2010-2011</th>
<th>Budget 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Revenues</td>
<td>$ 653,063.59</td>
<td>$ 332,500.00</td>
</tr>
<tr>
<td>Non-Performance Activities</td>
<td>$ 465,175.50</td>
<td>$ 3,538,007.00</td>
</tr>
<tr>
<td><strong>Total Revenues</strong></td>
<td>$ 1,118,239.09</td>
<td>$ 3,870,507.00</td>
</tr>
<tr>
<td><strong>EXPENSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Expenses*</td>
<td>$ 441,625.99</td>
<td>$ 840,000.00</td>
</tr>
<tr>
<td>Administrative Expenses</td>
<td>$ 118,394.90</td>
<td>$ 145,088.00</td>
</tr>
<tr>
<td>Fixed Charges</td>
<td>$ 36,757.95</td>
<td>$ 41,500.00</td>
</tr>
<tr>
<td>Capital Expenditures</td>
<td>$ 156,268.95</td>
<td>$ 1,515,000.00</td>
</tr>
<tr>
<td>Non Operating Expenses</td>
<td>$ 208,364.09</td>
<td>$ 250,000.00</td>
</tr>
<tr>
<td><strong>Total Expenditures</strong></td>
<td>$ 961,411.88</td>
<td>$ 2,791,588.00</td>
</tr>
</tbody>
</table>

* Includes for 25% Reserves

**Total Revenues less Expenses =**

<table>
<thead>
<tr>
<th></th>
<th>Actual 2010-2011</th>
<th>Budget 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ 156,827.21</td>
<td>$ 1,078,919.00</td>
</tr>
</tbody>
</table>

No adjustments to the current rate structure, tap fees, or other financial procedures are being recommended to the WWSD at this time.
5 ECONOMIC ANALYSIS AND RECOMMENDATION FINANCING

This section presents a recommended financial plan that is designed to allow the WWSD to construct the recommended water system improvements. 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.

Wyoming Water Development Commission (WWDC)

- Currently 67% Grant funding is available for new wells, tanks, and transmission lines.
- Loans are also available through the WWDC for the balance of the project funding. The WWDC loans are currently at a rate of 4% for a term not to exceed 50 years. However the WWSD is not in need of a loan at this time.

Campbell County Capital Facilities Tax

- The Capital Facilities Tax will raise about 110 million dollars over the next 4 years (2012 -2015).

Office of State Lands and Investments (SLIB)

- 50% grant funding is available for all water projects.
- Loans are available from the SLIB a current rate of 6% for 30 years.
- Grants are difficult to obtain from the SLIB unless it is an extreme situation.

Drinking Water State Revolving (Loan) Fund (SRF)

- The WWSD is eligible to receive funding through the SRF.
- The DWSRF loan current interest rate is 2.5% for 20 years.
- The WWSD RJ-7 Well, Tank and Transmission is currently ranked 179 out of 203 on the 2012 Drinking Water Intended Use Plan. This would make it difficult at this time to get a loan from the SRF. However the WWSD is not in need of a loan at this time.

All of the system improvements discussed in Section 3 of the report are eligible for funding from the WWDC. At this time the WWSD with assistance through HDR Engineering and the WWDC have determined to pursue funding for the project at a 67% grant from the WWDC and the remaining 33% match coming from the Campbell County Capital Facilities tax.
Campbell County has implemented a 1% Capital Facilities sales tax that was primarily done to raise funding for the proposed regional water system in and around the Gillette area. The Capital Facilities tax will raise an estimated 110 million dollars over the next 4 years. The Wright Water and Sewer District is within Campbell County but outside of the feasible planning boundary. Because of this the WWSD will be using their share of the Capital Facilities tax for the matching monies for the proposed system improvements. The WWSD will receive approximately 15 million dollars over the next 4 years.

6 EASEMENTS AND RIGHT-OF-WAYS

The WWSD has already purchased the site for the RJ-7 well and future tanks along with easements for the permanent location of the new proposed transmission pipelines to connect the well and treatment facility to the existing system. The existing easements are recorded in the Campbell County Clerk and Recorders Office in Book 2299 on Page 402, Page 407, Page 411, Page 416, and Page 423. Copies of the existing easements are included in Appendix D. Temporary construction easements should be negotiated along the alignments to provide adequate working room for the Contractor to install the lines. Not forcing the construction to tight easements, i.e. 25’ width and less will provide a better overall value to the project. These temporary easements should be determined and negotiated during the Level III construction phase of the projects.
7 ENVIRONMENTAL REVIEW

An Environmental Assessment (EA) was completed for the Well/Tank site and the proposed alignment areas for the recommended waterlines and associated infrastructure prior to the drilling of the well. The EA included all the area that would be impacted by the well completion and connection to the existing system and the construction of the proposed future tanks. Letters and maps were sent to the agencies listed below requesting them to review the project recommendations for compliance with environmental issues under the agency’s jurisdiction and authority. A copy of the letters and maps sent and the responses are included in Appendix E. The EA included clearances from all agencies. There are no known environmental concerns on the project site.

<table>
<thead>
<tr>
<th>Joseph Daniele</th>
<th>Brian T Kelly, Field Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wyoming State Historic Preservation Office</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>2301 Central Ave.</td>
<td>Ecological Services</td>
</tr>
<tr>
<td>Barrett Bldg. 3rd Floor</td>
<td>5353 Yellowstone Road, Suite 308A</td>
</tr>
<tr>
<td>Cheyenne, WY 82002</td>
<td>Cheyenne, WY 82009</td>
</tr>
<tr>
<td>307-777-7013</td>
<td>307-772-2374</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J. Xavier Montoya, State Conservationist</th>
<th>David A. Finley</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA-NRCS</td>
<td>DEQ/Air Quality Division</td>
</tr>
<tr>
<td>P.O. Box 33124</td>
<td>Herschler Bldg.4-W</td>
</tr>
<tr>
<td>100 East B Street, Room 3124</td>
<td>122 West 25th Street</td>
</tr>
<tr>
<td>Casper, WY 82602</td>
<td>Cheyenne, WY 82002</td>
</tr>
<tr>
<td>307-233-6770</td>
<td>307-777-7391</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Matt Bilodeau</th>
<th>John Emmerich</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheyenne Regulatory Office</td>
<td>Deputy Director</td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Wyoming Game &amp; Fish Dept.</td>
</tr>
<tr>
<td>2232 Dell Range Blvd, Suite 210</td>
<td>5400 Bishop Blvd.</td>
</tr>
<tr>
<td>Cheyenne, WY 82009</td>
<td>Cheyenne, WY 82006</td>
</tr>
<tr>
<td>307-772-2300</td>
<td>307-777-4800</td>
</tr>
</tbody>
</table>
8 PERMITTING

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

Department of Environmental Quality

A DEQ Permit to Construct will be required for:

- Completion of the Well
- Construction of the new Transmission Mains and Control/Treatment Buildings
- Construction of a new Tank

A Temporary Discharge permit will be required for work on the Well

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 State Engineer’s Office

The Completion and Statement of Beneficial Use form must be completed once the RJ-7 Well is on line. The State Engineers Office will require eventual adjudication of the water right. The adjudication is done by the Office of the State Engineer.

9 GEOTEchnical INVESTigations

A subsurface study was completed for the planned water storage tank locations as discussed in section 3.2.2. The study consisted of a field exploration program of two exploratory borings. The results of the study were analyzed to develop recommendations for foundation types, depths, and allowable pressures for the proposed water storage tanks.

The results of the study recommend that the tanks should be founded on straight-shaft drilled piers. A complete copy of the Geotechnical report is included in Appendix F
APPENDIX A

PERMITS
APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

FOR OFFICE USE ONLY
PERMIT NO. U.W. 186050
WATER DIVISION No. 2 DISTRICT 1
U.W. DISTRICT Campbell Co.

STATE OF WYOMING
APPLICATION FOR WELLS AND SPRINGS
OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4E
CHEYENNE, WYOMING 82002

APPLICATION FOR WELLS AND SPRINGS
Note: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic and/or stock watering, will be considered as ground water appropriations.

NAME AND NUMBER OF WELL or SPRING RJ-7

1. Name of applicant(s) Wright Water & Sewer District Phone: 307-464-0491
2. Address of applicant(s) PO BOX 549 Wright Wyoming 82732
3. Name & address of agent to receive correspondence and notices Ralph Kinger PO Box 549 Wright Wyoming 82732 Phone: 464-0491

4. Use to which the water will be applied:
   - Domestic: Use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totalling one acre or less. Number of houses served? 
   - Stock Watering: Normal livestock use at four tanks or less within one mile of well or spring. Stockwatering pipelines and commercial feedlots are a miscellaneous use.
   - Irrigation: Watering of commercially grown crops, (large-scale lawn watering of golf courses, cemeteries, recreation areas, etc., is miscellaneous use.)
   - Municipal: Use of water in incorporated Towns and Cities, (use of water in unincorporated towns, subdivisions, Improvement districts, mobile home parks, etc. are classified as miscellaneous use.)
   - Industrial: Long term use of water for the manufacture of a product or production of oilgas or other minerals, (oil field water flood operations, power plant water supply, etc). (Describe in REMARKS)
   - Miscellaneous: Any use of water not defined under previous definitions such as stockwater pipelines, subdivisions, mine dewatering, mineral / oil exploration drilling, reclamation purposes, potable and sanitary supplies in offices or light manufacturing, animal waste management, etc. Describe miscellaneous use completely: Water District

5. Location of the well or spring: (NOTE: Quarter-quarter (40 acre subdivision) MUST be shown. EXAMPLE: SE 1/4 NW 1/4 of Sec. 12, Township 14 North, Range 68 West.)

   Campbell County, SW 1/4 NE 1/4 of Sec 3, T. 43 N., R. 72 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot ______ Block ______ of the Subdivision (or Add’n) of ______. Resurvey Location: Tract ______, (or Lot) ______

6. Estimated depth of the well or spring is ______ feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 500 gallons per minute. NOTE: If for domestic and / or stock use, this application will be processed for a maximum of 25 gallons per minute. For a spring, after approval of this application, some type of artificial diversion or improvement must be constructed to qualify for a water right.

   (b) MAXIMUM volumetric quantity of water to be developed and beneficially used per calendar year: - - - - 350 - 530 (Acres Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. If use is not irrigation, mark the point(s) or area(s) of use in the tabulation box below.

9. If for irrigation use:
   a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box below.
   b. Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

<table>
<thead>
<tr>
<th>TWP</th>
<th>RNG</th>
<th>SEC</th>
<th>NE 1/4</th>
<th>NW 1/4</th>
<th>SW 1/4</th>
<th>SE 1/4</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>72</td>
<td>26</td>
<td>X X X X X X X X X X X X X X X X X X</td>
<td>640</td>
<td></td>
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</tr>
<tr>
<td>44</td>
<td>72</td>
<td>27</td>
<td>X X X X X X X X X X X X X X X X X X</td>
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<td></td>
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</tr>
<tr>
<td>44</td>
<td>72</td>
<td>28</td>
<td>X X X X X X X X X X X X X X X X X X</td>
<td>160</td>
<td></td>
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<tr>
<td>44</td>
<td>72</td>
<td>29</td>
<td>X X X X X X X X X X X X X X X X X X</td>
<td>640</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. If for irrigation use, describe method of irrigation, i.e., center pivot sprinkler, flood, etc.

Permit No. U.W. 186050  Book No. 1345 Page No. 150
11. The well or spring is to be constructed on lands owned by WRIGHT WATER and SEWER DISTRICT (The granting of a permit does not constitute the granting of right-of-way. If any easement or right-of-way is necessary, in connection with this application, it should be understood that the responsibility is the applicant's. A copy of the agreement should accompany this application, if the land is privately owned and the owner is not the co-applicant.)

12. The water is to be used on lands within the Wright Water & Sewer District (If the landowner is not the applicant, a copy of the agreement relating to the usage of appropriated water on the land should be submitted to this office. If the landowner is included as co-applicant on the application, this procedure need not be followed.) NOTE: Water rights attach to the area(s) and/or point(s) of use.

REMARKS: ____________________________ ______________ ______________ __________________

Under penalties of perjury, I declare that I have examined this application and to the best of my knowledge and belief it is true, correct and complete.

Signature of Applicant or Authorized Agent

Date ___________ ________________ ______________

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES
(Domestic use is defined as use of water in 3 single family dwellings or less, noncommercial watering of lawns and gardens totaling one acre or less.)

IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS

MONITOR (For water level measurements or chemical quality sampling, test well)

IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.

THE STATE OF WYOMING ) ss.
STATE ENGINEER'S OFFICE )
This instrument was received and filed for record on the ________ ________ day of ________ ________ A.D. 2007, at ________ ________ o'clock A.M.

Permit No. U.W. 186050

Witness my hand this ______ day of _______ A.D. ________.

State Engineer

Approval of this application may be considered as authorization to proceed with construction of the proposed well or spring. Construction of well or spring will begin within one (1) year from date of approval. A Statement of Completion will be filed within thirty (30) days of completion of construction, including pump installation.

Completion of construction and completion of the beneficial use of water for the purposes specified in item 4 of this application will be made by December 31, ________.

The amount of appropriation shall be limited to the quantity to which permittee is entitled as determined at time of proof of application of water to beneficial use.

Witness my hand this ______ day of _______ A.D. ________.
This well will provide water to the Wright Water and Sewer District service area. The Wright Water and Sewer District's service area is shown below:

Water from this well will be commingled with water from:

1. RJ-2, Permit No. U.W. 46664
2. Enlargement RJ-2, Permit No. U.W. 101356
3. RJ-3, Permit No. U.W. 46693
4. Enlargement RJ-3, Permit No. U.W. 101357
5. RJ-4, Permit No. U.W. 71834
6. RJ-5, Permit No. U.W. 48091
7. RJ-6, Permit No. U.W. 145417

<table>
<thead>
<tr>
<th>TWN</th>
<th>RGE</th>
<th>SEC</th>
<th>NE%</th>
<th>NW%</th>
<th>SW%</th>
<th>SE%</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>NE</td>
<td>NW</td>
<td>SW</td>
<td>SE</td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
<td>1/4</td>
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<td>1/4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table shows the service area of Wright Water and Sewer Districts.
PERMIT NO. U.W. 186050
T.F. No. 40-3-264

PERMIT STATUS

Priority Date July 16th, 2007

Approval Date APR 2, 2008

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.

2. An annual report shall be submitted to the State Engineer no later than February 15 of each year stating the total amount of water produced from this well and other wells used to supply water to the Wright Water & Sewer District each month during the previous January 1 to December 31, twelve (12) month period.

3. The report shall identify the well(s) by name(s), location(s), permit number(s) and shall identify the type of meter(s) used for the measurement(s).

4. The report shall contain at least one (1) annual measurement of the pumping water level in this well and the other wells used to supply water to the Wright Water & Sewer District, as measured after a minimum of twenty-four (24) consecutive hour of pumping. The dates the measurements were obtained and the period of time the well was pumped prior to obtaining the measurements must be specified.

5. The report shall contain at least one (1) annual measurement of the static water level in this well and the other wells used to supply water to the Wright Water & Sewer District, as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well and the other wells were "shut-in" prior to obtaining the measurements must be specified.

6. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.

Date of Approval April 2, 2008

PATRICK T. TYRRELL, State Engineer

COPY OF THIS PERMIT MAILED TO:
MICHAEL (MIKE) B. WHITAKER—SUPERINTENDENT WATER DIV. 2
P.O. BOX 6103
1025 EAST BRUNDAGE LANE
SHERIDAN, WY 82801
APPENDIX B

WELL LOGS
### Wright Water and Sewer District Well RJ-7

#### Field Log

<table>
<thead>
<tr>
<th>Caliper (in)</th>
<th>Gamma CPS</th>
<th>SP mV</th>
<th>Res 16&quot; Ohm-m</th>
<th>Res 64&quot; Ohm-m</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>120</td>
<td>100</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

#### Drill Cutting Descriptions

- **Clyst, tan and lt gy blky chps; tr blk Coal**
- **Clyst, gy - tan blky chps; Carb strgrs**
- **Clyst, gy - brn blky chps; tr Coal**
- **Clyst, gy blky chps; tr Coal**
- **Ss, gy, vf, lse grns, occ grnl; Clyst, gy; tr Coal**
- **Ss, gy, f lse grns, pos kao cmt, occ grnl; Clyst, gy**

---

**Western Groundwater Services**

Page 1 of 13
<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper (in)</th>
<th>Gamma (CPS)</th>
<th>SP (mV)</th>
<th>Resistivity (Ohm-m)</th>
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</thead>
<tbody>
<tr>
<td>640</td>
<td>6</td>
<td>120</td>
<td>100</td>
<td>1000.0</td>
</tr>
<tr>
<td>660</td>
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<td>680</td>
<td>6</td>
<td>120</td>
<td>100</td>
<td>1000.0</td>
</tr>
</tbody>
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**Drill Cutting Descriptions**

- **640 ft:** Coal/lig, blk - brn, blk chps
- **660 ft:** Coal/lig, blk-brn, blk chps; Clyst, gy-brn
- **680 ft:** Coal/lig, blk-brn, blk chps; Clyst, gy-brn
- **700 ft:** Coal/lig, blk-brn, blk chps; Clyst, gy-brn
- **720 ft:** Coal/lig, blk-brn, blk chps; Clyst, gy-brn
- **740 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **760 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **780 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **800 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **820 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **840 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **860 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **880 ft:** Sltst, lt gy, v hd, calc cmt; Clyst, gy
- **900 ft:** Coal, blk, blky chps w/com frac surfs; Clystn, gy, plty chps, no HCL rxn
- **920 ft:** Coal, blk, blky and plty chps, occ frac surfs; tr Clystn, gy plty chps, calc

*Western Groundwater Services Page 3 of 13*
### Wright Water and Sewer District Well RJ-7 Field Log

#### Drill Cutting Descriptions

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper (in)</th>
<th>Gamma CPS</th>
<th>SP mV</th>
<th>Res 16&quot; Ohm-m</th>
<th>Res 64&quot; Ohm-m</th>
<th>Drill Cutting Description</th>
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<tbody>
<tr>
<td>960</td>
<td>6</td>
<td>0</td>
<td>-20</td>
<td>0.1</td>
<td>0.1</td>
<td>Coal, blk, blky chps, occ frac surf.</td>
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<tr>
<td>980</td>
<td></td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td>Clyst, gy-brn; tr Coal; Ss, gy, vf lse gms; com blk chps of coal</td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td></td>
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<td></td>
<td>Coal, blk blk chps w/com frac surf.</td>
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<td></td>
<td>Coal, blk plty chps w/ com frac surf.</td>
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<td>1040</td>
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<td>Coal, blk plty and blky chps w/com frac surf.</td>
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<td>1060</td>
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<td></td>
<td>Ss, lt gy, vf, lse grns, sly; com blky chps of coal</td>
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<td>1080</td>
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<td></td>
<td></td>
<td></td>
<td>Ss, lt gy, vf - m lse grns; Sltst, calc; Clyst, brn and gy; Coal, blk blk chps</td>
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<td>Ss, lt gy, vf - m lse grns; tr Clyst, gy; abnt Coal, blk</td>
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<tr>
<td>1120</td>
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<td></td>
<td>Poor sample recovery. Primarily LCM; some coal.</td>
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<td>Poor sample recovery. Primarily LCM; some coal.</td>
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<tr>
<td>1160</td>
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<td></td>
<td>Poor sample recovery. Primarily LCM; some coal.</td>
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<td>1180</td>
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<td></td>
<td>Ss, lt gy, vf, lse and occ w/kao cmt. TD of surface casing; Top of sand at ~1,234'.</td>
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**Western Groundwater Services**

Page 4 of 13
Wright Water and Sewer District Well RJ-7

Field Log

Drill Cutting Descriptions

<table>
<thead>
<tr>
<th>Caliper (in)</th>
<th>Gamma CPS</th>
<th>SP mV</th>
<th>Res 16&quot; Ohm-m 1000.0</th>
<th>Res 64&quot; Ohm-m 1000.0</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>0</td>
<td>-20</td>
<td>0.1</td>
<td>0.1</td>
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Sh, gy

Coal, blk blky chps; Clyst, gy; LCM - wood fiber

Sh, gy; Sltst, lt gy, arg, calc

Sltst, lt gy, sndy, arg, calc

Sltst, lt gy, sndy, tr arg, calc, tr pyrtzd

Sltst, lt gy, sndy, arg, calc; Sh, olv gy

Sh, dk gy, hd

Sltst, lt gy, sly, arg, tr calc; Sh, gy; Sh, brn gy, carb

Sltst, lt gy, sly, arg, tr calc

Sh, lt gy; Sltst, lt gy, arg, sndy, tr calc

Sh, gy; Sltst/vf Ss; tr Coal chps
### Wright Water and Sewer District Well RJ-7 Field Log

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper (in)</th>
<th>Gamma (CPS)</th>
<th>SP (mV)</th>
<th>Resistivity 16&quot; (Ohm-m)</th>
<th>Resistivity 64&quot; (Ohm-m)</th>
<th>Drill Cutting Descriptions</th>
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<td>Sh, gy, carb prtgs; tr vf Ss; rr Coal</td>
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<td></td>
<td>Sltst, lt gy, calc; Ss, lt gy, vf, lse</td>
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<tr>
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<td>Sh, gy, carb prtgs; Ss, lt gy, vf, lse; rr Coal chp</td>
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<td>Sh, gy, calc, slty</td>
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<td>0 60 FPM 150</td>
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<tr>
<td>0 30 FPM 100</td>
<td>0 30 FPM 150</td>
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Construction

9-1/2" Borehole

2062-2092
7" OD Casing/Screen
### Wright Water and Sewer District RJ-7 Well

#### Spinner Flow Meter Log

<table>
<thead>
<tr>
<th>Cable Speed</th>
<th>0</th>
<th>90 FPM</th>
<th>100</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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<td>0</td>
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<tr>
<td>0</td>
<td>90 FPM</td>
<td>150</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Upflow Velocity</th>
<th>0</th>
<th>90 FPM</th>
<th>150</th>
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<tbody>
<tr>
<td>0</td>
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<td>0</td>
<td>60 FPM</td>
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<tr>
<td>0</td>
<td>90 FPM</td>
<td>150</td>
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Western Groundwater Services

Page 4 of 6
Wright Water and Sewer District RJ-7 Well

Spinster Flow Meter Log

<table>
<thead>
<tr>
<th>Cable Speed</th>
<th>0</th>
<th>90 FPM</th>
<th>100</th>
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<tbody>
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<td></td>
<td>0</td>
<td>60 FPM</td>
<td>100</td>
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<tr>
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<td>0</td>
<td>30 FPM</td>
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</table>

<table>
<thead>
<tr>
<th>Upflow Velocity</th>
<th>0</th>
<th>90 FPM</th>
<th>150</th>
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<tbody>
<tr>
<td></td>
<td>0</td>
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Construction

8-3/4" Borehole

2894-2924
Datum is ground level (video depths were reduced by 3 ft for this log)

**VIDEO LOG SCREEN DEPTHS**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper 6 (in)</th>
<th>Res. (16&quot;) 1 (ohm-m)/100</th>
<th>Well Construction (As Specified)</th>
<th>Well Construction (As-Built from Video)</th>
</tr>
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<tbody>
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</tr>
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<td>1520</td>
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Centralizer

7-0" Screen

Screen #11
Screen #12
Screen #13
Screen #14
Screen #15
Datum is ground level (video depths were reduced by 3 ft for this log)

**VIDEO LOG SCREEN DEPTHS**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper (in)</th>
<th>Res. (16&quot;) (ohm-m)100</th>
<th>Well Construction (As Specified)</th>
<th>Well Construction (As-Built from Video)</th>
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<tbody>
<tr>
<td>1840</td>
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<td>1</td>
<td>9-1/2&quot; Borehole</td>
<td>9-1/2&quot; Borehole</td>
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Western Groundwater Services
Datum is ground level (video depths were reduced by 3 ft for this log)

**VIDEO LOG SCREEN DEPTHS**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Caliper (in)</th>
<th>Res. (16&quot;) (ohm-m)100</th>
<th>Well Construction (As Specified)</th>
<th>Well Construction (As-Built from Video)</th>
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Screen #20
Screen #21
Screen #22
Datum is ground level (video depths were reduced by 3 ft for this log)

VIDEO LOG SCREEN DEPTHS

- **Caliper (in)**: 18
- **Res. (16") (ohm-m)/100**: 11

**Well Construction (As Specified)**

**Well Construction (As-Built from Video)**

- **Screen #23**
- **Screen #24**
- **Screen #25**
- **Screen #26**
- **8-3/4" Borehole**
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<tr>
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<td>Depth Logger</td>
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<td>Bottom Logged Interval</td>
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<td>Density / Viscosity</td>
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<td>Max. Recorded Temp.</td>
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<td>Estimated Cement Top</td>
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<td>Time Well Ready</td>
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<tr>
<td>Time Logger on Bottom</td>
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<td>Equipment Number</td>
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<td>Location</td>
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<td>J BULLARD</td>
</tr>
<tr>
<td>Witnessed By</td>
<td>J HUNT</td>
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<td>Borehole Record</td>
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<td>Production String</td>
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This log was collected by contractor to confirm the screen locations. Annotations were made by engineer to show the screens and other features.
All interpretations are opinions based on inferences from electrical or other measurements, and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any losses, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

**Comments**

`shows screen interval interpreted from sonic log`

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*bottom 10" casing* (based on other log data)
WELL RJ-7
HISTORY OF HOLE REPORT

SPONSOR: Wright Water and Sewer District
Wright, WY

FUNDING AGENCY: Wyoming Water Development Commission
Keith Clarey (307) 777-7626

ENGINEER: Stetson Engineering, Inc.
Gillette, WY
Todd Rand (307) 682-8936

GEOLOGIST: Western Groundwater Services, LLC
Bozeman, MT
Mark Cunnane (406) 579-1493

CONTRACTOR: Weston Engineering, Inc.
Upton, WY
Jerry Hunt (307) 468-2427, (307) 689-2087
Ron Bruce (307) 689-2088 (tool pusher)

NOTICE TO PROCEED: 4/25/2011

Bold = payable quantity

Depth are ft below KB (KB is 5' above ground)

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<thead>
<tr>
<th>DATE</th>
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<td><strong>Mobilization 50% Complete;</strong> Drilled 7-7/8&quot; pilot borehole to 204'</td>
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<td>06/09/11</td>
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<td>46</td>
<td>Overdrilled borehole to 20&quot; from surface to 92'.</td>
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<td><strong>Set and cemented 92' surface casing.</strong></td>
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<td>Rigging up to drill 14-3/4&quot; borehole.</td>
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<td>Drilled 14-3/4&quot; borehole to 398'</td>
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<td>Drilled 14-3/4&quot; borehole to 614'</td>
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<td>Drilled 14-3/4&quot; borehole to 838'</td>
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<td>Drilled 14-3/4&quot; borehole to 887'; Replaced drill bit.</td>
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<td>Lost circulation in AM; no footage made.</td>
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<td>56</td>
<td>Restoring circulation; set cement plug; no footage made.</td>
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<td>Weather delay.</td>
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<td>58</td>
<td>Drilled 14-3/4&quot; borehole to 944'. Lost circulation; set cement plug; waiting on cement.</td>
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<td>Drilled 14-3/4&quot; borehole to 975'; lost circulation; set cement plug, waiting on cement.</td>
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<tr>
<td>06/23/11</td>
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<td>Drilled cement to 944'; lost circulation; waiting on cement.</td>
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<tr>
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<td>Drilled cement to 934'; lost circulation; waiting on cement.</td>
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<td>Drilled 14-3/4&quot; borehole to 1031' (AM 6/26)</td>
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<td>Drilled 14-3/4&quot; borehole to 1192' (AM 6/27); lost circulation</td>
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<td>Restoring lost circulation.</td>
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<td>Restoring lost circulation; pumped cement plug; waiting on cement.</td>
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<td>Waiting on cement; reaming upper borehole; drilling cement plug.</td>
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<td>Reaming borehole and drilling cement plug to 880' (AM 7/1).</td>
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<td>Reaming borehole and drilling cement plug; remove drill tools from borehole for weekend.</td>
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<td>Reamed borehole to 880' (AM 7/7).</td>
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<td>Drilled cement to 992' (AM 7/8).</td>
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<td>Lost circulation with bit at 996'. Worked on restoring circulation (AM 7/9).</td>
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<td>Restored lost circulation; reaming with tools at 750' (AM 7/10).</td>
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<td>Reamed borehole to 930' (AM 7/11).</td>
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<td>Drilling 14-3/4&quot; borehole to 1217' (AM 7/12).</td>
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<td>Drilled 14-3/4&quot; borehole to 1248'; Reaming borehole in preparation for setting casing (AM 7/13).</td>
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<td>Set 10-3/4&quot; casing to 1230 ft KB; set first stage of cement seal; waiting on cement.</td>
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<td>Ran cement bond log (CBL). Data inadequately defining top of cement. Planning to run different tool on Friday.</td>
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<td>Repeated CBL; pumped second stage of cement with surface returns; waiting on cement. Set and cemented 1230 LF of Intermediate Casing.</td>
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<td>Waiting on cement.</td>
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<td>85</td>
<td>Equipment repairs; Rigging up for liner borehole.</td>
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<td>Prepared to drill; drilled 9-1/2&quot; borehole to 1250 ft; changed drill bit. 20 LF Liner Borehole.</td>
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<td>Drilled 9-1/2&quot; liner borehole to 1360 ft (AM 7/21). 110 LF Liner Borehole.</td>
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<td>Drilled 9-1/2&quot; liner borehole to 1590 ft (AM 7/22). 230 LF Liner Borehole.</td>
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<td>Drilled 9-1/2&quot; liner borehole to 1830 ft (AM 7/23). 240 LF Liner Borehole.</td>
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<td>Drilled 9-1/2&quot; liner borehole to 2035 ft (AM 7/24). 205 LF Liner Borehole.</td>
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<td>Drilled 9-1/2&quot; liner borehole to 2326 ft (AM 7/25). 291 LF Liner Borehole.</td>
</tr>
<tr>
<td>07/25/11</td>
<td>Mon</td>
<td>92</td>
<td>Drilled 9-1/2&quot; liner borehole to 2560 ft (AM 7/26). 234 LF Liner Borehole.</td>
</tr>
<tr>
<td>07/26/11</td>
<td>Tue</td>
<td>93</td>
<td>Drilled 9-1/2&quot; liner borehole to 2688 ft; removed drill tools from borehole for bit change. 128 LF Liner Borehole.</td>
</tr>
<tr>
<td>07/27/11</td>
<td>Wed</td>
<td>94</td>
<td>Changed drill bit to 8-3/4&quot;; set tools to 1200 ft; stopped for days off.</td>
</tr>
<tr>
<td>07/28/11</td>
<td>Thu</td>
<td>95</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>07/29/11</td>
<td>Fri</td>
<td>96</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>07/30/11</td>
<td>Sat</td>
<td>97</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>07/31/11</td>
<td>Sun</td>
<td>98</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>08/01/11</td>
<td>Mon</td>
<td>99</td>
<td>Drilled 8-3/4&quot; liner borehole to 2807 ft (AM 8/2). 119 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/02/11</td>
<td>Tue</td>
<td>100</td>
<td>Drilled 8-3/4&quot; liner borehole to 2995 ft (AM 8/3). 188 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/03/11</td>
<td>Wed</td>
<td>101</td>
<td>Drilled 8-3/4&quot; liner borehole to 3045 ft (AM 8/4); completed equipment repairs; mixed drilling fluids. 50 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/04/11</td>
<td>Thu</td>
<td>102</td>
<td>Drilled 8-3/4&quot; liner borehole to 3170 ft (AM 8/5). 120 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/05/11</td>
<td>Fri</td>
<td>103</td>
<td>Changed drill bit; drilled 8-3/4&quot; liner borehole to 3263 ft (AM 8/6). 93 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/06/11</td>
<td>Sat</td>
<td>104</td>
<td>Drilled 8-3/4&quot; liner borehole to 3512 ft (AM 8/7). 249 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/07/11</td>
<td>Sun</td>
<td>105</td>
<td>Drilled 8-3/4&quot; liner borehole to 3755 ft (AM 8/8). 243 LF Liner Borehole.</td>
</tr>
<tr>
<td>08/08/11</td>
<td>Mon</td>
<td>106</td>
<td>Changed drill bit; drilled 8-3/4&quot; liner borehole to 3775 ft (AM 8/9)</td>
</tr>
<tr>
<td>Date</td>
<td>Day</td>
<td>Contract Time</td>
<td>Activity</td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>08/09/11</td>
<td>Tue</td>
<td>107</td>
<td>Drilled 8-3/4” liner borehole to 3944 ft (AM 8/10). <strong>169 LF Liner Borehole.</strong></td>
</tr>
<tr>
<td>08/10/11</td>
<td>Wed</td>
<td>108</td>
<td>Drilled 8-3/4” liner borehole to 4007 ft. <strong>63 LF Liner Borehole.</strong></td>
</tr>
<tr>
<td>08/11/11</td>
<td>Thu</td>
<td>109</td>
<td>Collected wireline logs; started packer installation.</td>
</tr>
<tr>
<td>08/12/11</td>
<td>Fri</td>
<td>110</td>
<td>Installed packer; Air- lifted for sampling; compressor repair.</td>
</tr>
<tr>
<td>08/13/11</td>
<td>Sat</td>
<td>111</td>
<td>Air- lifted for sampling; compressor repair.</td>
</tr>
<tr>
<td>08/14/11</td>
<td>Sun</td>
<td>112</td>
<td>Air- lifted for sampling; <strong>34 HRS Water Sampling Through Packer</strong>; Retrieved packer from borehole; <strong>Isolation Packer</strong></td>
</tr>
<tr>
<td>08/15/11</td>
<td>Mon</td>
<td>113</td>
<td>Cleaning borehole for logging.</td>
</tr>
<tr>
<td>08/16/11</td>
<td>Tue</td>
<td>114</td>
<td>Cleaning borehole for logging.</td>
</tr>
<tr>
<td>08/17/11</td>
<td>Wed</td>
<td>115</td>
<td>Ran wireline logs; plugged lower borehole to 3081 ft; conditioned mud for setting liner. <strong>Open Borehole Wireline Logging; Borehole Plugging and Mud Conditioning.</strong></td>
</tr>
<tr>
<td>08/18/11</td>
<td>Thu</td>
<td>116</td>
<td>Set liner with screens; prepared site for development. <strong>355 LF Liner Screen Installed; 1445 LF Liner Casing Installed; Liner Hanger System Installed.</strong></td>
</tr>
<tr>
<td>08/19/11</td>
<td>Fri</td>
<td>117</td>
<td>Completed development work -- jetting screens with water.</td>
</tr>
<tr>
<td>08/20/11</td>
<td>Sat</td>
<td>118</td>
<td>Completed development work -- air-lifting.</td>
</tr>
<tr>
<td>08/21/11</td>
<td>Sun</td>
<td>119</td>
<td>Completing development work -- mixed and injected development chemical into screen; air-lifting.</td>
</tr>
<tr>
<td>08/22/11</td>
<td>Mon</td>
<td>120</td>
<td>Completed development work -- air-lifting; terminated development. <strong>65 HRS Development</strong></td>
</tr>
<tr>
<td>08/23/11</td>
<td>Tue</td>
<td>121</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/24/11</td>
<td>Wed</td>
<td>122</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/25/11</td>
<td>Thu</td>
<td>123</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/26/11</td>
<td>Fri</td>
<td>124</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/27/11</td>
<td>Sat</td>
<td>125</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/28/11</td>
<td>Sun</td>
<td>126</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>DATE</td>
<td>DAY</td>
<td>CONTRACT TIME</td>
<td>ACTIVITY</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>08/29/11</td>
<td>Mon</td>
<td>127</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/30/11</td>
<td>Tue</td>
<td>128</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>08/31/11</td>
<td>Wed</td>
<td>129</td>
<td>Demobilizing drill rig; preparing site for pump testing.</td>
</tr>
<tr>
<td>09/01/11</td>
<td>Thu</td>
<td>130</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/02/11</td>
<td>Fri</td>
<td>131</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/03/11</td>
<td>Sat</td>
<td>132</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/04/11</td>
<td>Sun</td>
<td>133</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/05/11</td>
<td>Mon</td>
<td>134</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/06/11</td>
<td>Tue</td>
<td>135</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/07/11</td>
<td>Wed</td>
<td>136</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/08/11</td>
<td>Thu</td>
<td>137</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/09/11</td>
<td>Fri</td>
<td>138</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/10/11</td>
<td>Sat</td>
<td>139</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/11/11</td>
<td>Sun</td>
<td>140</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/12/11</td>
<td>Mon</td>
<td>141</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/13/11</td>
<td>Tue</td>
<td>142</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/14/11</td>
<td>Wed</td>
<td>143</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/15/11</td>
<td>Thu</td>
<td>144</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/16/11</td>
<td>Fri</td>
<td>145</td>
<td>Set test pump in well.</td>
</tr>
<tr>
<td>09/17/11</td>
<td>Sat</td>
<td>146</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/18/11</td>
<td>Sun</td>
<td>147</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/19/11</td>
<td>Mon</td>
<td>148</td>
<td>Set test pump in well.</td>
</tr>
<tr>
<td>09/20/11</td>
<td>Tue</td>
<td>149</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/21/11</td>
<td>Wed</td>
<td>150</td>
<td>Step rate test: 100, 200, 300, 400 gpm; 4 HRS Pumping Test Hourly</td>
</tr>
<tr>
<td>09/22/11</td>
<td>Thu</td>
<td>151</td>
<td>Constant rate test; Mechanical failure after 25 minutes</td>
</tr>
<tr>
<td>09/23/11</td>
<td>Fri</td>
<td>152</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/24/11</td>
<td>Sat</td>
<td>153</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>09/25/11</td>
<td>Sun</td>
<td>154</td>
<td>Equipment repairs.</td>
</tr>
<tr>
<td>09/26/11</td>
<td>Mon</td>
<td>155</td>
<td>Equipment repairs.</td>
</tr>
<tr>
<td>09/27/11</td>
<td>Tue</td>
<td>156</td>
<td>Well recovery</td>
</tr>
<tr>
<td>09/28/11</td>
<td>Wed</td>
<td>157</td>
<td>Well recovery</td>
</tr>
<tr>
<td>09/29/11</td>
<td>Thu</td>
<td>158</td>
<td>Well recovery</td>
</tr>
<tr>
<td>09/30/11</td>
<td>Fri</td>
<td>159</td>
<td>Well recovery</td>
</tr>
<tr>
<td>10/01/11</td>
<td>Sat</td>
<td>160</td>
<td>Well recovery</td>
</tr>
<tr>
<td>10/02/11</td>
<td>Sun</td>
<td>161</td>
<td>Well recovery</td>
</tr>
<tr>
<td>10/03/11</td>
<td>Mon</td>
<td>162</td>
<td>Well recovery</td>
</tr>
<tr>
<td>10/04/11</td>
<td>Tue</td>
<td>163</td>
<td>Well recovery</td>
</tr>
<tr>
<td>10/05/11</td>
<td>Wed</td>
<td>164</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>DATE</td>
<td>DAY</td>
<td>CONTRACT TIME</td>
<td>ACTIVITY</td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10/06/11</td>
<td>Thu</td>
<td>165</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>10/07/11</td>
<td>Fri</td>
<td>166</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>10/08/11</td>
<td>Sat</td>
<td>167</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>10/09/11</td>
<td>Sun</td>
<td>168</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>10/10/11</td>
<td>Mon</td>
<td>169</td>
<td>Constant rate test, 305 gpm.</td>
</tr>
<tr>
<td>10/11/11</td>
<td>Tue</td>
<td>170</td>
<td>Constant rate test, 305 gpm. 168 HRS Pumping Test Hourly; Temporary Pumping System.</td>
</tr>
<tr>
<td>10/12/11</td>
<td>Wed</td>
<td>171</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/13/11</td>
<td>Thu</td>
<td>172</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/14/11</td>
<td>Fri</td>
<td>173</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/15/11</td>
<td>Sat</td>
<td>174</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/16/11</td>
<td>Sun</td>
<td>175</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/17/11</td>
<td>Mon</td>
<td>176</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/18/11</td>
<td>Tue</td>
<td>177</td>
<td>Recovery monitoring</td>
</tr>
<tr>
<td>10/19/11</td>
<td>Wed</td>
<td>178</td>
<td>Spinner flow meter logging (FAILED); pulled test pump and tools from well.</td>
</tr>
<tr>
<td>10/20/11</td>
<td>Thu</td>
<td>179</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/21/11</td>
<td>Fri</td>
<td>180</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/22/11</td>
<td>Sat</td>
<td>181</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/23/11</td>
<td>Sun</td>
<td>182</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/24/11</td>
<td>Mon</td>
<td>183</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/25/11</td>
<td>Tue</td>
<td>184</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/26/11</td>
<td>Wed</td>
<td>185</td>
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<tr>
<td>10/27/11</td>
<td>Thu</td>
<td>186</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/28/11</td>
<td>Fri</td>
<td>187</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/29/11</td>
<td>Sat</td>
<td>188</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/30/11</td>
<td>Sun</td>
<td>189</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>10/31/11</td>
<td>Mon</td>
<td>190</td>
<td>Mobilize logging test pump</td>
</tr>
<tr>
<td>11/01/11</td>
<td>Tue</td>
<td>191</td>
<td>Set test pump and evaluated logging tool.</td>
</tr>
<tr>
<td>11/02/11</td>
<td>Wed</td>
<td>192</td>
<td>Attempted to run spinner log. Data indicate possible electronic noise; tool malfunctioned.</td>
</tr>
<tr>
<td>11/03/11</td>
<td>Thu</td>
<td>193</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/04/11</td>
<td>Fri</td>
<td>194</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/05/11</td>
<td>Sat</td>
<td>195</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/06/11</td>
<td>Sun</td>
<td>196</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/07/11</td>
<td>Mon</td>
<td>197</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/08/11</td>
<td>Tue</td>
<td>198</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/09/11</td>
<td>Wed</td>
<td>199</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/10/11</td>
<td>Thu</td>
<td>200</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/11/11</td>
<td>Fri</td>
<td>201</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/12/11</td>
<td>Sat</td>
<td>202</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/13/11</td>
<td>Sun</td>
<td>203</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>DATE</td>
<td>DAY</td>
<td>CONTRACT TIME</td>
<td>ACTIVITY</td>
</tr>
<tr>
<td>----------</td>
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<td>----------------------------------------------</td>
</tr>
<tr>
<td>11/14/11</td>
<td>Mon</td>
<td>204</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/15/11</td>
<td>Tue</td>
<td>205</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>11/16/11</td>
<td>Wed</td>
<td>206</td>
<td>No Site Work Completed</td>
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<tr>
<td>11/17/11</td>
<td>Thu</td>
<td>207</td>
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<tr>
<td>11/18/11</td>
<td>Fri</td>
<td>208</td>
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<td>11/19/11</td>
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<tr>
<td>11/20/11</td>
<td>Sun</td>
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<tr>
<td>11/21/11</td>
<td>Mon</td>
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<td>11/22/11</td>
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<td>11/23/11</td>
<td>Wed</td>
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<td>11/24/11</td>
<td>Thu</td>
<td>214</td>
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<td>11/25/11</td>
<td>Fri</td>
<td>215</td>
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<td>11/26/11</td>
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<td>11/27/11</td>
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<td>11/30/11</td>
<td>Wed</td>
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<tr>
<td>12/01/11</td>
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<td>221</td>
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<tr>
<td>12/02/11</td>
<td>Fri</td>
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<td>No Site Work Completed</td>
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<tr>
<td>12/03/11</td>
<td>Sat</td>
<td>223</td>
<td>No Site Work Completed</td>
</tr>
<tr>
<td>12/04/11</td>
<td>Sun</td>
<td>224</td>
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<td>Mon</td>
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<tr>
<td>12/13/11</td>
<td>Tue</td>
<td>233</td>
<td>Set pump and impeller flow meter tool</td>
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<td>12/14/11</td>
<td>Wed</td>
<td>234</td>
<td>Collected spinner flow meter log</td>
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<td>12/15/11</td>
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<td>235</td>
<td>Pulled pump/logging tool; collected well video log.</td>
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<td>12/16/11</td>
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APPENDIX C

WATER QUALITY REPORTS
### FIELD PARAMETERS

#### STEP RATE PUMPING TEST, 9/21/2011

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<th>Time</th>
<th>Step No.</th>
<th>SC</th>
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<th>GPM</th>
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**Step Times**

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<td>#2 1335</td>
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<td>#4 1535</td>
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#### CONSTANT RATE PUMPING TEST

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<th>Date + Time</th>
<th>SC</th>
<th>pH</th>
<th>T</th>
<th>ORP</th>
<th>Eh (mV)</th>
<th>GPM</th>
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#### SAND CONTENT

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<th>Vol H2O</th>
<th>Vol Sand</th>
<th>ppm-v</th>
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*Western Groundwater Services*
WATER ANALYSIS REPORT

Client: Stetson Engineering, Inc.  
Project: Wright W&SD Level II Study  
Location: Wright W&SD Well RJ-7  
Collection Date: 10/19/11  
Comments: Sample collected after 30 min of pumping at 300 gpm. (1.6 well volumes purged)

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Result</th>
<th>Units A</th>
<th>Method B</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Heterotrophic Bacteria   | 2.5    | Days    | HAB      | 187,000 pac/ml, Anerobic bacteria (DO)  
High Aggressivity                                                  |
| Slime Forming Bacteria   | >8     | Days    | SLYM     | <1 pac/ml, Background                                                                             |
| Iron-Related Bacteria    | 2.5    | Days    | IRB      | 75,000 pac/ml, Anaerobic bacteria (FO)  
High Aggressivity                                                  |
| Sulphate Reducing Bacteria | 5     | Days    | SRB      | 5,000 pac/ml, Consortium with SRB  
(BT/BA) High Aggressivity                                           |

NOTES

A BART units are reported as days to reaction. Concentrations of microorganisms reported in the ‘Comments’ column are estimated by manufacturer based on days to reaction. The method does not directly count organisms. Microorganism numbers are reported in units of pac/mL (predicted active cell per milliliter).

B Methods listed refer to specific BART ™ (Biological Activity Reaction Tubes) analyses. BART ™ methods are a product of Droycon Bioconcepts Inc., Regina, Saskatchewan, Canada, www.DBI.ca
<table>
<thead>
<tr>
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<th>Units</th>
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<th>MCL/QCL</th>
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<td>s.u.</td>
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<td></td>
<td>08/23/11 20:52 / jjw</td>
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**Report Definitions:**
- RL - Analyte reporting limit.
- MCL - Maximum contaminant level.
- QCL - Quality control limit.
- ND - Not detected at the reporting limit.
- H - Analysis performed past recommended holding time.
- D - RL increased due to sample matrix.
- * - The result exceeds the MCL.

Prepared by Billings, MT Branch
### Sample Analysis Report

**CLIENT:** Western Groundwater Services  
6595 Bear Claw Lane  
Bozeman, MT 59715

**Project:** Stetson/Wright R7-7  
**Client Sample ID:** RJ-7LBH

**Lab ID:** S1111343-001  
**Collection Date:** 8/14/2011 2:30:00 PM  
**Date Received:** 11/21/2011 1:18:00 PM  
**Sampler:** MC  
**Matrix:** Water

**Date Reported:** 12/12/2011  
**Report ID:** S1111343001  
**Work Order:** S1111343

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<tr>
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<th>Qual</th>
<th>Units</th>
<th>Date Analyzed/Init</th>
<th>Method</th>
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<tbody>
<tr>
<td><strong>Radiochemistry</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Gross Alpha</td>
<td>7.0 ± 3.0</td>
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<td>pCi/L</td>
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These results apply only to the samples tested.

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<thead>
<tr>
<th>Qualifiers</th>
<th>Description</th>
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<tbody>
<tr>
<td>*</td>
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<td>B</td>
</tr>
<tr>
<td>C</td>
<td>Calculated Value</td>
<td>E</td>
</tr>
<tr>
<td>H</td>
<td>Holding times for preparation or analysis exceeded</td>
<td>J</td>
</tr>
<tr>
<td>L</td>
<td>Analyzed by a contract laboratory</td>
<td>M</td>
</tr>
<tr>
<td>ND</td>
<td>Not Detected at the Reporting Limit</td>
<td>O</td>
</tr>
<tr>
<td>S</td>
<td>Spike Recovery outside accepted recovery limits</td>
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</table>

Reviewed by: ____________________________  
RJ-7 LOWER BOREHOLE
### Sample Analysis Report

**CLIENT:** Western Groundwater Services  
6595 Bear Claw Lane  
Bozeman, MT 59715

**Project:** Midpoint Sample  
**Lab ID:** S1109427-001  
**Client Sample ID:** RJ-7 Midpoint  
**COC:** 141176  
**Matrix:** Water

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<th>Date Analyzed/Init</th>
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<td>s.u.</td>
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<td>SM 4500 H B</td>
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<td>µhmhos/cm</td>
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<td>SM 2510B</td>
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<tr>
<td>Total Dissolved Solids (180)</td>
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<td>mg/L</td>
<td>09/26/2011 1125 TH</td>
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<tr>
<td>Alkalinity, Total (As CaCO3)</td>
<td>209</td>
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<td>mg/L</td>
<td>09/23/2011 2351 AMB</td>
<td>SM 2320B</td>
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<td>Total Coliform</td>
<td>Positive</td>
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<td>MPN/100mL</td>
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<td>E.coli</td>
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<tbody>
<tr>
<td>Alkalinity, Bicarbonate as HCO3</td>
<td>250</td>
<td>5</td>
<td>mg/L</td>
<td>09/23/2011 2351 AMB</td>
</tr>
<tr>
<td>Alkalinity, Carbonate (As CaCO3)</td>
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<td>5</td>
<td>mg/L</td>
<td>09/23/2011 2351 AMB</td>
</tr>
<tr>
<td>Chloride</td>
<td>6</td>
<td>1</td>
<td>mg/L</td>
<td>09/29/2011 1157 KO</td>
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<tr>
<td>Sulfate</td>
<td>15</td>
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<table>
<thead>
<tr>
<th>Cations</th>
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<tbody>
<tr>
<td>Calcium</td>
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<td>mg/L</td>
<td>10/03/2011 1432 DG</td>
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<tr>
<td>Magnesium</td>
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<td>1</td>
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<tr>
<td>Potassium</td>
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<td>1</td>
<td>mg/L</td>
<td>10/03/2011 1432 DG</td>
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<tr>
<td>Sodium</td>
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<table>
<thead>
<tr>
<th>Radiochemistry</th>
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</thead>
<tbody>
<tr>
<td>Gross Alpha</td>
<td>ND</td>
<td>2</td>
<td>pCi/L</td>
<td>10/18/2011 2156 SH</td>
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<tr>
<td>Gross Beta</td>
<td>6.8 ± 1.3</td>
<td>3</td>
<td>pCi/L</td>
<td>10/18/2011 2156 SH</td>
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<tr>
<td>Radium 226</td>
<td>0.7 ± 0.1</td>
<td>0.2</td>
<td>pCi/L</td>
<td>10/14/2011 1628 SH</td>
</tr>
<tr>
<td>Total Radium 228</td>
<td>1.9 ± 1.2</td>
<td>1</td>
<td>pCi/L</td>
<td>10/31/2011 1749 WN</td>
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<table>
<thead>
<tr>
<th>Total Metals</th>
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</thead>
<tbody>
<tr>
<td>Iron</td>
<td>12.6</td>
<td>0.05</td>
<td>mg/L</td>
<td>09/27/2011 1840 DG</td>
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<tr>
<td>Manganese</td>
<td>0.26</td>
<td>0.02</td>
<td>mg/L</td>
<td>09/27/2011 1840 DG</td>
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<td>Uranium</td>
<td>0.02</td>
<td>0.01</td>
<td>mg/L</td>
<td>09/27/2011 1840 DG</td>
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These results apply only to the samples tested.  
**RL - Reporting Limit**

<table>
<thead>
<tr>
<th>Qualifiers</th>
<th>RL - Reporting Limit</th>
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</thead>
<tbody>
<tr>
<td>*</td>
<td>Value exceeds Maximum Contaminant Level</td>
</tr>
<tr>
<td>C</td>
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</tr>
<tr>
<td>H</td>
<td>Holding times for preparation or analysis exceeded</td>
</tr>
<tr>
<td>L</td>
<td>Not Detected at the Reporting Limit</td>
</tr>
<tr>
<td>ND</td>
<td>Spike Recovery outside accepted recovery limits</td>
</tr>
<tr>
<td>B</td>
<td>Analyte detected in the associated Method Blank</td>
</tr>
<tr>
<td>E</td>
<td>Value above quantitation range</td>
</tr>
<tr>
<td>J</td>
<td>Analyte detected below quantitation limits</td>
</tr>
<tr>
<td>M</td>
<td>Value exceeds Monthly Ave or MCL</td>
</tr>
<tr>
<td>O</td>
<td>Outside the Range of Dilutions</td>
</tr>
</tbody>
</table>

Reviewed by: Connie Mattson, Project Manager  
RJ-7 MIDPOINT SAMPLE
Samples RJ-7 Endpoint, and Trip Blank were received on October 10, 2011.

All samples were received and analyzed within the EPA recommended holding times, except those noted in this case narrative. Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition
Methods indicated with the Monday, March 12, 2007 Federal Register, 40 CFR Part 122, 136 et al.

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

S1110128-001 - General Parameters/Odor - Holding times for preparation or analysis exceeded
S1110128-001 - General Parameters/Color - Holding times for preparation or analysis exceeded
### Sample Analysis Report

**CLIENT:** Western Groundwater Services  
6595 Bear Claw Lane  
Bozeman, MT 59715

**Project:** Endpoint Sample: RJ-7  
**Lab ID:** S1110128-001  
**Client Sample ID:** RJ-7 Endpoint  
**COC:** 141174

**Date Reported:** 11/15/2011  
**Report ID:** S1110128001  
**Work Order:** S1110128  
**Collection Date:** 10/10/2011 9:00:00 AM  
**Date Received:** 10/10/2011 10:09:00 AM  
**Sampler:** Water

### Analyses

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<tr>
<th>Parameter</th>
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<th>Qual</th>
<th>Units</th>
<th>Date Analyzed/Init</th>
<th>Method</th>
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</thead>
</table>

#### General Parameters
- **pH:** 8.3  
  - 10/11/2011 2259 AMB  
  - SM 4500 H B
- **Electrical Conductivity:** 520  
  - 10/11/2011 2259 AMB  
  - SM 2510 B
- **Total Dissolved Solids (180):** 320  
  - 10/11/2011 955 TH  
  - SM 2540
- **Total Suspended Solids:** ND  
  - 10/14/2011 1110 AMB  
  - SM 2540
- **Acidity, Total (As CaCO3):** ND  
  - 10/11/2011 000 AMB  
  - SM 2310 B
- **Alkalinity, Total (As CaCO3):** 207  
  - 10/11/2011 2259 AMB  
  - SM 2320 B
- **Hardness, Calcium/Magnesium (As CaCO3):** 34  
  - 10/14/2011 745 KO  
  - SM 2340 B
- **Nitrogen, Nitrate (As N):** 0.05  
  - 10/14/2011 1038 ARF  
  - EPA 300.0
- **Nitrogen, Nitrite (As N):** 0.05  
  - 10/14/2011 1038 ARF  
  - EPA 300.0
- **Color:** 5  
  - 10/11/2011 1830 ML  
  - SM 2120 B
- **Cyanide, Total:** ND  
  - 10/13/2011 1443 MEL  
  - EPA 335.4
- **Odor:** 1  
  - 10/12/2011 900 KO  
  - SM 2150 B
- **MBAS:** ND  
  - 10/12/2011 740 AMB  
  - SM 5540 C
- **Turbidity:** 0.9  
  - 10/11/2011 1715 JD  
  - SM 2130
- **Total Coliform:** positive  
  - 10/10/2011 900 GL  
  - SM 9223 B
- **E.Coli:** negative  
  - 10/10/2011 900 GL  
  - SM 9223 B
- **Heterotrophic Plate Count:** ND  
  - 10/13/2011 1410 KB  
  - SM 9215 B
- **Langelier Value:** 0.23  
  - 10/11/2011 000 CJM  
  - Calculation

#### Anions
- **Alkalinity, Bicarbonate as HCO3:** 250  
  - 10/11/2011 2259 AMB  
  - SM 2320 B
- **Alkalinity, Carbonate as CO3:** ND  
  - 10/11/2011 2259 AMB  
  - SM 2320 B
- **Chloride:** 6  
  - 10/14/2011 1038 ARF  
  - EPA 300.0
- **Fluoride:** 1.1  
  - 10/11/2011 2259 AMB  
  - SM 4500 FC
- **Nitrogen, Nitrate-Nitrite (as N):** 1.1  
  - 10/11/2011 2259 AMB  
  - SM 4500 FC
- **Sulfate:** 43  
  - 10/14/2011 1038 ARF  
  - EPA 300.0

#### Cations
- **Calcium:** 10  
  - 10/12/2011 916 DG  
  - EPA 200.7
- **Magnesium:** 2  
  - 10/12/2011 916 DG  
  - EPA 200.7
- **Potassium:** 6  
  - 10/12/2011 916 DG  
  - EPA 200.7
- **Sodium:** 105  
  - 10/12/2011 916 DG  
  - EPA 200.7

#### Radiochemistry (SDWA)
- **Gross Alpha:** ND  
  - 10/11/2011 1951 SH  
  - SM 7110 B
- **Gross Beta:** 5.7 ± 1.2  
  - 10/11/2011 1951 SH  
  - SM 7110 B
- **Radium 226:** 0.6 ± 0.1  
  - 10/29/2011 1405 SH  
  - SM 7500 RA_B
- **Radium 228:** 1.5 ± 1.0  
  - 10/29/2011 2019 SH  
  - RA-05

### These results apply only to the samples tested.

**Qualifiers:**
- **RL - Reporting Limit**
  - B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - M Value exceeds Monthly Ave or MCL
  - O Outside the Range of Dilutions

**Reviewed by:** Connie Mattson, Project Manager  
**RJ-7 ENDPOINT SAMPLE**
## Sample Analysis Report

**CLIENT:** Western Groundwater Services  
6595 Bear Claw Lane  
Bozeman, MT 59715

**Project:** Endpoint Sample: RJ-7  
**Lab ID:** S1110128-001  
**Client Sample ID:** RJ-7 Endpoint  
**COC:** 141174  
**Date Received:** 10/10/2011 10:09:00 AM  
**Sampler:** Water

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<tr>
<th>Analyses</th>
<th>Result</th>
<th>RL</th>
<th>Qual</th>
<th>Units</th>
<th>Date Analyzed/Init</th>
<th>Method</th>
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<td>10/13/2011 1527</td>
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<td>EPA 200.7</td>
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</table>

These results apply only to the samples tested.  

**Qualifiers:**  
- * Value exceeds Maximum Contaminant Level  
- B Analyte detected in the associated Method Blank  
- C Calculated Value  
- D Analyte detected below quantitation limits  
- E Value above quantitation range  
- F Value exceeds Monthly Ave or MCL  
- G Holding times for preparation or analysis exceeded  
- H Analyte detected below quantitation limits  
- J Analyte detected in the associated Method Blank  
- K Outside the Range of Dilutions  
- L Analyzed by a contract laboratory  
- M Value exceeds Monthly Ave or MCL  
- N Not Detected at the Reporting Limit  
- O Outside the Range of Dilutions  
- S Spike Recovery outside accepted recovery limits

**Reviewed by:**  
Connie Mattson, Project Manager  
RJ-7 ENDPOINT SAMPLE

Page 2 of 2
Pace Analytical Services, Inc.
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS
Project:

WY5680001C

Pace Project No.:

3540595

Sample: S1110128-001
Parameters

Lab ID: 3540595001
Results

Units

Collected: 10/10/11 09:00
PQL

MDL

Received: 10/12/11 10:30

DF

Prepared

504.1 GCS EDB and DBCP

Analytical Method: EPA 504.1 Preparation Method: EPA 504.1

1,2-Dibromo-3-chloropropane
1,2-Dibromoethane (EDB)

<0.0048 ug/L
<0.0061 ug/L

508.1 GCS Pesticides

Analytical Method: EPA 508.1 Preparation Method: EPA 508.1

Alachlor
Atrazine
gamma-BHC (Lindane)
Chlordane (Technical)
Endrin
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Methoxychlor
PCB-1016 (Aroclor 1016)
PCB-1221 (Aroclor 1221)
PCB-1232 (Aroclor 1232)
PCB-1242 (Aroclor 1242)
PCB-1248 (Aroclor 1248)
PCB-1254 (Aroclor 1254)
PCB-1260 (Aroclor 1260)
PCB, Total
Simazine
Toxaphene
Decachlorobiphenyl (S)

<0.036
<0.022
<0.0031
<0.049
<0.0021
<0.0063
<0.0031
<0.012
<0.013
<0.015
<0.091
<0.030
<0.030
<0.053
<0.065
<0.024
<0.069
<0.10
<0.046
<0.64
98

515.3 Chlorinated Herbicides

Analytical Method: EPA 515.3 Preparation Method: EPA 515.3

2,4-D
Dalapon
Dinoseb
Pentachlorophenol
Picloram
2,4,5-TP (Silvex)
2,4-DCPA (S)

<0.017
<0.38
<0.050
<0.0090
<0.050
<0.035
105

531.1 GCS Carbamates

Analytical Method: EPA 531.1

Aldicarb
Aldicarb sulfone
Aldicarb sulfoxide
Carbofuran
Oxamyl
Propoxur (S)

<0.64
<0.35
<0.30
<0.32
<0.41
138

ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
%

ug/L
ug/L
ug/L
ug/L
ug/L
ug/L
%

ug/L
ug/L
ug/L
ug/L
ug/L
%

0.020
0.0099

0.21
0.10
0.021
0.21
0.010
0.042
0.021
0.10
0.10
0.10
0.10
0.10
0.10
0.10
0.10
0.10
0.10
0.10
0.073
1.0
70-130

0.10
1.0
0.20
0.040
0.10
0.20
70-130

2.0
2.0
2.0
2.0
2.0
80-120

0.0048
0.0061

0.036
0.022
0.0031
0.049
0.0021
0.0063
0.0031
0.012
0.013
0.015
0.091
0.030
0.030
0.053
0.065
0.024
0.069
0.10
0.046
0.64

1
1

1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1
1

10/18/11 10:30
10/18/11 10:30

10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
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10/14/11 18:00
10/14/11 18:00
10/14/11 18:00
10/14/11 18:00

10/13/11 09:00
10/13/11 09:00
10/13/11 09:00
10/13/11 09:00
10/13/11 09:00
10/13/11 09:00
10/13/11 09:00

Matrix: Drinking Water

Analyzed

CAS No.

Qual

10/18/11 17:01 96-12-8
10/18/11 17:01 106-93-4

10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
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10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06
10/16/11 22:06

15972-60-8
1912-24-9
58-89-9
57-74-9
72-20-8
76-44-8
1024-57-3
118-74-1
77-47-4
72-43-5
12674-11-2
11104-28-2
11141-16-5
53469-21-9
12672-29-6
11097-69-1
11096-82-5
1336-36-3
122-34-9
8001-35-2
2051-24-3

10/15/11 05:03
10/15/11 05:03
10/15/11 05:03
10/15/11 05:03
10/15/11 05:03
10/15/11 05:03
10/15/11 05:03

94-75-7
127-20-8
88-85-7
87-86-5
1918-02-1
93-72-1
19719-28-9

116-06-3
1646-88-4
1646-87-3
1563-66-2
23135-22-0
114-26-1

0.017
0.38
0.050
0.0090
0.050
0.035

1
1
1
1
1
1
1

0.64
0.35
0.30
0.32
0.41

1
1
1
1
1
1

10/27/11 19:21
10/27/11 19:21
10/27/11 19:21
10/27/11 19:21
10/27/11 19:21
10/27/11 19:21

1

10/13/11 16:37 71-43-2

L3
L3

L3

S3

Analytical Method: EPA 524.2

524.2 MSV
Benzene

<0.25 ug/L

Date: 10/31/2011 10:57 AM

0.50

0.25

REPORT OF LABORATORY ANALYSIS
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RJ-7 ENDPOINT SAMPLE

Page 5 of 16


ANALYTICAL RESULTS

Project: WY5680001C
Pace Project No.: 3540595

Sample: S1110128-001  Lab ID: 3540595001  Collected: 10/10/11 09:00  Received: 10/12/11 10:30  Matrix: Drinking Water

<table>
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<tr>
<th>Parameters</th>
<th>Results</th>
<th>Units</th>
<th>PQL</th>
<th>MDL</th>
<th>DF</th>
<th>Prepared</th>
<th>Analyzed</th>
<th>CAS No.</th>
<th>Qual</th>
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<td>524.2 MSV</td>
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</tr>
<tr>
<td>Bromodichloromethane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>75-27-4</td>
<td></td>
</tr>
<tr>
<td>Bromoform</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>75-25-2</td>
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<td>Carbon tetrachloride</td>
<td>&lt;0.25</td>
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<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>56-23-5</td>
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<td>Chlorobenzene</td>
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<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>108-90-7</td>
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<tr>
<td>Chloroform</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>67-66-3</td>
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<td>Dibromochloromethane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>124-48-1</td>
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<td>1,2-Dichlorobenzene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
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<td>95-50-1</td>
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<td>1,4-Dichlorobenzene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
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<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
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<td>106-46-7</td>
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<td>1,2-Dichloroethane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>107-06-2</td>
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<tr>
<td>1,1-Dichloroethene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>75-35-4</td>
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<tr>
<td>cis-1,2-Dichloroethene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
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<td>0.25</td>
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<td>10/13/11</td>
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<td>trans-1,2-Dichloroethene</td>
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<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>156-60-5</td>
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<tr>
<td>1,2-Dichloropropane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>78-87-5</td>
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<tr>
<td>Ethylbenzene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>100-41-4</td>
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<tr>
<td>Methylene Chloride</td>
<td>&lt;0.44</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.44</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>75-09-2</td>
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<tr>
<td>Styrene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>100-42-5</td>
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<tr>
<td>Tetrachloroethene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
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<tr>
<td>Toluene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
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<td>108-88-3</td>
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<tr>
<td>Total Trihalomethanes (Calc.)</td>
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<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td></td>
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<tr>
<td>1,2,4-Trichlorobenzene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
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<td>120-82-1</td>
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<tr>
<td>1,1,1-Trichloroethane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>71-55-6</td>
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<tr>
<td>1,1,2-Trichloroethane</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>79-00-5</td>
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<tr>
<td>Trichloroethylene</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
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<td>10/13/11</td>
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<td>79-01-6</td>
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<td>Vinyl chloride</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
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<tr>
<td>Xylene (Total)</td>
<td>&lt;0.25</td>
<td>ug/L</td>
<td>0.50</td>
<td>0.25</td>
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<td>10/13/11</td>
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<td>1330-20-7</td>
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<tr>
<td>4-Bromofluorobenzene (S)</td>
<td>92 %</td>
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<tr>
<td>Dibromofluoromethane (S)</td>
<td>106 %</td>
<td>ug/L</td>
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<td>70-130</td>
<td>1</td>
<td>10/13/11</td>
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<td>Toluene-d8 (S)</td>
<td>103 %</td>
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<td>70-130</td>
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<td>10/13/11</td>
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<td>2037-26-5</td>
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<tr>
<td>1,2-Dichloroethane-d4 (S)</td>
<td>106 %</td>
<td>ug/L</td>
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<td>70-130</td>
<td>1</td>
<td>10/13/11</td>
<td>16:37</td>
<td>17060-07-0</td>
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## ANALYSIS REPORT
### ASBESTOS IN POTABLE WATER
Transmission Electron Microscopy*

**Client:** Inter-Mountain Laboratories, Inc.  
**Contact:** C. Mattson  
**Street:** 1673 Terra Avenue  
**City/state/zip:** Sheridan, WY 82801

---

**Site:** Site Filtered: 10/12/11 0840  
**P.O. #** 239134  
**Hold time, hrs:** <48  
**Filter type/pore:** MCE / 0.22 µm

---

### ANALYTICAL RESULTS

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<th>728480</th>
<th>728481</th>
<th>725817</th>
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<tr>
<td>Volume Filtered, mL</td>
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<td></td>
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<tr>
<td>Filter Area, mm²</td>
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<tr>
<td>Grid Opening Area, mm²</td>
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<tr>
<td>Number of GOs Analyzed</td>
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<tr>
<td>Area Analyzed, mm²</td>
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<td># Asbestos Fibers &gt;10µm</td>
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<td>Analytical Sensitivity, MFL</td>
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</table>

| Asbestos Concentration, >10µm in length, MFL | <0.2 |
| Asbestos Type(s) Detected** | ND |
| 95% Upper Conf. Limit | 0.7 |
| 95% Lower Conf. Limit | 0 |

---

*Method 100.2 (EPA/600/R-94/134). Results are reported in Millions of Fibers per Liter (MFL) over 10 microns (µm) in length.

**Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

---

Mark S. Floyd, Analytical Microscopy Supervisor

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APPENDIX D

EASEMENT DOCUMENTS
WATERLINE EASEMENT

Ted R. Cosner Revocable Trust, of P.O. Box 690, Wright, Wyoming 82732, hereinafter GRANTORS, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is acknowledged does Grant and Convey to Wright Water & Sewer District, of P.O. Box 547, Wright, Wyoming, hereinafter GRANTEE a permanent waterline easement in and to the following described tract of land:

DESCRIPTION

A thirty (30') foot wide waterline easement with sidelines lying fifteen (15) feet on both sides of the following described centerline located in the Southeast ¼ of Section 34, Township 44 North, Range 72 West, Sixth P.M., Campbell County, Wyoming:

Beginning at a point on the North-South centerline of Section 34 from which the South ¼ Corner of Section 34 bears S 02°20'13"W a distance of 1314.13 feet; thence S 88°50'45"W, a distance of 100.93 feet to the westerly line of a parcel of land described in Book 1505, Page 588 as being deeded to Duffy A. J. Buresh and Tammie L. Buresh and the point of termination.

The sidelines of the above described waterline easement begin on the North-South centerline of Section 34 and terminate at the westerly line of the Buresh property described in Book 1505, Page 588. Said easement containing 0.070 acres, more or less. The basis of bearing for the foregoing description being N00°33'23"E for the South line of the Southeast ¼ of Section 34, Township 44 North, Range 72 West, Sixth P.M., Campbell County, Wyoming.

GRANTORS

Ted R. Cosner Revocable Trust
Ted R. Cosner, Trustee

STATE OF Wyoming  
County of Campbell

The above and foregoing instrument was acknowledged before me by
Ted R. Cosner, Trustee of the Ted R. Cosner Revocable Trust, Wyoming,
Witness my hand and official seal.

My Commission Expires:  
Notary Public

STATE OF WYOMING
Campbell County

Filed for record this 10th day of August 2001 at 12:00 o'clock P.M. and recorded in Book 1687 of Photos on page 131-132. Fees $8.00 782491

County Clerk and Ex-Officio Register of Deeds

CHERED
WATERLINE EASEMENT

Duffy A.J. Buresh and Tammie L. Buresh, of P.O. Box 155, Wright, Wyoming 82732, hereinafter GRANTORS, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is acknowledged does Grant and Convey to Wright Water & Sewer District, of P.O. Box 547, Wright, Wyoming, hereinafter GRANTEE a permanent water line easement in and to the following described tract of land:

DESCRIPTION

A thirty (30') foot wide waterline easement with sidelines lying fifteen (15') feet on both sides of the following described centerline located in the Southeast ¼ of Section 34, Township 44 North, Range 72 West, Sixth P.M., Campbell County, Wyoming:

Commencing at a point on the North-South centerline of Section 34 from which the South ¼ Corner of Section 34 bears S 02°20’13” W a distance of 1314.13 feet;

thence S 88°50’45” W, a distance of 100.93 feet to the westerly line of a parcel of land described in Book 1505, Page 588 as being deeded to Duffy A. J. Buresh and Tammie L. Buresh and the True Point of Beginning;

thence S 88°50’45” W, a distance of 1348.37 feet to a point on the westerly right-of-way line of Duffy Road as described in Book 1428, Page 312, in the Campbell County Courthouse and the point of termination.

The sidelines of the above described waterline easement begin on the westerly line of the Buresh property described in Book 1505, Page 588 and terminate on the westerly right-of-way line of Duffy Road as described in Book 1428, Page 312 as filed in the Campbell County Courthouse. Said easement containing 0.930 acres, more or less. The basis of bearing for the foregoing description being N00°33’23”E for the South line of the Southeast ¼ of Section 34, Township 44 North, Range 72 West, Sixth P.M., Campbell County, Wyoming.

GRANTORS

Duffy A.J. Buresh
Tammie L. Buresh

STATE OF Wyoming
County of Campbell
The above and foregoing instrument was acknowledged before me by Duffy A.J. Buresh and Tammie L. Buresh, on MAY 10, 2001.
Witness my hand and official seal.

My Commission Expires: Notary Public

STATE OF WYOMING
Campbell County
Filed for record May 31st, 2001 at 12:20 a.m. and recorded in Book 1691, Page 573-574 of Photos, on page 573.

County Clerk and Ex-Officio Register of Deeds

RECEIVED
AUG 3 1 2001
TOWN OF WRIGHT, WYOMING of P.O. Box 70, Wright, Wyoming 82732, hereinafter GRANTOR, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is acknowledged does Grant and Convey to WRIGHT WATER & SEWER DISTRICT of P.O. Box 549, Wright, Wyoming, hereinafter GRANTEE, a permanent utility easement in and to the following described tract of land:

A strip of land 20 feet wide, in that portion of the southwest quarter of Section 34, Township 44 North, Range 72 West of the Sixth Principal Meridian, Campbell County, Wyoming, the centerline of which is described as follows:

Beginning at a point on the northerly line of Parcel III as filed in Book 1522 Page 389 of the Campbell County Clerks Office, said point bears north 06°02'00" west 1,261.39 feet from the south quarter corner of said Section 34; thence north 49°59'32" east 248.70 feet to the north-south centerline of said Section 34 and the end of this centerline description.

The sidelines of said 20 foot easement shall lie 10 feet on both sides of said centerline and shall begin on the northerly line of said Parcel III and terminate on said north-south centerline of said Section 34.

The Basis of Bearing for this description is South 89°39'39" East for the south line of said section 34, said description contains 0.12 acres more or less.

GRANTEE, its successors, licensees and assigns to have and to hold forever the lands described above for a utility easement over, under, upon and within which to construct, maintain, service, reconstruct, operate, and locate at any time and from time to time a waterline and other related appurtenant facilities to be determined in the sole discretion of the GRANTEE.
At the conclusion of initial construction and any reconstruction or repair activities within the easement, GRANTEE shall restore the surface and any improvements damaged and any adjacent areas disturbed during the construction or repair activities to a condition comparable to the condition of the disturbed or damaged areas before construction within the easement.

Dated this 14th day of September, 2001.

TOWN OF WRIGHT

Kelly Hand, Mayor

ATTEST: 

Clerk/Treasurer

STATE OF WYOMING
COUNTY OF CAMPBELL

The above and foregoing instrument was acknowledged before me by Kelly Hand, Mayor of the Town of Wright, on this 14th day of September, 2001.

Witness my hand and official seal.

Notary Public

My Commission Expires:

STATE OF WYOMING
Campbell County

County Clerk and Ex-Officio Register of Deeds
By
RIGHT-OF-WAY AGREEMENT

THIS AGREEMENT is made as of August 2, 1982, by and between HOUSING SERVICES, INC., a Delaware corporation having offices at 555 17th Street, P. O. Box 5390, Denver, Colorado 80217 ("HSI") and WRIGHT WATER AND SEWER DISTRICT, of Campbell County, Wyoming, a special service district organized and existing under the laws of the State of Wyoming ("WSD").

NOW THEREFORE, in consideration of the mutual covenants and agreements set forth below, the parties agree as follows:

1. RIGHT-OF-WAY GRANT:

HSI hereby grants, sells, and conveys to WSD a right-of-way (the "right-of-way") for the purposes of laying, constructing, operating, inspecting, maintaining, repairing, replacing, substituting and relocating and removing a pipeline for the transportation of water on, in, over and through each of the following described parcels of land:

A. A right-of-way located in the South one-half of the Northwest one-quarter of Section 35 and the South one-half of the Northwest one-quarter of Section 34, Township 44 North, Range 72 West of the Sixth Principal Meridian, County of Campbell, State of Wyoming, except the Southerly 11.6 feet, more particularly described as follows:

Beginning at the Southwest corner of the Northwest one-quarter of Section 35; thence North 89°50'57" East a distance of 510.61 feet to the Southwest corner of a parcel of land owned by the Wright Water and Sewer District and
recorded in Book 531 of photos at Page 131, Campbell County Records; thence North 5°06'00" East along the Westerly boundary of said parcel a distance of 34.67 feet; thence North 84°53'55" West a distance of 96.00 feet; thence North 5°06'05" East a distance of 50.00 feet to a point on the Southerly right-of-way line of the Belle Fourche Pipeline Easement, described in Book 228 at Page 50, Campbell County records; thence North 84°53'55" West along Southerly right-of-way of said easement a distance of 40.00 feet; thence South 5°06'05" West a distance of 53.68 feet; thence South 89°50'02" West a distance of 375.46 feet; thence South 88°42'56" West a distance of 323.78 feet to the boundary of tract "C", Winchester Ridge Subdivision Plat No. 1; thence South 5°06'05" West, along said boundary, a distance of 41.52 feet to the South line of the North half of Section 34; thence North 88°42'56" East along said South line a distance of 325.00 feet to the point of beginning, except for the Southerly 13.0 feet of the above described real property.

B. A right-of-way in the South one-half of the Northeast one-quarter of Section 34, Township 44 North, Range 72 West of the Sixth Principal Meridian, County of Campbell, State of Wyoming, except for the Southerly 13.0 feet, more particularly described as follows:

Commencing at the Southeast corner of the Northeast one-quarter of Section 34, thence South 88°42'56" West, along the South line of the North one-half of said Section 34, a distance of 1260.29 feet to the West line of Tract "C", Winchester Ridge Subdivision Platting No. 3, being the true point of beginning; thence North 1°17'04" West, along said West line a distance of 43.25 feet; thence South 88°42'56" West a distance
of 535.00 feet; thence South 1°17'04" East a distance of 43.25 feet to the South line of the North one-half of said Section 36; thence North 58°42'56" East along said South line a distance of 535.00 feet to the true point of beginning, except for the Southerly 11.00 feet of the above described real property.

(Both of the parcels described in this Section 1 are collectively hereinafter referred to as "the Premises").

2. TERM:
   The right-of-way granted to WSD pursuant to Section 1 hereof shall be possessed and enjoyed by WSD, its successors and assigns, so long as the pipeline or pipelines and appurtenances constructed with said right-of-way pursuant to this agreement shall be maintained by WSD, its successors and assigns.

3. OPERATION:
   WSD shall operate and maintain the right-of-way in a safe, clean and workmanlike manner and in accordance with accepted industry standards.

4. ADDITIONAL RIGHTS:
   WSD shall have the right of ingress and egress to and from the Premises for any and all purposes necessary or convenient to the exercise by WSD of the rights granted herein.
5. **RIGHTS OF HSI:**

HSI reserves the right to use and enjoy the Premises to the fullest extent without unreasonable interference with the exercise by WSD of the rights granted herein.

6. **ASSIGNMENT:**

The rights granted herein shall be assignable together or separately in whole or in part.

7. **SURFACE DAMAGE:**

WSD shall bury to a sufficient depth all pipelines constructed by it on the Premises and shall restore the surface to avoid any interference with the operations of HSI on the surface portions of the Premises.

Upon termination or surrender of this right-of-way WSD shall restore and reclaim the Premises either to the extent required by law or to its prior condition including but not limited to the removal of the improvements and facilities installed by WSD (if required by HSI) whichever is greater.

8. **CONSENT TO DEDICATION:**

HSI shall be entitled to dedicate to public use or to grant easements or rights-of-way for the purpose of laying, constructing, operating, inspecting, maintaining, replacing, substituting, relocating and removing utilities, including, but not limited to,
water, sewer, gas, electric, telephone, and cable television systems whether such systems are publicly or privately owned. WSD shall execute and deliver whatever documents are reasonably necessary to implement such dedication in accordance with the requirements of state or local governmental authorities.

9. **DEFAULT BY WSD:**

This agreement and all rights of WSD hereunder shall, at the option of HS1, terminate upon the failure by WSD to remedy any default in the performance of any term or condition of this agreement within sixty (60) days from WSD’s receipt of written notice of such default, provided that WSD shall not be deemed in default hereunder during whatever periods of time WSD’s failure to perform hereunder results from acts of God or other causes reasonably beyond the control of WSD.

10. **WARRANTY OF TITLE:**

HS1 covenants that it is the owner of the Premises and that it has the right, title and capacity to grant the rights-of-way herein subject to:

A. all rights-of-way, easements, exceptions, reservations, conditions, covenants, other restrictions and all instruments of record as of the date of this agreement, the provisions of which touch and concern or pertain to the Premises;
B. general taxes for the year 1982;
C. zoning and building codes or ordinances or any governmental regulation limiting, regulating or concerning the use, operation or enjoyment of the Premises;
D. patented or unpatented mining claims;
E. mineral reservations and exceptions in patents or in acts authorizing the issuance thereof.

11. INDEMNITY:

WSD shall indemnify, defend and hold harmless HSI and its employees from and against all loss, cost, damage, expense or liability including reasonable attorney's fees which any of the indemnities may incur or suffer as a result of damage to property (belonging to any of the indemnities or others) or injury to or death of persons arising out of or resulting from the exercise of WSD's right and privileges hereunder except to the extent that any such damage, injury or death was caused by the sole negligence or misconduct of an indemnitee.

12. TAXES:

Whether or not taxes, assessments or public charges are separately assessed against the WSD, it shall pay taxes, assessments or public charges levied or imposed upon its right-of-way or personal property, improvements or fixtures owned or placed by it within its right-of-way subject to its right to contest same
provided that in no event shall WSD permit its right-of-way to be sold for tax purposes. If the taxes, assessments or public charges are not separately assessed, then promptly following written notice from HSI, the WSD shall reimburse HSI for any taxes, assessments or public charges attributable to its right-of-way or improvements. HSI shall be responsible for all taxes, assessments or public charges levied or imposed upon HSI's improvements and any portion of HSI's land not contained within the right-of-way.

13. SUCCESSORS AND ASSIGNS:

This agreement shall be binding upon and inure to the benefit of the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed by their duly authorized officers as of the date first above written.

ATTEST:

HOUSING SERVICES, INC.

R. L. Hal, Vice President

KRIGHT WATER AND SEWER DISTRICT 05

Charles E. Smith 8-12-82

-7-
STATE OF

COUNTY OF

The foregoing instrument was acknowledged before me this day of August, 1982, by Edward B. Smith, as Chairman of WYRIT RIVER AND SERR DISTRICT.

Witnesse my hand and official seal.


STATE OF WYOMING

COUNTY OF Campbell

The foregoing instrument was acknowledged before me this 17th day of August, 1982, by R. E. Huff, as Vice-President of HOUSING SERVICES, INC.

Witnesse my hand and official seal.

WATERLINE EASEMENT

Town of Wright, Wyoming, of P.O. Box 70, Wright, Wyoming 82732, hereinafter GRANTORS, for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which is acknowledged does Grant and Convey to Wright Water & Sewer District, of P.O. Box 547, Wright, Wyoming, hereinafter GRANTEE a permanent waterline easement in and to the following described tract of land:

DESCRIPTION

A waterline easement Twenty (20.00') feet in width and a temporary construction easement Fifty feet (50.00') in width located in the Southeast ¼ and the Southwest ¼ of Section 34, Township 44 North, Range 72 West, of the Sixth P.M., Campbell County, Wyoming, with sidelines lying Ten feet on both sides of the following described centerline, the sidelines of which begin on the northerly line of a tract of land described as “Parcel III” in Book 1414, at Page 126, as filed in the Campbell County Courthouse, and ends in the Right-of-Way of Chad Road, the sidelines will be extended or foreshortened to meet at angle points:

Beginning at a point on the northerly line of the above mentioned “Parcel III”, from which the Southeast corner of Section 33 bears S 63°06'24" W 2737.65 feet;

thence N 50°15'29" E 319.47 feet;

thence N 43°26'46" E 57.74 feet;

thence N 36°14'36" E 998.80 feet;

thence S 54°40'47" E 354.70 feet to the point of termination in the Chad Road Right-of-Way, from which point the South ¾ corner of Section 34 bears S 24°42'12" W 2312.21 feet.

Said easement containing 0.795 acres, more or less. Basis of bearing for the foregoing description is S 89°40'15" W for the southerly line of the Southeast ¼, Section 33, T 44 N, R 72 W.

GRANTEE, its successors, licensees and assigns have to and to hold forever the lands described above for a waterline easement over, under, upon and within which to construct, maintain, service, reconstruct, operate, and locate at any time and from time to time a waterline and other related appurtenant facilities to be determined in the sole discretion of the GRANTEE.

At the conclusion of initial construction and any reconstruction or repair activities within the easement, GRANTEE shall restore the surface and any improvements damaged and any adjacent areas disturbed during the
construction or repair activities to a condition comparable to the condition of the disturbed or damaged areas before construction within the easement.

DATED November 15, 2000.

GRANTORS

Robert Nolte, Mayor

STATE OF Wyoming )
County of Campbell ) ss.

The above and foregoing instrument was acknowledged before me by Robert Nolte, Mayor for the Town of Wright, Wyoming, on November 15, 2000.

Witness my hand and official seal.

My Commission Expires: __________________________

Notary Public

STATE OF WYOMING )
Campbell County )

 Recorded November 15, 2000 Cities of 8:10 a.m. and recorded in Book 1632 of Photos on page 644.
This Easement Agreement is entered into as of April 5th, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. **Grant Of Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 as necessary for the installation, operation and repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee’s option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during normal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. **Property.** Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 0.746 acres, more or less, as more particularly described in Exhibit A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. **Term.** This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the
giving of sixty (60) days prior written notice to the Grantor and the removing of
Grantee’s lines and related equipment from the property. On such termination
and removal, Grantee shall record such documents as are necessary to abandon
the easement.

5. Noninterference. Grantee, for itself, its heirs, successors and assigns, covenants
that the above easement shall not be used in any manner or at any time which
might otherwise damage the property or interfere with the operations or activities
of the property by the Grantor. Grantor shall not materially interfere with the
lines or other equipment installed pursuant to the rights granted herein.

6. Binding. Provisions and covenants contained in this easement shall run with the
land and shall bind and inure to the benefit of the respective successors in interest
of the parties hereto.

7. Recordation. Grantee may record this Easement Agreement in the real property
records of Campbell County, Wyoming.

8. Indemnification. Grantee shall indemnify Grantor against any loss or damage
which may be caused by the wrongful or negligent act or omission of any of its
agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR: GRANTEE:

BY: The Ted R. Cosner Revocable Trust

BY: WRIGHT WATER & SEWER DISTRICT

STATE OF WYOMING )
County of Campbell ) ss.

The foregoing instrument was acknowledged before me by Ted R. Cosner
for the Ted R. Cosner Revocable Trust, this 31st day of September, 2007.

Witness my hand and official seal.

My Commission Expires: October 29, 2009
STATE OF WYOMING  
County of Campbell ss.

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007.

Witness my hand and official seal.

[Signature]

My Commission Expires: October 25, 2009
LEGAL DESCRIPTION
FOR
TWENTY FIVE FOOT WIDE UTILITY EASEMENT
SECTION 34, TOWNSHIP 44 NORTH, RANGE 72 WEST

A twenty five foot utility easement located in the Southwest ¼ of the Southeast ¼ of Section 34, Township 44 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Westerly side line being described as follows;

Commencing at the South ¼ corner of said Section 34, thence South 88°34'45" East, 75.71 feet, along the South line of said Southwest ¼ of the Southeast ¼ of said Section 34, to the True Point of Beginning;

Thence North 02°19'56" East, 1,299.48 feet, to the South line of an existing thirty-foot wide waterline easement, as recorded in Book 1687 and Page 131 in the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. From which the Southeast Corner of said Section 34, bears South 62°30'45" East, 2,956.78 feet.

The Easterly line being twenty-five (25) feet distant and parallel with said described line, also being coincident with the West Property line of that tract of land described in Book 1706 Page 455 in the Clerk of Records office, Campbell County, Wyoming, the sidelines of the above described utility easement will begin on the southerly line of the Southeast ¼ of said Section 34 and terminate on the southerly line of the above referenced water line easement.

Said easement containing 0.746 acres, more or less.
THIS ACCESS EASEMENT AGREEMENT is entered into as of 5/27/2007, by and between The Ted R. Cosner Revocable Trust (Grantor) and the Wright Water & Sewer District (Grantee). The parties hereto agree as follows:

1. **Grant Of Access Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successor, assigns and invitees, an easement to the property defined in Section 2 below for purposes of ingress and egress and generally as necessary for the maintenance, operation and quiet enjoyment of the Grantee’s property and/or facilities. The easement shall include the right of the Grantee to access their property by way of the easement granted herein at any time, day or night.

2. **Property.** Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibits A, attached hereto and made a part hereof. The access easement generally contains 0.746 acres more or less, as more particularly described in Exhibits A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor of any roadway, structure, fence, landscaping or other part of the property associated with Grantee’s use, including normal wear and tear, of the easement granted herein.

4. **Term.** This Easement Agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This Easement Agreement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor. On such termination, Grantee shall record such documents as are necessary to abandon the easement.

5. **Non-Interference.** Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with operations or activities of the property by Grantor. Grantor shall not materially interfere with the rights granted herein.
6. Binding. The provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of respective successors in interest of the parties hereto.

7. Recordation. Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. Indemnification. Grantee shall indemnify Grantor against any loss and damage which may be caused by the exercise of the right of ingress and egress or by any wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR: 

BY: 

The Ted R. Cosner Revocable Trust 

GRANTEE: 

BY: 

WRIGHT WATER & SEWER DISTRICT 

STATE OF WYOMING )
County of Campbell ) ss.

The foregoing instrument was acknowledged before me by Ted R. Cosner for the Ted R. Cosner Revocable Trust, this 5th day of September, 2007. Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009

STATE OF WYOMING )
County of Campbell ) ss.

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007. Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009
EXHIBIT
25' WIDE ACCESS EASEMENT

EXISTING 30' WIDE WATERLINE EASEMENT

EASTING 30' "DE WATRUNE EASEMENT"

SECTION 34, T44N, R72W
VICINITY MAP NO SCALE

DATE: JULY 13, 2007
JOB NO.: 07-039
EXHIBIT FOR: 25 WIDE ACCESS EASEMENT
GRANTEE: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
WRIGHT, WYOMING 82732-0690

LEGEND

SECTION CORNER
REBAR WITH CAP
SECTION LINE
QUARTER SECTION LINE
SIXTEENTH SECTION LINE
PROPERTY/R-G-W LINE

PREPARED BY:

STETSON
ENGINEERING, INC.
4901 S. Douglas Highway
P.O. Box 453
Gillette, Wyoming 82717

PREPARED FOR:
WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
WRIGHT, WYOMING 82732
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE ACCESS EASEMENT
SECTION 34, TOWNSHIP 44 NORTH, RANGE 72 WEST

A twenty five foot wide access easement, located in the Southwest ¼ of the
Southeast ¼ of Section 34, Township 44 North, Range 72 West, of the Sixth Principal
Meridian, Campbell County, Wyoming, with the Easterly side line being described as
follows;

Commencing at the South ¼ corner of said Section 34, thence South 88°34'45"
East, 75.71 feet, along the South line of said Southwest ¼ of the Southeast ¼ of Section
34, to the True Point of Beginning;

Thence North 02°19'56" East, 1,299.48 feet, to the South line of an existing
thirty-foot wide waterline easement, as recorded in Book 1687 and Page 131 in the
Campbell County Clerk and Recorders Office, Campbell County, Wyoming. From which
the Southeast Corner of said Section 34, bears South 62°30'45" East, 2,956.78 feet.

The Westerly line being twenty five (25) feet distant and parallel with said
described line, the sidelines of the above described access easement begin on the
Southerly line of said Section 34 and terminating on the southerly line of the above
referenced waterline easement.

Said easement containing 0.746 acres, more or less.
ACCESS AND UTILITY EASEMENT

This Easement Agreement is entered into as of August 5th, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. Grant Of Easement. For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 below for purposes of ingress and egress, and the installation, operation and/or repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee’s option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during nonnormal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. Property. Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 0.385 acres more or less, as more particularly described in Exhibit A.

3. Repair. Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. Term. This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor and the removing of
Grantee's lines and related equipment from the property. On such termination
and removal, Grantee shall record such documents as are necessary to abandon
the easement.

5. **Noninterference.** Grantee, for itself, its heirs, successors and assigns, covenants
that the above easement shall not be used in any manner or at any time which
might otherwise damage the property or interfere with the operations or activities
of the property by the Grantor. Grantor shall not materially interfere with the
lines or other equipment installed pursuant to the rights granted herein.

6. **Binding.** Provisions and covenants contained in this easement shall run with the
land and shall bind and inure to the benefit of the respective successors in interest
of the parties hereto.

7. **Recordation.** Grantee may record this Easement Agreement in the real property
records of Campbell County, Wyoming.

8. **Indemnification.** Grantee shall indemnify Grantor against any loss or damage
which may be caused by the exercise of the right of ingress and egress or by the
wrongful or negligent act or omission of any of its agents or employees in the
course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

**GRANTOR:**

**GRANTEE:**

BY: [Signature]

The Ted R. Cosner Revocable Trust

BY: [Signature]

WRIGHT WATER & SEWER DISTRICT

STATE OF WYOMING )

County of Campbell ) ss.

Witness my hand and official seal.

[Signature]

Notary Public

My Commission Expires: October 29, 2009
STATE OF WYOMING  
County of (Campbell) ss.

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007.

Witness my hand and official seal.

My Commission Expires: October 29, 2009
LEGAL DESCRIPTION
FOR A
FIFTY FOOT WIDE ACCESS AND UTILITY EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A fifty (50) foot wide access and utility easement, located in the Southwest ¼ of the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the centerline being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 16°47'32" East, 2,142.69 feet, to the North line of a 200 foot by 320 foot Well and Tank site property, and the True Point of Beginning;

Thence North 00°00'00" West, 335.83 feet, to the Southerly line of an existing 25-foot wide utility easement. From which the Northeast corner of said Section 3, bears North 52°18'55" East, 2,694.69 feet. The sidelines of said easement will begin on the North line of the Well and Tank site property, and terminate on the South line of said twenty-five (25) foot wide utility easement.

Said access and utility easement containing 0.385 acres more or less.

The basis of bearing for the foregoing description being South 88°34'49" East, for the North line of the Northeast ¼ of said Section 3.
This Easement Agreement is entered into as of September 5, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. **Grant Of Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 below for the installation, operation and/or repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee’s option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during normal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. **Property.** Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 2.419 acres, more or less, as more particularly described in Exhibit A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. **Term.** This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the
giving of sixty (60) days prior written notice to the Grantor and the removing of Grantee’s lines and related equipment from the property. On such termination and removal, Grantee shall record such documents as are necessary to abandon the easement.

5. Noninterference. Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with the operations or activities of the property by the Grantor. Grantor shall not materially interfere with the lines or other equipment installed pursuant to the rights granted herein.

6. Binding. Provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of the respective successors in interest of the parties hereto.

7. Recordation. Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. Indemnification. Grantee shall indemnify Grantor against any loss or damage which may be caused by the wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR: GRANTEE:

BY: The Ted R. Cosner Revocable Trust BY: Wright Water & Sewer District

STATE OF WYOMING )
County of Campbell ) ss.

The foregoing instrument was acknowledged before me by Ted R. Cosner for the Ted R. Cosner Revocable Trust, this 5th day of September, 2007.

Witness my hand and official seal.

My Commission Expires: October 31, 2009
STATE OF WYOMING  

County of Campbell  

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007.

Witness my hand and official seal.

[Signature]

Notary Public

My Commission Expires: October 29, 2009
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE UTILITY EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A twenty five foot wide utility easement located in the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Westerly and Southerly sidelines being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 88°34'45" East, 75.71 feet, running along the North line of the Northeast ¼, of said Section 3, to the True Point of Beginning;

Thence South 02°13'46" East, 811.88 feet, to point;

Thence South 01°00'56" East, 920.21 feet, to point;

Thence North 87°57'09" East, 2478.47 feet, to a point, the Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. Said point also being the point of termination of this easement, from which the Northeast corner of said Section 3, bears North 05°28'30" East, 1,583.69 feet.

With the Easterly and Northerly sidelines of the above described utility easement will begin on the Northerly line of the Northeast ¼ of said Section 3, will be lengthened or shortened to meet at angle points and will terminate at the most Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming, with the Easterly and Northerly lines being twenty-five (25) feet distant, Easterly and Northerly, and parallel with the above described Westerly and Southerly sidelines.

Said easement containing 2.439 acres, more or less.
ACCESS EASEMENT AGREEMENT

THIS ACCESS EASEMENT AGREEMENT is entered into as of ________________, 2007 by and between The Ted R. Cosner Revocable Trust (Grantor) and the Wright Water & Sewer District (Grantee). The parties hereto agree as follows:

1. **Grant Of Access Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successor, assigns and invitees, an easement to the property defined in Section 2 below for purposes of ingress and egress and generally as necessary for the maintenance, operation and quiet enjoyment of the Grantee's property and/or facilities. The easement shall include the right of the Grantee to access their property by way of the easement granted herein at any time, day or night.

2. **Property.** Grantor's property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibits A, attached hereto and made a part hereof. The access easement generally contains 2.395 acres more or less, as more particularly described in Exhibits A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor of any roadway, structure, fence, landscaping or other part of the property associated with Grantee's use, including normal wear and tear, of the easement granted herein.

4. **Term.** This Easement Agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee's failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This Easement Agreement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor. On such termination, Grantee shall record such documents as are necessary to abandon the easement.

5. **Non-Interference.** Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with operations or activities of the property by Grantor. Grantor shall not materially interfere with the rights granted herein.
6. **Binding.** The provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of respective successors in interest of the parties hereto.

7. **Recordation.** Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. **Indemnification.** Grantee shall indemnify Grantor against any loss and damage which may be caused by the exercise of the right of ingress and egress or by any wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR:  

GRANTEE:

BY:  

BY:  

The Ted R. Cosner Revocable Trust  
WRIGHT WATER & SEWER DISTRICT

STATE OF WYOMING  
County of Campbell  

The foregoing instrument was acknowledged before me by **Ted R. Cosner** for the Ted R. Cosner Revocable Trust, this 5th day of **September** 2007.

Witness my hand and official seal:

**JULIANNE SWEENEY,** Notary Public  

My Commission Expires: **October 29, 2009**

STATE OF WYOMING  
County of **Campbell**  

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of **September** 2007.

Witness my hand and official seal:

**JULIANNE SWEENEY,** Notary Public  

My Commission Expires: **October 29, 2009**
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE ACCESS EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A twenty five foot wide access easement, located in the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Easterly and Northerly sidelines being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 88°34'45" East, 75.71 feet, along the North line of the Northeast ¼, of said Section 3, to the True Point of Beginning;

Thence South 02°13'46" East, 811.88 feet, to a point;

Thence South 01°00'56" East, 920.21 feet, to a point;

Thence North 87°57'09" East, 2478.47 feet, to a point, the Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. Said point also being the point of termination of this easement, from which the Northeast corner of said Section 3, bears North 05°28'30" East, 1,583.69 feet.

The sidelines of the above described access easement will begin on the Northerly line of the Northeast ¼ of said Section 3 and terminate at the most Easterly line of a tract of land described in Book 1771 Page 534, as recorded at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. With the Westerly and Southerly, sidelines being twenty-five (25) feet distant, Westerly and Southerly, and parallel with the above described Easterly and Northerly sidelines.

Said easement containing 2.395 acres, more or less.

Said easement containing 2.395 acres, more or less.
APPENDIX E

ENVIRONMENTAL REPORT
October 22, 2010

WER 9625.04
Stetson Engineering, Inc.
Environmental Review
Wright Water & Sewer District RJ-7
Well, Tank, and Transmission Line
Campbell County

Todd Rand
Project Manager
Stetson Engineering, Inc
PO Box 457
Gillette, WY 83717-0457

Dear Mr. Rand:

The staff of the Wyoming Game and Fish Department has reviewed the environmental review for the Wright Water & Sewer District RJ-7 well, tank, and transmission line in Campbell County. We have no terrestrial wildlife or aquatic concerns pertaining to this proposed project.

Thank you for the opportunity to comment.

Sincerely,

John Emmerich
Deputy Director

cc: USFWS
Lynn Jahnke, Sheridan Region
Heather O’Brien, Sheridan Region
Paul Mavrakis, Sheridan Region
Sep 27, 2010

Todd Rand  
Stetson Engineering, Inc.  
Project Manager  
P.O. Box 457  
Gillette, WY 82717-0457

Re: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File # 0710JRD002)

Dear Mr. Rand:

Thank you for consulting with the Wyoming State Historic Preservation Office (SHPO) regarding the above referenced project. We have reviewed the project report and find the documentation meets the Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42). We concur with your finding that no historic properties, as defined in 36 CFR § 800.16(1)(1), will be affected by the project as planned.

We recommend the Stetson Engineering, Inc. allow the project to proceed in accordance with state and federal laws subject to the following stipulation:

If any cultural materials are discovered during construction, work in the area shall halt immediately, the federal agency must be contacted, and the materials evaluated by an archaeologist or historian meeting the Secretary of the Interior’s Professional Qualification Standards (48 FR 22716, Sept. 1983).

This letter should be retained in your files as documentation of a SHPO concurrence on your finding of no historic properties affected. Please refer to SHPO project #0710JRD002 on any future correspondence regarding this project. If you have any questions, please contact Joseph Daniele, Archaeologist/Review and Federal Consultation at 307-777-8793.

Sincerely,

Joseph Daniele  
Wyoming State Historic Preservation Office
Jul 6, 2010

Todd Rand
Stetson Engineering, Inc.
Project Manager
P.O. Box 457
Gillette, WY 82717-0457

Re: Wright Water and Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File #0710JRD002)

Dear Mr. Rand:

Thank you for consulting with the Wyoming State Historic Preservation Office (SHPO) regarding the above referenced project.

A search of our records shows that a cultural resource survey has not been conducted in the area of potential effect. Following 36 CFR Part 800, and prior to any ground disturbing activities, we recommend that the Department of Environmental Quality and Stetson Engineering, Inc. carry out appropriate efforts necessary for identification of historic properties, which may include a file search, background research, consultation, consideration of visual effects, sample field investigations or field survey. The identification efforts must be conducted by a consultant meeting the Secretary of the Interior’s Professional Qualification Standards (48 FR 22716, Sept. 1983). A report detailing the results of these efforts must be provided to SHPO staff for our review and comment.

We have enclosed a copy of a cultural resource consultants list for your use. Please refer to SHPO project control number #0710JRD002 on any future correspondence dealing with this project. If you have any questions, please contact Joseph Daniele, Archaeologist/Review and Federal Consultation at 307-777-8793.

Sincerely,

Joseph Daniele
Wyoming State Historic Preservation Office
September 23, 2010

Joseph Daniele
State Historic Preservation Office
Barrett Building, 3rd Floor
2301 Central Avenue
Cheyenne, WY 82002

Re: Wright Water and Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File #0710JRD002)

Dear Mr. Daniele:

You had requested a cultural resource survey be conducted in the area of potential effect of this project. We recently received a completed survey report done by Frontier Archaeology out of Casper Wyoming. Enclosed is a copy of the report for your files.

If you have any questions or wish to discuss the project further, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

Todd Rand
Project Manager

Enclosures
ENVIRO/N/MENTAL ASSESSMENT REPORT
For the
WRIGHT WATER & SEWER DISTRICT
WRIGHT RJ-7 WELL PROJECT

Project: Wright Water & Sewer District—
Wright RJ-7 Well Project

Applicant: Wright Water & Sewer District
P.O. Box 549
Wright, WY 82732

Contacts:
District Chairman: Mr. Roger Porter
Wright Water & Sewer District
P.O. Box 549
Wright, WY 82732
307-464-0491

Project Engineer: Todd Rand, P.E.
P.O. Box 457
Gillette, WY 82717
307-682-8936

1. SUMMARY

The project entails the drilling and completion of a new water supply well, storage tank,
and transmission line to increase the water supply capacity of the Wright Water & Sewer
District’s (WWSD) water system. The purpose of the well, tank and transmission line is
to meet the demand of WWSD’s increasing population rates. The new well will help
provide the WWSD an adequate water supply to meet the increasing demand of the Town
of Wright and the immediate surrounding area.

The project location shall be within the established boundaries of the WWSD. More
specifically the storage tank and well will be constructed and drilled on a 200 foot by 320
foot site, located in the SW ¼ of the NE ¼ of Section 3, Township 43, Range 72 West as
shown on Exhibit 1. The property is currently owned by the WWSD. The site is
approximately 1.469 acres in size.

Easements for the installation of the transmission line have also been acquired. Copies of
the filed easements are included with this report.
This Environmental Assessment Report (EA) is intended to cover all portions of this project. This includes the drilling and construction of the well, storage tank, and transmission lines.

There are no anticipated significant or adverse environmental impacts that will occur as a result of this project.

2. PURPOSE AND NEED FOR ACTION

2.1. Project Purpose

The purpose of the project is to increase the water supply capacity of the WWSD. Presently the estimated population served by the water system is approximately 2,951. The population is expected to increase to at least 3,284 within the next 1 to 2 years. The increase in population is because of the energy production in the area. The new storage tank is also intended to extend the operation life of the exiting, as well as proposed, wells.

2.2. Possible Project Funding Sources

Wyoming Water Development Commission (WWDC)
- 67% Grant funding is available for new wells, tanks, and transmission lines.

Drinking Water State Revolving (Loan) Fund (DWSRF)
- The Wright Water and Sewer District is eligible to receive funding through the DWSRF.
- The DWSRF loan current interest rate is 2.5% for 20 years.
- The Wright RJ-7 Well is listed on the DWSRF intended use plan (2011). The well project is listed 207 on the intended use plan with 2 Rank Points.

3. ALTERNATIVES

3.1 No Action Alternative

This alternative is unacceptable because the existing sources of supply will be unable to meet the required demand in the area. This would have a detrimental effect on the community at large by limiting both residential and commercial growth in the community.

3.2. Proposed Alternative

The proposed alternative will be the drilling and completion of a new water supply well, storage tank, and transmission line to increase the water supply capacity of the Wright Water & Sewer District's (WWSD) water system. Completion of the well will include the installation of a new pump house, the grading of the pump house site, and the installation of new transmission line and storage tank. The new well will help provide
the WWSD an adequate water supply to meet the increasing demands of the WWSD in and around the Town of Wright, Wyoming.

The well will be completed into the Fort Union Formation. The well will have a larger 16-0 inch diameter cased section in the top 160 feet of the well and smaller 10-3/4 inch diameter cased section to an estimated depth of 1,300 feet. Liner casing and screen will consist of 6-5/8 inch diameter casing and wire wrapped screen set to an estimated depth of 3,000 feet.

The well will be drilled on a 200 foot by 320 foot parcel of land currently owned by the WWSD. The land is located in the SW 1/4 of the NE 1/4 of Section 3, Township 43 North, and Range 72 West as shown on Exhibit 1. The well site is approximately 1.469 acres in size.

The total estimated cost for the proposed well, including the installation of the pump, electric service, pump house, and all other associated work to complete the well to the point of connection to the existing system is $4,958,000.00.

4. POPULATION, LAND USE, GROWTH, AND USE PROJECTIONS

Currently the Wright Water and Sewer District serves 788 residential services, 42 commercial services, 25 institutional services, and 16 irrigation services. The estimated population served by the current water supply is approximately 2,951. The population is expected to increase to 3,473 by 2015.

The current zoning of the Wright Water and Sewer District is rural residential, light industrial and not zoned. The Town of Wright has a variety of zoning from residential, to commercial, and industrial.

5. IMPACTS AND MITIGATION

The following is a summary of each regulatory agency contacted and their responses and or mitigation requirements. Copies of the letters sent and the responses are included in the Appendix A.

5.1 U.S. Army Corps of Engineers

5.1.1 Impacts and Recommendations

The U.S. Army Corps of Engineers found that the project may cross a tributary to Little Thunder Creek and adjacent wetlands. Nationwide Permit (NP) 12 for Utility Line Activities likely authorizes the planned construction, provided that construction activities do not result in the loss of more than 0.5 acres of water of the U.S. and WWSD complies with all of the terms and conditions of the permit. The Corps recommended a review of all the terms and general conditions of NP 12 to determine
if any of the proposed activities trigger the need to submit a pre-construction notification (PCN).

5.1.2 Mitigation of Impacts

The terms and general conditions of NP 12 were reviewed and the construction plans were found to be in no violation of this authorization. The following actions may be followed.
- Proceed under the current NP 12 authorization, provided that WWSD complies with all of the terms and conditions and construction is conducted in a manner that does not result in violation of any applicable water quality standard.
- Request written verification of authorization under NP 12 from the Corps, once the project plans are completed.

5.2 Department of Environmental Quality / Air Quality Division

5.2.1 Impacts and Recommendations
The WDEQ/AQD does not anticipate any adverse air quality impacts associated with the proposed project with the exception of possible dust problems during construction.

5.2.2 Mitigation of Impacts

Most of the site will remain vegetated during the construction of the well. Haul roads and areas stripped of vegetation during the project will be watered if needed during construction to control dust. The stripped areas will be reseeded after construction.

5.3 Natural Resources Conservation Service

5.3.1 Impacts and Recommendations
No permanent conversion of irrigated agricultural land to non-agricultural use is anticipated. Prompt re-vegetation of the disturbed areas is recommended, to minimize soil erosion and weed encroachment.

5.3.2 Mitigation of Impacts

Most of the site will remain vegetated during construction, and stripped areas will be reseeded after construction.

5.4 U.S. Fish and Wildlife Service – Ecological Services

5.4.1 Impacts and Recommendations
The Service sent a list of possible species that may be encountered in or around the project area and recommendations for each.
• Ute ladies’-tresses
  1. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys.

• Mountain Plover
  1. Project planners are encouraged to develop and implement protective measures should mountain plovers occur within project areas.

• Greater sage-grouse
  1. It is recommended that if breeding habitat is present, no project related disturbance take place from March 15\textsuperscript{th} through June 30\textsuperscript{th}.
  2. It is recommended that if winter habitats are present, no project related disturbance take place from November 15\textsuperscript{th} through March 14\textsuperscript{th}.
  3. Wyoming Game and Fish Department should be contacted to identify important greater sage-grouse habitats within the project area
  4. Appropriate measures to minimize potential impacts from the proposed project.
  5. Surveys and mapping should be conducted of important greater sage-grouse habitats where local information is not available.

The Service also requested notification of any decision made on this project, such as issuance of a permit or signing of a Record of Decision or Decision Memo.

5.4.2 Mitigation of Impacts

The site does not include the described habitat where Ute Ladies’-tresses are found.

Pictures of the site have been sent to the Fish and Wildlife Service and the Game and Fish Department.

If these species are found within the project area, recommendations will be followed to protect them.

The Wyoming Game and Fish Department has been contacted, and they have no terrestrial wildlife or aquatic concerns pertaining to this project.

5.5 Wyoming State Historic Preservation Office

5.5.1 Impacts and Recommendations

A search of their records showed that a cultural resource survey has not been conducted in the area of potential effect. Prior to any ground disturbing activities, the Service recommended that we carry out appropriate efforts necessary for identification of historic properties. After receiving the cultural resource survey, the Service found that no historic properties will be affected by the project as planned. A copy of the Cultural Resource Survey is included in this report.
5.5.2 Mitigation of Impacts

No action is required. However, if any cultural materials are discovered during construction, work in the area shall halt immediately and the SHPO staff shall be notified. No work in the area will resume until materials have been evaluated and adequate measure for their protection or collection have been taken.

5.6 Wyoming Game and Fish Department

5.6.1 Impacts and Recommendations

After reviewing the environmental review of the project, the WGFD has no terrestrial wildlife or aquatic concerns.

5.6.2 Mitigation of Impacts

No action required.

6.0 PUBLIC PARTICIPATION

6.1 Meetings

A public hearing was conducted on December 9, 2010 at 7:30 p.m. Minutes to the meeting are included in this report.

7.0 REFERENCES

7.1 Wright Master Plan Level 1 Study, December 2009

8.0 PREPARER OF THE ENVIRONMENTAL ASSESSMENT

Stetson Engineering, Inc. has prepared this Environmental Assessment under contract with the Wright Water and Sewer District, for the Wright Water and Sewer District.

The Study was specifically prepared by Todd Rand, a Licensed Professional Engineer. The Cultural Resource Survey was prepared by James Brunette with Frontier Archeology.
Appendix A

Environment Agency Contact Letters and Responses
May 26, 2010

Mr. Mathew Bilodeau, Program Manager
Wyoming Regulatory Office
U.S. Army Corps of Engineers
2232 Dell Range Boulevard, Suite 210
Cheyenne, Wyoming 82009
307-772-2300

Project: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line

RE: Affected Environment/Environmental Consequences

Dear Mr. Bilodeau:

The Wright Water & Sewer District (WWSD) is performing an environmental review pursuant to the National Environmental Policy Act for the Drinking Water State Revolving Fund (SRF) through the Wyoming Department of Environmental Quality (DEQ), in order to assess the environmental impacts of a proposed storage tank and transmission line for the District. The WWSD serves the Town of Wright and the immediate surrounding area. The purpose of the well, tank, and transmission line is to meet the demand of WWSD's increasing population rates. The storage tank is also intended to extend the operating life of the existing, as well as proposed, wells. Enclosed are maps that depict the proposed project's area of potential effect for all construction activities associated with the well, tank, and transmission line. Please refer to Exhibit 1 for a vicinity map of the proposed site. A description of the proposed site involved follows:

The storage tank and well will be constructed and drilled on a 200 foot by 320 foot site, located in the Southwest 1/4 of the Northeast 1/4 of Section 3, Township 43 North, Range 72 West as shown on the enclosed Exhibit 2. This land is owned by WWSD as shown in the Warranty Deed as recorded in the Campbell County Clerk and Recorders Office in Book 2386 on Page 472.

The well will be developed, pump tested, sampled for water quality and completed. The discharge will be controlled to eliminate erosion.

The transmission line is to be installed within existing easements, as shown on the enclosed Exhibit 3. The included easements are recorded in the Campbell County Clerk and Recorders Office in Book 2299 on Page 402, Page 407, Page 411, Page 416, and Page 423. The fact that the new waterline will be installed in existing utility and access easements brings us to believe that the probability of surface archeological or historic manifestations are low and therefore no Class III Cultural Survey is warranted. We believe that no historical properties will be affected by this aspect of the project. If any cultural materials are discovered during the construction, work in the area will halt immediately and we will notify the SHPO staff. No work in the area will resume until materials have been evaluated and adequate measures for their protections or collection have been taken.
The WWSD 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.

If you need further information or wish to discuss the project, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

Todd Rand
Project Manager

Cc: Roger Porter, Chairman, WWSD
   P.O. Box 549
   15009 Highway 387
   Wright, WY 82732

Enclosures
July 9, 2010

Wyoming Regulatory Office

Todd Rand
Stetson Engineering, Inc.
P.O. Box 457
Gillette, Wyoming 82717-0457

Dear Mr. Rand:

This letter is in response to a request for comments we received from your office on June 18, 2010, concerning an environmental review for the Wright Water and Sewer District (WWSD) to install a new well, storage tank and associated transmission line near Wright. The project is located in SW ¼ of NE ¼ of Section 3, Township 43 North, Range 72 West, Campbell County, Wyoming.

The U.S. Army Corps of Engineers (Corps) 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 streams, reservoirs, lakes and adjacent wetlands. The Corps regulations are published in the Code of Federal Regulations as 33 CFR Parts 320 through 332. Information on Section 404 program requirements in Wyoming can be obtained from our web site at https://www.nwo.usace.army.mil/html/od-rwy/Wyoming.htm.

Based on the preliminary information provided, the proposed project involves installation of a well, storage tank and an unknown length of transmission line which may cross a tributary to Little Thunder Creek and adjacent wetlands. It appears that no other permanent facilities such as roads would be constructed. Activities in waters of the United States such as those described above are likely authorized by Nationwide Permit (NP) 12 for Utility Line Activities, as defined in Part II of the Federal Register published on March 12, 2007 (Vol. 72, No. 47), provided that construction activities do not result in the loss of more than 0.5 acre of waters of the U.S. and the permittee (WWSD) complies with all of the terms and conditions of the permit. Nationwide Permit 12, General Conditions and Regional Conditions can be found on our website.

We encourage you and WWSD to review all the terms and general conditions of NP 12 to determine if any of the proposed activities trigger the need to submit a pre-construction notification (PCN). The criteria for when a PCN is required for NP 12 are defined under the
“Notification” heading in the permit. General Condition (GC) 27 defines the pre-construction notification (PCN) procedure. A PCN is also required for any activity that “may affect” threatened or endangered species as explained under GC 17 and any activity that has the “potential to cause effects” to any historic properties within the “permit area” as explained under GC 18. The permit area is the aquatic habitat affected by the activity and immediately adjacent uplands, as further defined in the regulations at 33 CFR Part 325, Appendix C.

The lead federal agency for this project should follow its own procedures for complying with the requirements of the Endangered Species Act and Section 106 of the National Historic Preservation Act as defined under GC 17(b) and GC 18(b). The permittee shall not begin work until the lead federal agency has documented that the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed.

If no PCN is required for the project, the permittee (WWSD) may elect to proceed under the current NP 12 authorization, provided that the permittee complies with all of the terms and conditions and construction is conducted in a manner which does not result in a violation of any applicable water quality standard. The permittee may also elect to request written verification of authorization under NP 12 from the Corps, once the project plans are completed. In order to verify authorization under NP 12, the Corps must document quantified impacts for utility line crossings of waters of the U.S. This information would need to be provided.

Thank you for your interest in cooperating with requirements of the U.S. Army Corps of Engineers' regulatory program. Please contact Ms. Paige Wolken at (307) 772-2300 if you have any questions and reference file NWO-2010-01492.

Sincerely,

Paige Wolken
Project Manager
Wyoming Regulatory Office

Copy Furnished:

Roger Porter, Chairman
Wright Water & Sewer District
P.O. Box 549
15009 Highway 387
Wright, WY 82732
May 26, 2010

David A. Finley, Administrator
Wyoming DEQ/ Air Quality Division
122 West 25th Street
Herschler Building: 4-West
Cheyenne, Wyoming 82002
307-777-7391

Project: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line

RE: Affected Environment/Environmental Consequences

Dear Mr. Finley:

The Wright Water & Sewer District (WWSD) is performing an environmental review pursuant to the National Environmental Policy Act for the Drinking Water State Revolving Fund (SRF) through the Wyoming Department of Environmental Quality (DEQ), in order to assess the environmental impacts of a proposed storage tank and transmission line for the District. The WWSD serves the Town of Wright and the immediate surrounding area. The purpose of the well, tank, and transmission line is to meet the demand of WWSD's increasing population rates. The storage tank is also intended to extend the operating life of the existing, as well as proposed, wells. Enclosed are maps that depict the proposed project's area of potential effect for all construction activities associated with the well, tank, and transmission line. Please refer to Exhibit 1 for a vicinity map of the proposed site. A description of the proposed site involved follows:

The storage tank and well will be constructed and drilled on a 200 foot by 320 foot site, located in the Southwest 1/4 of the Northeast 1/4 of Section 3, Township 43 North, Range 72 West as shown on the enclosed Exhibit 2. This land is owned by WWSD as shown in the Warranty Deed as recorded in the Campbell County Clerk and Recorders Office in Book 2386 on Page 472.

The well will be developed, pump tested, sampled for water quality and completed. The discharge will be controlled to eliminate erosion.

The transmission line is to be installed within existing easements, as shown on the enclosed Exhibit 3. The included easements are recorded in the Campbell County Clerk and Recorders Office in Book 2299 on Page 402, Page 407, Page 411, Page 416, and Page 423. The fact that the new waterline will be installed in existing utility and access easements brings us to believe that the probability of surface archeological or historic manifestations are low and therefore no Class III Cultural Survey is warranted. We believe that no historical properties will be affected by this aspect of the project. If any cultural materials are discovered during the construction, work in the area will halt immediately and we will notify the SHPO staff. No work in the area will
resume until materials have been evaluated and adequate measures for their protection or collection have been taken.

The WWSD 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.

If you need further information or wish to discuss the project, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

Todd Rand
Project Manager

Enclosures
Cc: Tanner Shadow
July 9, 2010

Mr. Todd Rand  
Project Manager  
Stetson Engineering, Inc.  
P.O. Box 457  
Gillette, WY 82717-0457

RE: Wright Water & Sewer District R1-7 Well, Tank and Transmission Line

Dear Mr. Rand:

The Air Quality Division is in receipt of your letters dated May 26 and June 16, 2010, regarding the construction and drilling of a water well, construction of a water storage tank and the installation of a transmission line in Wright, Wyoming. Your letter stated that the storage tank and water well would be constructed and drilled on a 200-foot by 320-foot site located in the Southwest ¼ of the Northeast ¼ of Section 3, T43N, R72W, as depicted on Exhibit 2. In addition to the water well and storage tank, you stated that a transmission line would be installed within existing easements, and you provided an exhibit (Exhibit 3) depicting its location. We do not anticipate any adverse air quality impacts associated with the construction of the water well, storage tank and installation of the transmission line, with the exception of possible dust problems during construction. Your environmental planning should include effective dust control procedures such as the application of water along haul roads, and compaction, mulching and reseeding during the post-construction and installation phase to reduce windblown dust off exposed acreage. Good dust management practices will allow you to comply with the Wyoming Air Quality Standards and Regulations.

Because this project is in relation to the National Environmental Policy Act for the Drinking Water State Revolving Fund, we are forwarding copies of your letters and exhibits to Mr. Brian Mark of our Water Quality Division in Cheyenne in order that he may have the opportunity to address any concerns his Division may have regarding this project.

If you need further assistance, please feel free to contact me or Mr. Tanner Shatto, District Air Quality Engineer in Sheridan, at 307-673-9337.

Sincerely,

Vanessa Buyok  
State Implementation Plan and Rule Development  
Air Quality Division

cc: Tanner Shatto, AQD District Engineer  
    Brian Mark, WQD
June 16, 2010

J. Xavier Montoya, State Conservationist  
USDA-NRCS  
P.O. Box 33124  
100 East B Street, 3rd Floor  
Casper, Wyoming 82602-5011

Project: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line

RE: Affected Environmental/Environmental Consequences

Dear Mr. Montoya:

I recently sent a letter to you dated May 26th of 2010 concerning an environmental review that the Wright Water & Sewer District (WWSD) is performing. A well, storage tank, and transmission line has been proposed for the District to meet the demand of WWSD's increasing population rates. The exhibits previously noted in the letter were not available at the time the letter was sent. Enclosed are the three referenced exhibits. I apologize for the inconvenience and confusion.

If you need further information or wish to discuss the project, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

[Signature]

Todd Rand  
Project Manager

Enclosures: Exhibit 1, Exhibit 2, Exhibit 3
VICINITY MAP
T 43 N, R 72 W, 6th P.M.
CAMPBELL COUNTY, WYOMING
NOT TO SCALE

LEGEND

SECTION LINE
QUARTER SECTION LINE
SIXTEENTH SECTION LINE
PROPERTY/R.O.W LINE
TRANSMISSION LINE EASEMENT

EXHIBIT 3

WRIGHT WATER AND SEWER DISTRICT
RJ-7 WELL LOCATION
Dear Sir:

The Natural Resources Conservation Service (NRCS) has reviewed the proposal for the Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line Project dated June 16, 2010.

The Agriculture and Food Act of 1981, (Public Law 97-98) containing the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549, is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency.

It does not appear there will be any permanent conversion of irrigated agricultural land to non-agricultural use based on the information you provided. As such, we do not believe the work will adversely impact prime farmland. However, if you feel your project will, in fact, convert farmland to non-agricultural use, further review may be necessary. We do recommend prompt re-vegetation of the disturbed areas to minimize soil erosion and weed encroachment. If you need assistance developing a seeding plan or would like a review of an existing seeding plan to ensure suitability for the soil types impacted, feel free to contact the local NRCS office in Gillette. A good point of contact would be Tim Kellogg, the District Conservationist, at (307) 682-8843 extension 101.

If you have any questions, or need to discuss this comment, please contact Casey Sheley at (307) 233-6770.

Sincerely,

[Signature]

L. XAVIER MONTOYA
State Conservationist

Cc: Tim Kellogg, District Conservationist, Gillette Field Office
    Tom Watson, Area Conservationist, Douglas Area Office
Mr. Brian T. Kelly, Field Supervisor  
Ecological Services  
U.S. Fish and Wildlife Service  
5353 Yellowstone Road, Suite 308A  
Cheyenne, Wyoming 82009  
307-772-2374

Project: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line

RE: Affected Environment/Environmental Consequences

Dear Mr. Kelly:

The Wright Water & Sewer District (WWSD) is performing an environmental review pursuant to the National Environmental Policy Act for the Drinking Water State Revolving Fund (SRF) through the Wyoming Department of Environmental Quality (DEQ), in order to assess the environmental impacts of a proposed storage tank and transmission line for the District. The WWSD serves the Town of Wright and the immediate surrounding area. The purpose of the well, tank, and transmission line is to meet the demand of WWSD's increasing population rates. The storage tank is also intended to extend the operating life of the existing, as well as proposed, wells. Enclosed are maps that depict the proposed project's area of potential effect for all construction activities associated with the well, tank, and transmission line. Please refer to Exhibit 1 for a vicinity map of the proposed site. A description of the proposed site involved follows:

The storage tank and well will be constructed and drilled on a 200 foot by 320 foot site, located in the Southwest ¼ of the Northeast ¼ of Section 3, Township 43 North, Range 72 West as shown on the enclosed Exhibit 2. This land is owned by WWSD as shown in the Warranty Deed as recorded in the Campbell County Clerk and Recorders Office in Book 2386 on Page 472.

The well will be developed, pump tested, sampled for water quality and completed. The discharge will be controlled to eliminate erosion.

The transmission line is to be installed within existing easements, as shown on the enclosed Exhibit 3. The included easements are recorded in the Campbell County Clerk and Recorders Office in Book 2299 on Page 402, Page 407, Page 411, Page 416, and Page 423. The fact that the new waterline will be installed in existing utility and access easements brings us to believe that the probability of surface archeological or historic manifestations are low and therefore no Class III Cultural Survey is warranted. We believe that no historical properties will be affected by this aspect of the project. If any cultural materials are discovered during the construction, work in the area will halt immediately and we will notify the SHPO staff. No work in the area will
resume until materials have been evaluated and adequate measures for their protections or collection have been taken.

The WWSD 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.

If you need further information or wish to discuss the project, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

Todd Rand
Project Manager

Enclosures
In Reply Refer To:
ES-61411/WY10SL0316

Todd Rand, Project Manager
Stetson Engineering, Inc.
P.O. Box 457
Gillette, WY 82717-0457

Dear Mr. Rand:

Thank you for your letter of May 26, 2010, received in our office on June 24, regarding the well, tank, and transmission line construction in the Wright Water and Sewer District which serves the Town of Wright in Campbell County. The proposed project will be constructed on a 200 foot by 320 foot site located in the Southwest ¼ of the Northeast ¼ of Section 3, Township 43 North, Range 72 West.

You have requested information regarding species listed under the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 et seq. In response to your request, the U.S. Fish and Wildlife Service (Service) is providing you with recommendations for protective measures for threatened and endangered species in accordance with the Act. We are also providing recommendations concerning migratory birds in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq., and the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742a-742j.

In accordance with Section 7(c) of the Act, we have determined that the following species or their designated habitat may be present in the proposed project area. We would appreciate receiving information as to the current status of each of these species within the proposed project area.
develop protective measures with an assurance of implementation should mountain plovers be found within the project areas.

Greater sage-grouse: The Service has determined that the greater sage-grouse (*Centrocercus urophasianus*) warrants listing under the Act, but the development of a proposed listing rule is precluded by other higher priority listing actions. As a result, the greater sage-grouse has been placed on the list of candidate species. Candidates are reviewed annually to determine if they continue to warrant listing or to reassess their listing priority. Ideally, sufficient threats can be removed to eliminate the need for listing in which case sage-grouse would no longer be a candidate. If threats are not addressed or the status of the species declines, a candidate species can move up in priority for a listing proposal.

Please see our recent *Federal Register* notice (75 FR 13910) on greater sage-grouse for detailed information concerning the status of the species. Greater sage-grouse are dependent on sagebrush habitats year-round. Habitat loss and degradation, as well as loss of population connectivity have been identified as important factors contributing to the decline of greater sage-grouse populations rangewide. Therefore, any activities that result in loss or degradation of sagebrush habitats that are important to this species should be closely evaluated for their impacts to sage-grouse. If important breeding habitat (leks, nesting or brood rearing habitat) is present in the project area, the Service recommends no project-related disturbance March 15 through June 30, annually. Minimization of disturbance during lek activity, nesting, and brood rearing is critical to sage-grouse persistence within these areas. Likewise, if important winter habitats are present, we recommend no project-related disturbance November 15 through March 14.

We recommend you contact the Wyoming Game and Fish Department to identify important greater sage-grouse habitats within the project area, and appropriate measures to minimize potential impacts from the proposed project. The Service recommends surveys and mapping of important greater sage-grouse habitats where local information is not available. The results of these surveys should be used in project planning, to minimize potential impacts to this species. No project activities that may exacerbate habitat loss or degradation should be permitted in important habitats.

Migratory Birds:
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 MBTA 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 or eagle, their young, eggs, or nests (for example, if you are going to erect new roads, or power lines in the vicinity of a nest), should be coordinated with our office before any actions are taken.
potential effects on bank stability and water quality. Measures to compensate for unavoidable losses of riparian areas should be developed and implemented as part of the project.

Plans for mitigating unavoidable impacts to wetland and riparian areas should include mitigation goals and objectives, methodologies, time frames for implementation, success criteria, and monitoring to determine if the mitigation is successful. The mitigation plan should also include a contingency plan to be implemented should the mitigation not be successful. In addition, wetland restoration, creation, enhancement, and/or preservation does not compensate for loss of stream habitat; streams and wetlands have different functions and provide different habitat values for fish and wildlife resources.

Best Management Practices (BMPs) should be implemented within the project area wherever possible. BMPs include, but are not limited to, the following: installation of sediment and erosion control devices (e.g., silt fences, hay bales, temporary sediment control basins, erosion control matting); adequate and continued maintenance of sediment and erosion control devices to ensure their effectiveness; minimization of the construction disturbance area to further avoid streams, wetlands, and riparian areas; location of equipment staging, fueling, and maintenance areas outside of wetlands, streams, riparian areas, and floodplains; and re-seeding and re-planting of riparian vegetation native to Wyoming in order to stabilize shorelines and streambanks.

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of Wyoming's fish and wildlife resources. If you have questions regarding this letter or your responsibilities under the Act and/or other authorities or resources described above, please contact Kelsey Holzman of my office at the letterhead address or phone (307) 772-2374, extension 241.

Sincerely,

[Signature]

Brian T. Kelly
Field Supervisor
Wyoming Field Office

cc: WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
    WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)
October 22, 2010

WER 9625.04
Stetson Engineering, Inc.
Environmental Review
Wright Water & Sewer District RJ-7
Well, Tank, and Transmission Line
Campbell County

Todd Rand
Project Manager
Stetson Engineering, Inc
PO Box 457
Gillette, WY 83717-0457

Dear Mr. Rand:

The staff of the Wyoming Game and Fish Department has reviewed the environmental review for the Wright Water & Sewer District RJ-7 well, tank, and transmission line in Campbell County. We have no terrestrial wildlife or aquatic concerns pertaining to this proposed project.

Thank you for the opportunity to comment.

Sincerely,

[Signature]
John Emmerich
Deputy Director

JE:MF:gb

cc: USFWS
Lynn Jahnke, Sheridan Region
Heather O’Brien, Sheridan Region
Paul Mavrakis, Sheridan Region
September 23, 2010

Joseph Daniele
State Historic Preservation Office
Barrett Building, 3rd Floor
2301 Central Avenue
Cheyenne, WY 82002

Re: Wright Water and Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File #0710JRD002)

Dear Mr. Daniele:

You had requested a cultural resource survey be conducted in the area of potential effect of this project. We recently received a completed survey report done by Frontier Archaeology out of Casper Wyoming. Enclosed is a copy of the report for your files.

If you have any questions or wish to discuss the project further, please contact our office at 1-307-682-8936.

Thank you,
Stetson Engineering, Inc.

Todd Rand
Project Manager

Enclosures
Jul 6, 2010

Todd Rand
Stetson Engineering, Inc.
Project Manager
P.O. Box 457
Gillette, WY 82717-0457

Re: Wright Water and Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File #0710JRD002)

Dear Mr. Rand:

Thank you for consulting with the Wyoming State Historic Preservation Office (SHPO) regarding the above referenced project.

A search of our records shows that a cultural resource survey has not been conducted in the area of potential effect. Following 36 CFR Part 800, and prior to any ground disturbing activities, we recommend that the Department of Environmental Quality and Stetson Engineering, Inc. carry out appropriate efforts necessary for identification of historic properties, which may include a file search, background research, consultation, consideration of visual effects, sample field investigations or field survey. The identification efforts must be conducted by a consultant meeting the Secretary of the Interior’s Professional Qualification Standards (48 FR 22716, Sept. 1983). A report detailing the results of these efforts must be provided to SHPO staff for our review and comment.

We have enclosed a copy of a cultural resource consultants list for your use. Please refer to SHPO project control number #0710JRD002 on any future correspondence dealing with this project. If you have any questions, please contact Joseph Daniele, Archaeologist/Review and Federal Consultation at 307-777-8793.

Sincerely,

Joseph Daniele
Wyoming State Historic Preservation Office
Sep 27, 2010

Todd Rand
Stetson Engineering, Inc.
Project Manager
P.O. Box 457
Gillette, WY 82717-0457

Re: Wright Water & Sewer District RJ-7 Well, Tank, and Transmission Line (SHPO File # 0710JRD002)

Dear Mr. Rand:

Thank you for consulting with the Wyoming State Historic Preservation Office (SHPO) regarding the above referenced project. We have reviewed the project report and find the documentation meets the Secretary of the Interior’s Standards for Archaeology and Historic Preservation (48 FR 44716-42). We concur with your finding that no historic properties, as defined in 36 CFR § 800.16(1)(1), will be affected by the project as planned.

We recommend the Stetson Engineering, Inc. allow the project to proceed in accordance with state and federal laws subject to the following stipulation:

If any cultural materials are discovered during construction, work in the area shall halt immediately, the federal agency must be contacted, and the materials evaluated by an archaeologist or historian meeting the Secretary of the Interior’s Professional Qualification Standards (48 FR 22716, Sept. 1983).

This letter should be retained in your files as documentation of a SHPO concurrence on your finding of no historic properties affected. Please refer to SHPO project #0710JRD002 on any future correspondence regarding this project. If you have any questions, please contact Joseph Daniele, Archaeologist/Review and Federal Consultation at 307-777-8793.

Sincerely,

Joseph Daniele
Wyoming State Historic Preservation Office
Appendix B

Class III Cultural Resource

Inventory Report
AUTHOR: James A. Brunette
REPORT TITLE: Class III Cultural Resource inventory of the RJ-7 Water Well, Tank and Distribution Lines for the Town of Wright, Wyoming.
DATE OF REPORT (Month/Year): September 2, 2010
LEAD AGENCY: Wyoming State Historic Preservation Office
SURVEY ORGANIZATION/NAME: Frontier Archaeology/Brunette
FEDERAL PERMIT NO.: BLM CRUP #320-WY-SR08 (expires 8/31/11)
BRIEF DESCRIPTION OF UNDERTAKING: A water well, tank and distribution lines are proposed on private land.
SURVEY METHODS: X Standard 30 Meter Transects
Survey Width (All Linear Inventory): X 100 feet (individual road or pipeline corridor)
_150 feet (parallel road/pipeline corridor)
_Other (indicate width: _feet)
COUNTY: Campbell
SGS QUAD MAP: Little Thunder Reservoir, Wyo., 1971
AND OWNER: _BLM _BuRec _FS _NPS _X PRIVATE _STATE _USFWS _OTHER
LEGAL DESCRIPTION: The proposed project is located in Section 3,
3N, R72W; and Section 34, T44N, R72W (Figure 1).
DERAL ACREAGE:
DERAL FACE
IN-FED FACE
BLOCK: 0.0 LINEAR: 0.0 TOTAL: 0.0
BLOCK: 5.0 LINEAR: 13.54 TOTAL: 18.54
TOTAL ACREAGE: 18.54
SEARCH DATE: July 22, 2010 (#25992)
LD WORK DATE (Month/Year): July 28, 2010
LD PERSONNEL: James A. Brunette
SURVEY RESULTS: _ NO CULTURAL MATERIAL _ ISOLATED FINDS _ SITES
* check all that pertain
* check continuation sheets for additional data
**NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY:** E (Eligible); NE (Not Eligible); U (Unvaluated)

**ELIGIBILITY DETERMINATION:** R-Listed on NRHP Register; K-Eligible by NRHP Keeper; C-Eligible-SHPO concurrence; Eligible-Consultant/Agency; U-Eligibility Unknown; N-Not eligible

**PROJECT EFFECT:** NO for sites with no effect; NAE for site with no adverse effects; AE for sites with adverse effect; U for unknown

**PROPOSED MITIGATION:** e.g., data recovery, avoidance, fencing, sign, etc.

**ATTACH CONTINUATION SHEETS AS NEEDED/EXPAND, ADD OR DELETE INDIVIDUAL SITE COLUMNS AS NECESSARY:** Please list sites in alphabetical/numeric order first and isolates after the sites.

**FOOTNOTE:** Information about the location, character, or ownership of historic properties in the report may not be disclosed to the public unless authorized by the appropriate Federal agency and/or the Wyoming State Historic Preservation Office.
Town of Wright, Wyo., RJ-7 Water Well, Tank and Distribution Lines
Section 3, T43N, R72W & Section 34, T44N, R72W
Little Thunder Reservoir & Reno Junction, Wyo., 7.5' USGS Quads (1971);
Campbell County, Wyoming

Figure 1
FA10-12: View south of the RJ-7 water well and tank site, located on the knoll crest (center of photo), viewed from where the line splits in the NW/SW/NE of Section 3, T43N, R72W. (Photo by Jim Brunette 7/28/10)

FA 10-12: View west of the eastern end of the proposed water distribution line, as viewed from the gravel road near the eastern edge of Section 3, T43N, R72W (Photo by Jim Brunette-7/28/10)
FA10-12: View east of the proposed water distribution line, as viewed from the approximate C-N½ of Section 3, T43N, R72W. (Photo by Jim Brunette-7/28/10)

FA10-12: View north of the proposed water distribution line as viewed from the approximate C-N½ of Section 3, T43N, R72W. (Photo by Jim Brunette-7/28/10)
FA10-12: View west of the proposed water distribution line (which terminates at the road in center of photo), as viewed from the SW/NW/SE of Section 34, T44N, R72W. (Photo by Jim Brunette-7/28/10)

FA10-12: View south of the proposed distribution line as viewed from the SW/NW/SE of Section 34, T44N, R72W. (Photo by Jim Brunette-7/28/10)
SURVEY REPORT

UNDERTAKING/PROJECT DESCRIPTION: A water well, a water tank and distribution lines are proposed for the southern end of the Town of Wright, Wyoming. The proposed RJ-7 well and tank are staked on private land in the SW/SW/NE of Section 3, T43N, R72W (Figure 1). An existing road provides access to the well and tank site area, which measures 200’ N-S by 320’ E-W. In addition, two buried water distribution lines, totaling about 6000’ will be constructed in Section 3, T43N, R72W; and Section 34, T44N, R72W; as part of this undertaking.

Only a minor amount of leveling will be required to construct the well and tank pad due to the nearly flat terrain. The distribution lines are on gently rolling terrain so trenching and backfilling can be accomplished with minimal ground disturbance.

ENVIRONMENTAL SETTING: The project is located in the central Powder River Basin, at the southern end of Wright, Wyoming. Surface geology throughout the project area consists of drab sandstone and drab to variegated claystone of the Wasatch Formation (Love & Christiansen, 1985).

Soils consist primarily of tan silty clay, with occasional sandstone beds and concretions exposed on upper surfaces. Vegetation cover ranges from 0-30%, and consists of bunch grasses, birdfoot sage, winterfat, salt bush, sagebrush, phlox, and prickly pear cactus and invasion weeds.

Existing surface disturbances in and around the project area are numerous, and include paved and gravel roads, residences, Highways 59 and 387, overhead transmission lines, buried pipelines, fencelines and two-track trails.

BACKGROUND RESEARCH: A files search was requested from the Cultural Records Office of the Wyoming State Historic Preservation Office (SHPO) for Section 3, T43N, R72W; and Section 34, T44N, R72W; on July 22, 2010 (#25992). Their records indicate eight projects have been conducted in Section 3, T43N, R72W. They include Class III inventories of wells, access roads and pipelines, with a total of 79 block acres of inventory documented. Five sites, 48CA4868, 48CA5297, 48CA5428, 48CA5423 and 48CA5433, have been recorded in Section 3, T43N, R72W.

Site 48CA4868 is the Reno to Salt Creek Road, listed as not eligible for nomination to the National Register of Historic Places (NRHP). The road is located at least 1100’ west of the north-west segment of proposed water distribution lines and will not be affected by this undertaking.

Site 48CA5297 is the Hay Creek-Porcupine Road listed as not eligible for nomination to the NRHP. The road is about ½ mile southeast of the proposed well/tank facility and at least 2000’ southeast of the eastern end of the proposed water distribution line, so it will not be affected by this undertaking.

Site 48CA5428 is a prehistoric lithic scatter listed as eligible for nomination to the NRHP. Based on the legal description, it is located more than ½ mile west of the proposed water distribution line and will not be affected by this undertaking.

Sites 48CA5432 and 48CA5433 are prehistoric lithic scatters listed as not eligible for nomination to the NRHP. Each is located about ½ mile west of the proposed water distribution line and will not be affected by this undertaking.

Four projects are listed for Section 34, T44N, R72W. They include Class III inventories of wells, access roads and pipelines, with a total of 207 block acres of inventory documented. Five sites, 48CA4868, 48CA5429, 48CA5430, 48CA5431 and 48CA5434, have been recorded in Section 34, T44N, R72W.
Site 48CA4868 is the Reno to Salt Creek Road, listed as not eligible for nomination to the NRHP. The road is located at least 1100' west of the proposed water distribution lines and will not be affected by this undertaking.

Site 48CA5429 and 48CA5430 are prehistoric lithic scatters and site 48CA5431 is a historic debris and prehistoric lithic scatter. All three are listed as not eligible for nomination to the NRHP, and are located at least 2300' west of the proposed water distribution line, so they will not be affected by this undertaking.

Site 48CA5434 is a prehistoric lithic scatter listed as eligible for nomination to the NRHP. The site is located at least ½ mile west of the proposed water distribution line, so it will not be affected by this undertaking.

In summary, none of the previously recorded sites listed in Section 3, T43N, R72W; or Section 34, T44N, R72W; will be affected by this undertaking.

SURVEY METHODOLOGY: On July 28, 2010, James A. Brunette, dba Frontier Archaeology, conducted a Class III cultural resource inventory of a 5-acre block around the proposed water well and tank, which provides at least 100' of buffer around the 320' by 200' facility area. In addition, about 1.12 miles (13.54 linear acres) of proposed water distribution lines located outside of the block were included in the investigation. Standard pedestrian transects were used to conduct the inventory of the block and two pedestrian transects were used to inventory a 100' wide corridor (50' to either side of the centerline stakes) for the distribution lines.

Subsurface tests were not conducted in association with this project. Fieldwork conditions were favorable, with partly cloudy skies, temperatures in the upper 70's, and variable winds. Field notes and other data are on file at the Frontier Archaeology office at 3630 West 46th Street, Casper, Wyoming.

INVENTORY RESULTS: One site, 48CA7057, was identified during the Class III investigation of the RJ-7 water well, tank and distribution lines for the Town of Wright, Wyoming.

Site

48CA7057: SW/SW/NE/SW/NE of Section 3, T43N, R72W

Site 48CA7057 is a small prehistoric habitation/occupation site, comprised of a single hearth and three pieces of associated debitage distributed over an area measuring about 50' E-W by 10' N-S (Figure 2).

The hearth lies at the western end of the site and consists of at least 25 pieces of sandstone clustered in an area about 75 cm in diameter. About half of the rocks are slab-like pieces up to 15 cm across, with the remainder comprised of small fragments. A light gray ash stain was observed in the interior of the feature, so it may contain sufficient material to provide a radiocarbon date. Debitage consists of two chert flakes (one secondary, one tertiary), and a utilized porcellanite primary flake. The utilized flake measures about 4.3 cm by 3.8 cm by 1.2 cm, and exhibits heavy use wear on one lateral edge. It is located about 48' east of the hearth at the eastern end of the site.

The site is located on a gentle east-facing slope, near the crest of a knoll. The knoll forms
Smithsonian Site No.: 48CA7057  
Project (Field) No.: FA10-12-1

Well/Tank site

SE Corner Stake

Hearth

Utilized flake

LEGEND

\(\Delta\) - Datum
\(\odot\) - Site Boundary
\(\times\) - FCR
\(\bullet\) - Flake

FA10-12
Town of Wright, Wyo., RJ-7 Water well, Tank and Distribution Lines
SW/SW/NE/SW/NE of Section 3, T43N, R72W
Little Thunder Reservoir, Wyo., 7.5' USGS Quad, 1971
Campbell County, Wyoming
part of a hydrologic divide between unnamed ephemeral tributaries of Little Thunder Creek to the southeast and of unnamed ephemeral tributaries of Hay Creek to the northwest. The proposed RJ-7 water well and tank are located on the knoll crest northwest of the site. Soils consist of silty clay and claystone regolith. Concretions and thin sandstone beds are also exposed on and around the knoll.

Vegetation cover ranges from 5-25%, and consists of bunch grasses, sagebrush, prickly pear cactus, phlox, thistle and forbs.

Site 48CA7057 is recommended as not eligible for nomination to the National Register of Historic Places. Although the hearth may contain sufficient material to provide a viable radiocarbon date, 48CA7057 is a surface site which exhibits few associated artifacts, and lacks associated features and soil in which additional cultural materials might exist. As such, the site does not meet any of the criteria needed to be considered eligible for the National Register.

CONCLUSIONS/SUMMARY: Confidence is high that the objectives of the Class III inventory of the proposed RJ-7 well/water tank facility and distribution lines, for the Town of Wright, Wyoming, were met. One site, 48CA7057, considered not eligible for nomination to the National Register of Historic Places, was identified during the investigation. As staked, the southeastern corner of the proposed well/water tank facility is about 70’ west-northwest of the western margin of site 48CA7057, so it will not be affected by construction related activities.

Buried intact cultural materials are extremely unlikely to exist in project area. Therefore, no additional archaeological work is considered necessary for this undertaking.

Cited Reference

Love, J. D., & Ann Coe Christiansen
EXHIBIT
ARCHAEOLOGICAL FIND
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST, 6TH P.M., CAMPBELL COUNTY, WYOMING

LAT: 43°41'17.41836" N
LON: 105°29'28.08647" W
HGT: 4940.463
DATUM: WGS84

LAT: 43°43'55.98708" N
LON: 105°29'26.69235" W
HGT: 5009.352
DATUM: WGS84

DETAIL
1"=200'

LEGEND
ARCHAEOLOGICAL FIND AREA
PROPOSED WATER LINE
DATUM NAIL

PREPARED BY:
STETSON
ENGINEERING, INC.
601 Metz Drive
P.O. Box 457
Gillette, Wyoming 82717

PREPARED FOR:
JIM BURNETTE - FRONTIER ARCHAEOLOGY
3630 W. 4TH STREET
CASPER, WY 8204

VICINITY MAP
NOT TO SCALE
Appendix C

Notice of Public Hearing
PARKING RESTRICTIONS:

7-2-6: PARKING RESTRICTIONS ON NONSNOW EMERGENCY ROUTES:

In addition to the restrictions set forth in sections 7-2-2 through 7-2-5 of this chapter, from October 1 until May 1 of each year, parking on nonsnow emergency routes shall be limited to the odd numbered sides of the street on odd numbered days and even numbered sides of the street on even numbered days to facilitate clearing the streets of snow. For purposes of this chapter, days shall be considered to be a twenty four (24) hour period beginning at ten o'clock (10:00) A.M., and the day's number shall be the day of the month on which the twenty four (24) hour period begins. (Ord. 2003-07, 1-26-2004)

NOTICE OF PUBLIC HEARING

The Wright Water and Sewer District, Wright, Wyoming will conduct a public hearing at 7:30 P.M. local time, on December 9, 2010, in the District office located at 15009 Highway 387 in Wright Wyoming. The purpose of the hearing is to allow citizens to review and comment on the proposed RJ-7 Well Project. The purpose of the project is to increase the water supply capacity of the Wright Water and Sewer District.

The Wright Water and Sewer District intends to use funds from the Wyoming Clean Water State Revolving Loan Fund administered by the Wyoming Department of Environmental Quality. The Wright Water and Sewer District will present the preliminary design of the proposed project and discuss the estimated cost of the improvements. A preliminary plan of improvements can be reviewed at the Office of Stetson Engineering, Inc. at 601 Metz Drive, Gillette, Wyoming. Contact Todd Rand, P.E. at 1-307-682-8936.

Written comments are also welcome and must be received by 3:00 P.M. on December 8, 2010. Send written comments to Ralph Kingan, Supervisor, Wright Water and Sewer District, 15009 Highway 387, Wright Wyoming 82732.

Publish:
November 18, 2010
November 25, 2010
December 2, 2010
Date November 11, 2010

NOTICE OF APPLICATION FOR RENEWAL OF A RETAIL LIQUOR LICENSE

Notice is hereby given that on the 23rd of November 2010, Pridgeon Inc., dba Hank's Lounge filed an application for a renewal Retail Liquor License in the office of the Clerk/Treasurer of the Town of Wright for the following described place:

South East 1/4, North West 1/4, section 26 Township 44 N, R 72, Town of Wright, Campbell County, Wyoming, more specifically described as: a 47' x 51' room in the Southern most part of the complex for a dispensing area, located at 7508 Hwy 59, Wright, Wyoming.

And protests, if there be any, against the issuance of the Renewal of this License will be heard at the hour of 7:30 p.m. on the 27th day of December 2010, in the Council Room at the Wright Town Hall, 201 Wright Blvd., Wright, Wyoming.

Chrissy Herrera
Clerk/Treasurer
Town of Wright

Published for notice: December 2nd, 9th, 16th and 23rd

NOTICE OF APPLICATION FOR RENEWAL OF A RETAIL LIQUOR LICENSE

Notice is hereby given that on the 5th of November 2010, Cameron Brown, dba Hay Creek Golf Course filed an application for a renewal Retail Liquor License in the office of the Clerk/Treasurer of the Town of Wright for the following described place:
Affidavit of Publication

Publisher's Affidavit
Stetson Engineering

I, Ralph Kingan, do solemnly swear, that I am publisher of High Plains Sentinel, a Newspaper of general circulation, printed And published each week, at Wright, Campbell County, State of Wyoming, that the notice Hereby attached and which has been made A part of the affidavit, and a part of the Proof of publication

Notice of Public Hearing on December 9, 2010 Published on 11-18-10 and 11-25-10 Notice of Public Hearing on November 30, 2010 Published on 11-25-10

That said notice was printed and published In the newspaper proper and not a supplement

Subscribed and Sworn before me

This day December 1, 2010

Notary Public
Tax ID #20-1585136
The Board of Directors of the Wright Water & Sewer District held their Regular Meeting December 9, 2010 at 7:30 p.m. The meeting was held at the District Office, 15009 Hwy. 387. The following members of the Board were present:

DIRECTORS: R. Porter
           C. Burnell
           M. Meister
           E. Weyer via Phone

OTHERS PRESENT: R. Kingan
                C. Stetson
                D. Ostenson
                T. Rand
                J. Steele
                J. Surwald

PUBLIC HEARING
Chairman Porter opened the Public Hearing at 7:30 p.m. to accept any questions or comments on the proposed RJ-7 Well Project as a requirement to accept the Environmental Assessment Report. C. Stetson gave a brief summary of the preliminary design, as well as cost estimates for the improvements. With no public comment, the Public Hearing was closed at 7:32 p.m.

ORAL COMMENTS
T. Rand updated the Board on various Stetson projects not covered under either Unfinished or New Business. Sewer Lagoon System Upgrades - Aeration Industries picked up one of the faulty aerators to diagnose the problem and repair the unit; repair parts (warranty) for the additional units will be sent out; Stetson Engr. will contact Western Municipal concerning warranty issues, including parts installation; work continues on the O & M Manuals. RJ-7 Well - Public Hearing held this evening. RJ-7 Pumphouse, Tank, and Transmission Line - Public Hearing was held December 7th for WWDC's funding recommendation of the Level II, Phase I project (pre-construction costs, new S.C.A.D.A. System, and RJ-3 Well upgrades).

WRITTEN COMMENTS
There were no written comments.

MINUTES
A motion was made by M. Meister and seconded by C. Burnell to approve the minutes of the Regular Meeting of November 10, 2010. Motion passed unanimously.

REPORTS
The Operating Summary, Bank Reconciliation, Income/Expense Report, Balance Sheet, and Profit & Loss/Budget vs. Actual Report were presented for the Board's review.

CHECKS AND WARRANTS
A motion was made by M. Meister and seconded by C. Burnell to approve the checks and warrants. Motion passed unanimously.

OPERATORS' REPORT
R. Kingan gave the operators' report for the past month citing the following specifics: Water & sewer and effluent dechlorination samples were O.K.; Pulled one (1) of the faulty aerators for Aeration Industries; Worked w/Paintbrush and determined the grease pit was never connected at the Wright Hotel during construction; Pumps at RJ-4 and RJ-6 went bad; Pulled both faulty pumps and installed new pump at RJ-5 w/Weston Engineering; J. Steele re-certified on testing backflow preventers; Inventoried parts and restocked as needed; Checked all equipment before winter; Repaired meter and frozen lines (twice) at Horse Heads and repaired and/or replaced three (3) meters.

UNFINISHED BUSINESS
2009/2010 Financial Audit
A motion was made by C. Burnell and seconded by M. Meister to approve the 2009/2010 Financial Audit prepared by Grooms & Harkins. Motion passed unanimously.

NEW BUSINESS
There was no New Business.

ANNOUNCEMENTS
The next Regular Meeting of the Wright Water & Sewer District Board of Directors will be January 13, 2011 at 7:30 p.m. at the District Office.

ADJOURNMENT
With no further business to discuss, a motion was made by M. Meister and seconded by C. Burnell to adjourn. Motion passed unanimously. The meeting adjourned at 8:15 p.m.

Juli Surwald, Clerk
Roger E. Porter, Chairman

November 2010 Board Meeting Minutes

STATE OF WYOMING ) WRIGHT WATER & SEWER DISTRICT
COUNTY OF CAMPBELL )

The Board of Directors of the Wright Water & Sewer District held their Regular Meeting November 10, 2010 at 7:30 p.m. The meeting was held at the District Office, 15009 Hwy. 387. The following members of the Board were present:

DIRECTORS: R. Porter J. Johnson M. Meister


ORAL COMMENTS
Corrective Warranty Deed

Ted R. Cosner as Trustee of the Ted R. Cosner Revocable Trust, dated December 21, 1998, grantor(s) of Campbell County, State of WY, for and in consideration of Ten Dollars and Other Good and Valuable Consideration, in hand paid, receipt whereof is hereby acknowledged, Convey and Warrant To

Wright Water and Sewer District, grantee(s),

whose address is: PO Box 348, Wright, WY 82839 of County and State of , the following described real estate, situate in Campbell County and State of Wyoming, to wit:

A 200 foot by 320 foot well and tank site being a tract of land that is located in a portion of the SW1⁄4 NE1⁄4 of Section 3, Township 43 North, Range 72 West of the 6th P.M., Campbell County, Wyoming, being more particularly described as follows:

Commencing at the North ¼ corner of said Section 3; Thence S10°03′03″E, 2,286.41 feet to a point which is the Southwest corner of said 200 foot by 320 foot well tank site property, and the True Point of Beginning; Thence North, 200.00 feet to a point; Thence East 320.00 feet to a point; Thence South, 200.00 feet to a point from which the Northeast corner of said Section 3 bears N42°47′15″E, 2,882.83 feet; Thence West 320.00 feet to the True Point of Beginning

Hereby releasing and waiving all rights under and by virtue of the homestead exemption laws of the State of Wyoming. Witness my/our hand(s) this 30 day of August, 2008.

Ted R. Cosner Revocable Trust, dated December 21, 1998

By:

Ted R. Cosner Trustee

State of Wyoming

County of Campbell

The foregoing instrument was acknowledged before me this 30 day of August, 2008 by Ted R. Cosner as Trustee of the Ted R. Cosner Revocable Trust, dated December 21, 1998.

Witness my hand and official seal.

My commission expires:

Notary Public
This Easement Agreement is entered into as of August 5th, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. **Grant Of Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 below for the installation, operation and/or repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee’s option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during normal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. **Property.** Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 2.439 acres, more or less, as more particularly described in Exhibit A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. **Term.** This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the
giving of sixty (60) days prior written notice to the Grantor and the removing of
Grantee’s lines and related equipment from the property. On such termination
and removal, Grantee shall record such documents as are necessary to abandon
the easement.

5. **Noninterference.** Grantee, for itself, its heirs, successors and assigns, covenants
that the above easement shall not be used in any manner or at any time which
might otherwise damage the property or interfere with the operations or activities
of the property by the Grantor. Grantor shall not materially interfere with the
lines or other equipment installed pursuant to the rights granted herein.

6. **Binding.** Provisions and covenants contained in this easement shall run with the
land and shall bind and inure to the benefit of the respective successors in interest
of the parties hereto.

7. **Recordation.** Grantee may record this Easement Agreement in the real property
records of Campbell County, Wyoming.

8. **Indemnification.** Grantee shall indemnify Grantor against any loss or damage
which may be caused by the wrongful or negligent act or omission of any of its
agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

**GRANTOR:**

**GRANTEE:**

BY: \[Signature\] \[Signature\]

The Ted R. Cosner Revocable Trust \[WRIGHT WATER & SEWER DISTRICT\]

STATE OF WYOMING )

County of Campbell )

The foregoing instrument was acknowledged before me by **Ted R. Cosner** for the Ted R. Cosner Revocable Trust, this 5th day of **September**, 2007.

Witness my hand and official seal.

\[Signature\] \[Signature\]

Notary Public

My Commission Expires: **October 29, 2009**
STATE OF WYOMING

County of (Campbell)

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 111th day of September, 2007.

Witness my hand and official seal.

JULIANNE SNOWSLED
Notary Public

My Commission Expires: October 24, 2009
DATE: JULY 13, 2007
JOB NO.: 07-639
EXHIBIT FOR: 25' WIDE UTILITY EASEMENT
GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
WRIGHT, WYOMING 82732-0690

WIDE UTILITY EASEMENT

EXHIBIT

25' WIDE UTILITY EASEMENT

SEC. 3
T-43-N
R-72-W

PREPARED BY:
STETSON ENGINEERING, INC.
4901 S. Douglas Highway
P.O. Box 457
Gillette, Wyoming 82717

PREPARED FOR:
WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
WRIGHT, WYOMING 82732
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE UTILITY EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A twenty-five foot wide utility easement located in the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Westerly and Southerly sidelines being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 88°34'45" East, 75.71 feet, running along the North line of the Northeast ¼ of said Section 3, to the True Point of Beginning;

Thence South 02°13'46" East, 811.88 feet, to point;

Thence South 01°00'56" East, 920.21 feet, to point;

Thence North 87°57'09" East, 2478.47 feet, to a point, the Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. Said point also being the point of termination of this easement, from which the Northeast corner of said Section 3, bears North 05°28'30" East, 1,583.69 feet.

With the Easterly and Northerly sidelines of the above described utility easement will begin on the Northerly line of the Northeast ¼ of said Section 3, will be lengthened or shortened to meet at angle points and will terminate at the most Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming, with the Easterly and Northerly lines being twenty-five (25) feet distant, Easterly and Northerly, and parallel with the above described Westerly and Southerly sidelines.

Said easement containing 2.439 acres, more or less.
THIS ACCESS EASEMENT AGREEMENT is entered into as of \[\text{Date} \, 5\text{th} \, \text{of} \, 2007\] by and between The Ted R. Cosner Revocable Trust (Grantor) and the Wright Water & Sewer District (Grantee). The parties hereto agree as follows:

1. **Grant Of Access Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors, assigns and invitees, an easement to the property defined in Section 2 below for purposes of ingress and egress and generally as necessary for the maintenance, operation and quiet enjoyment of the Grantee's property and/or facilities. The easement shall include the right of the Grantee to access their property by way of the easement granted herein at any time, day or night.

2. **Property.** Grantor's property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibits A, attached hereto and made a part hereof. The access easement generally contains 2.395 acres more or less, as more particularly described in Exhibits A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor of any roadway, structure, fence, landscaping or other part of the property associated with Grantee's use, including normal wear and tear, of the easement granted herein.

4. **Term.** This Easement Agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee's failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This Easement Agreement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor. On such termination, Grantee shall record such documents as are necessary to abandon the easement.

5. **Non-Interference.** Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with operations or activities of the property by Grantor. Grantor shall not materially interfere with the rights granted herein.
6. **Binding.** The provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of respective successors in interest of the parties hereto.

7. **Recordation.** Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. **Indemnification.** Grantee shall indemnify Grantor against any loss and damage which may be caused by the exercise of the right of ingress and egress or by any wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

**GRANTOR:**

\[Signature\]

**GRANTEE:**

\[Signature\]

**STATE OF WYOMING**

\[Signature\]

County of Campbell

\[Signature\]

The foregoing instrument was acknowledged before me by \[Signature\] for the Ted R. Cosner Revocable Trust, this \[Date\] day of \[Month\] \[Year\], 2007.

**Witness my hand and official seal.**

\[Signature\]

Notary Public

My Commission Expires: \[Date\], \[Year\]

**STATE OF WYOMING**

\[Signature\]

County of \[County\]

\[Signature\]

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this \[Date\] day of \[Month\] \[Year\], 2007.

**Witness my hand and official seal.**

\[Signature\]

Notary Public

My Commission Expires: \[Date\], \[Year\]
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE ACCESS EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A twenty five foot wide access easement, located in the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Easterly and Northerly sidelines being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 88°34'45" East, 75.71 feet, along the North line of the Northeast ¼, of said Section 3, to the True Point of Beginning;

Thence South 02°13'46" East, 811.88 feet, to a point;

Thence South 01°00'56" East, 920.21 feet, to a point;

Thence North 87°57'09" East, 2478.47 feet, to a point, the Easterly line of a tract of land described in Book 1771 Page 534, at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. Said point also being the point of termination of this easement, from which the Northeast corner of said Section 3, bears North 05°28'30" East, 1,583.69 feet.

The sidelines of the above described access easement will begin on the Northerly line of the Northeast ¼ of said Section 3 and terminate at the most Easterly line of a tract of land described in Book 1771 Page 534, as recorded at the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. With the Westerly and Southerly, sidelines being twenty-five (25) feet distant, Westerly and Southerly, and parallel with the above described Easterly and Northerly sidelines.

Said easement containing 2.395 acres, more or less.
UTILITY EASEMENT

This Easement Agreement is entered into as of _____, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. Grant Of Easement. For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 as necessary for the installation, operation and/or repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee's option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during normal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. Property. Grantor's property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 0.746 acres, more or less, as more particularly described in Exhibit A.

3. Repair. Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. Term. This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee's failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the
giving of sixty (60) days prior written notice to the Grantor and the removing of
Grantee's lines and related equipment from the property. On such termination
and removal, Grantee shall record such documents as are necessary to abandon
the easement.

5. Noninterference. Grantee, for itself, its heirs, successors and assigns, covenants
that the above easement shall not be used in any manner or at any time which
might otherwise damage the property or interfere with the operations or activities
of the property by the Grantor. Grantor shall not materially interfere with the
lines or other equipment installed pursuant to the rights granted herein.

6. Binding. Provisions and covenants contained in this easement shall run with the
land and shall bind and inure to the benefit of the respective successors in interest
of the parties hereto.

7. Recordation. Grantee may record this Easement Agreement in the real property
records of Campbell County, Wyoming.

8. Indemnification. Grantee shall indemnify Grantor against any loss or damage
which may be caused by the wrongful or negligent act or omission of any of its
agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR: 

BY: [Signature]

The Ted R. Cosner Revocable Trust

GRANTEE:

BY: [Signature]

WRIGHT WATER & SEWER DISTRICT

STATE OF WYOMING 

County of Campbell 

The foregoing instrument was acknowledged before me by Ted R. Cosner,
for the Ted R. Cosner Revocable Trust, this 15th day of September, 2007.

Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009
STATE OF WYOMING
County of Campbell

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007.

Witness my hand and official seal.

My Commission Expires: October 29, 2009
LEGAL DESCRIPTION

FOR

TWENTY FIVE FOOT WIDE UTILITY EASEMENT

SECTION 34, TOWNSHIP 44 NORTH, RANGE 72 WEST

A twenty five foot utility easement located in the Southwest ¼ of the Southeast ¼ of Section 34, Township 44 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Westerly side line being described as follows;

Commencing at the South ¼ corner of said Section 34, thence South 88°34'45" East, 75.71 feet, along the South line of said Southwest ¼ of the Southeast ¼ of said Section 34, to the True Point of Beginning;

Thence North 02°19'56" East, 1,299.48 feet, to the South line of an existing thirty-foot wide waterline easement, as recorded in Book 1687 and Page 131 in the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. From which the Southeast Corner of said Section 34, bears South 62°30'45" East, 2,956.78 feet.

The Easterly line being twenty-five (25) feet distant and parallel with said described line, also being coincident with the West Property line of that tract of land described in Book 1706 Page 455 in the Clerk of Records office, Campbell County, Wyoming, the sidelines of the above described utility easement will begin on the southerly line of the above referenced water line easement.

Said easement containing 0.746 acres, more or less.
ACCESS EASEMENT AGREEMENT

THIS ACCESS EASEMENT AGREEMENT is entered into as of [date], 2007 by and between The Ted R. Cosner Revocable Trust (Grantor) and the Wright Water & Sewer District (Grantee). The parties hereto agree as follows:

1. Grant Of Access Easement. For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors, assigns and invitees, an easement to the property defined in Section 2 below for purposes of ingress and egress and generally as necessary for the maintenance, operation and quiet enjoyment of the Grantee’s property and/or facilities. The easement shall include the right of the Grantee to access their property by way of the easement granted herein at any time, day or night.

2. Property. Grantor’s property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibits A, attached hereto and made a part hereof. The access easement generally contains 0.746 acres more or less, as more particularly described in Exhibits A.

3. Repair. Grantee shall repair to the satisfaction of Grantor of any roadway, structure, fence, landscaping or other part of the property associated with Grantee’s use, including normal wear and tear, of the easement granted herein.

4. Term. This Easement Agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee’s failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This Easement Agreement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor. On such termination, Grantee shall record such documents as are necessary to abandon the easement.

5. Non-Interference. Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with operations or activities of the property by Grantor. Grantor shall not materially interfere with the rights granted herein.
6. **Binding.** The provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of respective successors in interest of the parties hereto.

7. **Recordation.** Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. **Indemnification.** Grantee shall indemnify Grantor against any loss and damage which may be caused by the exercise of the right of ingress and egress or by any wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR: 

GRANTEE:

BY: [Signature] 

The Ted R. Cosner Revocable Trust

BY: [Signature] 

WRIGHT WATER & SEWER DISTRICT

STATE OF WYOMING )

County of Campbell ) ss.

The foregoing instrument was acknowledged before me by [Signature] for the Ted R. Cosner Revocable Trust, this ___ day of September, 2007.

Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009

STATE OF WYOMING )

County of [Campbell] ) ss.

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this ___ day of September, 2007.

Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009
EXHIBIT
25' WIDE ACCESS EASEMENT

EXISTING 30' WIDE WATERLINE EASEMENT

LEGEND

○ SECTION CORNER
⊙ REBAR WITH CAP

SEC. 34
T-44-N
R-72-W

DATE: JULY 13, 2007
JOB NO.: 07-039

EXHIBIT FOR: 25' WIDE ACCESS EASEMENT
GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
WRIGHT, WYOMING 82732-0690

PREPARED FOR:
WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
WRIGHT, WYOMING 82732

PREPARED BY:
STETSON ENGINEERING, INC.
4901 S. Douglas Highway
P.O. Box 457
Gillette, Wyoming 82717

NO SCALE

SECTION 34, T44N, R72W
VICINITY MAP
LEGAL DESCRIPTION
FOR A
TWENTY FIVE FOOT WIDE ACCESS EASEMENT
SECTION 34, TOWNSHIP 44 NORTH, RANGE 72 WEST

A twenty five foot wide access easement, located in the Southwest ¼ of the Southeast ¼ of Section 34, Township 44 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the Easterly side line being described as follows;

Commencing at the South ¼ corner of said Section 34, thence South 88°34' 45" East, 75.71 feet, along the South line of said Southwest ¼ of the Southeast ¼ of Section 34, to the True Point of Beginning;

Thence North 02°19'56" East, 1,299.48 feet, to the South line of an existing thirty-foot wide waterline easement, as recorded in Book 1687 and Page 131 in the Campbell County Clerk and Recorders Office, Campbell County, Wyoming. From which the Southeast Corner of said Section 34, bears South 62°30'45" East, 2,956.78 feet.

The Westerly line being twenty five (25) feet distant and parallel with said described line, the sidelines of the above described access easement begin on the Southerly line of said Section 34 and terminating on the southerly line of the above referenced waterline easement.

Said easement containing 0.746 acres, more or less.
This Easement Agreement is entered into as of September 5, 2007, by and between The Ted R. Cosner Revocable Trust, Grantor and the Wright Water and Sewer District, Grantee. The parties hereto agree as follows:

1. **Grant Of Easement.** For valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee, its successors and assigns, an easement to the property defined in Section 2 below for purposes of ingress and egress, and the installation, operation and/or repair of electrical power transmission lines and water lines. Grantor hereby agrees that the above lines and any related personal property or equipment installed by Grantee shall remain the property of Grantee, removable at Grantee's option. The easement shall include the right to enter the property for installation, maintenance, operation and removal of the lines, related personal property or equipment during normal working hours, with this right to enter extending to any time, day or night, where Grantee determines that maintenance, repair, operation or removal cannot wait until normal working hours.

2. **Property.** Grantor's property is situated in the County of Campbell, State of Wyoming, with a legal description as set forth in Exhibit A, attached hereto and made a part hereof. The property is generally a parcel containing 0.385 acres more or less, as more particularly described in Exhibit A.

3. **Repair.** Grantee shall repair to the satisfaction of Grantor any structure, fence, paving, landscaping or other part of the property which is altered or damaged during the installation, maintenance, operation, repair or removal of the above lines or associated personal property or equipment.

4. **Term.** This easement agreement shall remain in full force and effect for as long as the easement continues to be used for the purposes for which it is granted. This agreement shall terminate upon Grantee's failure to comply with any of the terms or conditions of this agreement and failure to remedy the same within one hundred twenty (120) days after written notice of such failure being provided by Grantor. This easement may be terminated and abandoned by Grantee upon the giving of sixty (60) days prior written notice to the Grantor and the removing of
Grantee's lines and related equipment from the property. On such termination and removal, Grantee shall record such documents as are necessary to abandon the easement.

5. Noninterference. Grantee, for itself, its heirs, successors and assigns, covenants that the above easement shall not be used in any manner or at any time which might otherwise damage the property or interfere with the operations or activities of the property by the Grantor. Grantor shall not materially interfere with the lines or other equipment installed pursuant to the rights granted herein.

6. Binding. Provisions and covenants contained in this easement shall run with the land and shall bind and inure to the benefit of the respective successors in interest of the parties hereto.

7. Recordation. Grantee may record this Easement Agreement in the real property records of Campbell County, Wyoming.

8. Indemnification. Grantee shall indemnify Grantor against any loss or damage which may be caused by the exercise of the right of ingress and egress or by the wrongful or negligent act or omission of any of its agents or employees in the course of their employment.

The parties have executed this Easement Agreement as of the date first written above.

GRANTOR:

BY: [Signature]

The Ted R. Cosner Revocable Trust

WRIGHT WATER & SEWER DISTRICT

GRANTEE:

BY: [Signature]

The foregoing instrument was acknowledged before me by [Signature] for the Ted R. Cosner Revocable Trust, this 5th day of September, 2007.

Witness my hand and official seal.

[Signature]

Notary Public

My Commission Expires: October 29, 2009
STATE OF WYOMING

County of (Campbell)

The foregoing instrument was acknowledged before me by Roger Porter, Chairman for the Wright Water & Sewer District, this 11th day of September, 2007.

Witness my hand and official seal.

Notary Public

My Commission Expires: October 29, 2009
EXHIBIT

50 FOOT WIDE ACCESS & UTILITY EASEMENT

GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
RIGHT, WYOMING 82732-0690

DATE: JULY 13, 2007
JOB NO.: 07-039
EXHIBIT FOR: 50' WIDE ACCESS & UTILITY EASEMENT
GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
RIGHT, WYOMING 82732-0690

PREPARED FOR: WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
RIGHT, WYOMING 82732

50' FOOT WIDE ACCESS & UTILITY EASEMENT

N & CORNER
SECT. 3
SEC. 3
T-43-N
R-72-W

LEGEND

SECTION CORNER
REBAR WITH CAP
SECTION LINE
QUARTER SECTION LINE
SIXTEENTH SECTION LINE
PROPERTY/RO-W LINE

PREPARED BY:
STETSON ENGINEERING, INC.
4901 S. Douglas Highway
P.O. Box 457
Gillette, Wyoming 82717

VICINITY MAP
NO SCALE

EXHIBIT FOR: 50' WIDE ACCESS & UTILITY EASEMENT
GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
RIGHT, WYOMING 82732-0690

PREPARED FOR: WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
RIGHT, WYOMING 82732

DATE: JULY 13, 2007
JOB NO.: 07-039
EXHIBIT FOR: 50' WIDE ACCESS & UTILITY EASEMENT
GRANTOR: TED R. COSNER REVOCABLE TRUST
P.O. BOX 690
RIGHT, WYOMING 82732-0690

PREPARED FOR: WRIGHT WATER & SEWER DISTRICT
P.O. BOX 549
RIGHT, WYOMING 82732

EXHIBIT
LEGAL DESCRIPTION

FOR A

FIFTY FOOT WIDE ACCESS AND UTILITY EASEMENT
SECTION 3, TOWNSHIP 43 NORTH, RANGE 72 WEST

A fifty (50) foot wide access and utility easement, located in the Southwest ¼ of the Northeast ¼ of Section 3, Township 43 North, Range 72 West, of the Sixth Principal Meridian, Campbell County, Wyoming, with the centerline being more particularly described as follows;

Commencing at the North ¼ corner of said Section 3, thence South 16°47'32" East, 2,142.69 feet, to the North line of a 200 foot by 320 foot Well and Tank site property, and the True Point of Beginning;

Thence North 00°00'00" West, 335.83 feet, to the Southerly line of an existing 25-foot wide utility easement from which the Northeast corner of said Section 3, bears North 52°18'55" East, 2,694.69 feet. The sidelines of said easement will begin on the North line of the Well and Tank site property, and terminate on the South line of said twenty-five (25) foot wide utility easement.

Said access and utility easement containing 0.385 acres more or less.

The basis of bearing for the foregoing description being South 88°34'49" East, for the North line of the Northeast ¼ of said Section 3.
APPENDIX F

GEOTECHNICAL REPORT
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Table I – Summary of Laboratory Test Results
SUMMARY AND CONCLUSIONS

1. The subsurface conditions across the site, as indicated by exploratory borings B-1 and B-2, were quite uniform and consisted of 6 feet to 11 feet of firm to medium hard interlayered and intergraded weathered claystone/sandstone overlying hard to very hard interlayered and intergraded claystone/sandstone for the depth drilled, 31 feet. No free water was encountered in the exploratory borings at the time of drilling.

2. The tanks should be founded with straight-shaft piers drilled into bedrock designed for an allowable end bearing pressure of 40,000 psf, a skin friction of 4,000 psf for the portion of the pier 4 feet below the bottom of the grade beam, and a dead load pressure as high as possible with a minimum dead load pressure of 10,000 psf based on end area only.

3. Other design and construction details are discussed in the body of the report.

PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsurface study for the two planned water storage tanks to be located south of Wright, Wyoming. The subsurface study was conducted for the purpose of developing foundation recommendations. The project site is shown on Fig. 1. The study was conducted in accordance with our proposal P11-105 to Stetson Engineering dated November 7, 2011.

A field exploration program consisting of two exploratory borings was conducted to obtain information on subsurface conditions. Material samples obtained during the field exploration were tested in the laboratory to determine the strength, compressibility or swell characteristics, and classification of the on-site soil and rock. The results of the field exploration and laboratory testing were analyzed to develop recommendations for foundation types, depths, and allowable pressures for the proposed water storage tanks. The results of the field exploration and laboratory testing are presented herein.
This report has been prepared to summarize the data obtained during this study and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to construction of the foundations for the proposed water storage tanks are included in the report.

PROPOSED CONSTRUCTION

The tanks will be steel with a storage capacity of one million gallons and a diameter of approximately 50 feet. It is anticipated that the foundation loadings will light to moderate as is typical with this type of construction.

If the design varies from the project description presented above, the recommendations presented in this report should be re-evaluated.

SITE CONDITIONS

At the time of our investigation on December 2, 2011, the site was fenced and the topsoil stripped. Two stakes had been placed to indicate the center of each tank. The ground surface sloped down from southeast to northwest with a maximum elevation difference of 4 feet across the two tank sites.

FIELD EXPLORATION

The field exploration for the project was conducted on December 2, 2011. Two exploratory borings were drilled at the locations shown on Fig. 1 to explore the subsurface conditions. The locations of the exploratory borings were selected by Hollingsworth personnel based on the field staking of the centers of each tank by Stetson Engineering.
The borings were advanced through the subsurface materials with 4-inch diameter continuous flight augers. The borings were logged by a representative of Hollingsworth Associates, Inc.

Samples of the weathered bedrock and bedrock were taken with a 2-inch diameter spoon sampler. The sampler was driven into the various strata with blows from a 140-pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D-1586. Penetration resistance values, when properly evaluated, indicate the relative density or consistency of the soils. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Fig. 2, with a legend and notes shown on Fig. 3.

Measurements of the water levels were made in the borings by lowering an M-scope into the open holes shortly after completion of drilling. The borings were backfilled with auger cuttings after the water readings were made.

SUBSURFACE CONDITIONS

The subsurface conditions across the site, as indicated by exploratory borings B-1 and B-2, were quite uniform and consisted of 6 feet to 11 feet of firm to medium hard interlayered and intergraded weathered claystone/sandstone overlying hard to very hard interlayered and intergraded claystone/sandstone for the depth drilled, 31 feet. No free water was encountered in the exploratory borings at the time of drilling.

Gradations of the weathered claystone/sandstone are shown on Figs. 4 and 5. The weathered claystone/sandstone possesses a high swell potential with a percent swell ranging from 7.4% to 8.1% and a swell pressure ranging from 12,000 psf to 22,000 psf when wetted under constant load as indicated by the swell consolidation test results shown on Figs. 6 through 8. The
laboratory test results are summarized in Table I.

FOUNDATION RECOMMENDATIONS

Tank foundations are a difficult problem on sites such as this because of the potential for expansion of the foundation bearing materials and the manner in which the tank is constructed. By rigidly attaching the tank bottom and sidewalls, the amount of differential movement between the tank bottom and sidewalls must be controlled.

Shallow ringwall foundations placed on expansive weathered claystone/sandstone similar to that encountered at this site can experience movement causing structural distress if the bedrock is subjected to changes in moisture content. A drilled pier foundation is intended to place the bottoms of the piers in a zone of relatively stable moisture content and make it possible to load the piers sufficiently to resist uplift movements. However, the drilled pier foundation system will not protect the tank bottom from the potential uplift forces. Of course, if the moisture content of the weathered claystone/sandstone does not increase, the ringwall foundation and tank bottom will be stable. Because the tank will tend to increase the moisture content of the claystone/sandstone by retarding evaporation and the potential for water being released from the tank and piping, we believe it is prudent to expect an increase in the moisture content of the weathered claystone/sandstone and to plan accordingly.

Therefore, we recommend straight-shaft piers drilled into the bedrock be used to support the planned water storage tanks. A granular fill beneath the tank bottoms and drain systems are also recommended.

The design and construction criteria presented below should be observed for a straight-shaft pier foundation system. The construction details should be considered when preparing project documents.
(1) Piers should be designed for an allowable end bearing pressure of 40,000 psf and a skin friction of 4,000 psf for the portion of the pier in bedrock.

(2) Piers should also be designed for a dead load pressure as high as possible with a minimum dead load pressure of 10,000 psf based on pier area only. If the required dead load pressure cannot be met, the required minimum bedrock penetration should be increased assuming that one-half of the skin friction given above acts to resist uplift pressures.

(3) Piers should penetrate at least three pier diameters into the bedrock. A minimum penetration of 12 feet into the bedrock and a minimum pier length of 20 feet are recommended.

(4) Piers should be designed to resist lateral loads using a modulus of horizontal subgrade reaction of 100 tcf in the weathered bedrock. The modulus value given is for a one-foot wide pier and must be corrected for pier size.

(5) Piers should be reinforced their full length with at least one No. 5 reinforcing rod for each 16 inches of pier perimeter to resist tension created by the swelling materials.

(6) A 6-inch void should be provided beneath the grade beams to concentrate pier loadings and to prevent the expansive weathered claystone/sandstone from exerting uplift forces on the grade beams.

(7) Pier holes should be properly cleaned prior to the placement of concrete. A minimum pier diameter of 12 inches is recommended to facilitate proper cleaning and observation of the pier hole.

(8) Concrete used in the piers should be a fluid mix with sufficient slump so it will fill the void between reinforcing steel and the pier hole.
(9) The drilled shaft contractor should mobilize equipment of sufficient size and operating condition to achieve the required bedrock penetration.

(10) Care should be taken that the pier shafts are not oversized at the top. Mushroomed pier tops can reduce the effective dead load pressure on the piers.

(11) Concrete should be placed in piers the same day they are drilled. Failure to place concrete the day of drilling will normally result in a requirement for additional bedrock penetration.

(12) A representative of the soil engineer should observe pier drilling operations on a full-time basis.

TANK BOTTOM

The weathered claystone/sandstone should be removed from beneath the tank bottom down to the bottom of the grade beam. The excavation should be sloped to drain from the center of the tank to the outside with a slope of at least ¼-inch per foot. The over-excavated area should be backfilled with a granular, free draining material compacted to at least 70% relative density for support of the tank bottom. The free-draining granular material should contain less than 5% passing the No. 200 sieve, less than 50% passing the No. 4 sieve, and have a maximum size of 1½ inch.

To collect and discharge any water from beneath the tank, perimeter drains should be provided around the interior of the grade beam at least 4 inches in diameter. The perimeter drains should be placed near the bottom of the grade beam and graded to multiple outlets at a minimum slope of at least 1/8-inch per foot.

WATER SOLUBLE SULFATES

The concentration of water soluble sulfates measured in samples obtained from the
exploratory borings ranges from 0.11% to 0.26%. This concentration of water soluble sulfates represents a positive to severe degree of sulfate attack on concrete exposed to these materials. The degree of attack is based on a range of negligible, positive, severe, and very severe as presented in the U.S. Bureau of Reclamation Concrete Manual.

Based on this information, we recommend all concrete exposed to the on-site materials contain a sulfate resistant cement with less than or equal to 5% tri-calcium aluminate (Type II modified or Type V).

SURFACE DRAINAGE

The following drainage precautions should be observed during construction and maintained at all times after the tanks have been completed.

(1) Excessive wetting or drying of the foundation excavations and tank bottom areas should be avoided during construction.

(2) Exterior backfill should be adjusted to near optimum moisture and compacted to at least 95% of the maximum standard Proctor density in pavement areas and to at least 90% of the maximum standard Proctor density in unpaved areas.

(3) The ground surface surrounding the exterior of the tanks should be sloped to drain away from the foundation in all directions. We recommend a minimum slope of 6 inches in the first 10 feet in unpaved areas and a minimum slope of 3 inches in the first 10 feet in paved areas.

LIMITATIONS

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in this area for use by the client for design purposes. The conclusions and
recommendations submitted in this report are based upon the data obtained from the exploratory borings drilled at the locations indicated on the exploratory boring plan, and the proposed type of construction. The nature and extent of subsurface variations across the site may not become evident until excavation is performed. If during construction, fill, soil, rock, or water conditions appear to be different from those described herein, this office should be advised at once so reevaluation of the recommendations may be made. We recommend on-site observation of excavations and pier drilling operations by a representative of the soil engineer.

Sincerely,

HOLLINGSWORTH ASSOCIATES, INC.

Harold Hollingsworth, P.E.
HH: hr

Reviewed by: TRH
Scale: 1" = 100'

Base map provided by Stetson Engineering

Locations of Exploratory Borings

Fig. 1
Logs of Exploratory Borings

Fig. 2
Weathered claystone/sandstone, interlayered and intergraded, firm to medium hard, carbonaceous shale layers, coal stringers, gray, moist.

Claystone/sandstone, intergraded and interlayered, hard to very hard, partially cemented, gray, moist.

Drive sample, 2-inch I.D., California liner sample.

Drive sample blow count. Indicates that 38 blows of a 140-pound hammer falling 30 inches were required to drive the California sampler 12 inches.

1. Exploratory borings were drilled on December 2, 2011, with a 4-inch diameter continuous flight auger.

2. Exploratory borings were located in the field by HA personnel based on the field staking by Stetson Engineering.

3. Logs are drawn to depth.

4. The lines between materials shown in the borings represent the approximate boundaries between material types and the transitions may be gradual.

5. No free water was encountered at the time of drilling.
Gradation Test Results

**HYDROMETER ANALYSIS**

<table>
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<th>GRAVEL</th>
<th>SAND</th>
<th>SILT AND CLAY</th>
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<td>0%</td>
<td>16%</td>
<td>84%</td>
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**LIQUID LIMIT** 47%

**PLASTICITY INDEX** 26%

SAMPLE OF Weathered claystone/sandstone FROM Boring B-1 at 3'-0"

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**HYDROMETER ANALYSIS**

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<th>SILT AND CLAY</th>
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<td>1%</td>
<td>17%</td>
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**LIQUID LIMIT** 61%

**PLASTICITY INDEX** 40%

SAMPLE OF Weathered claystone/sandstone FROM Boring B-2 at 5'-0"
### Gradation Test Results

**Sample:** Weathered claystone/sandstone  
**Source:** Boring B-2 at 10'-0"

**Hydrometer Analysis**

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<th>Sand</th>
<th>Silty Clays</th>
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**Sieve Analysis**

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<tbody>
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</table>

**Liquid Limit:** 49%  
**Plasticity Index:** 31%
Moisture Content = 15.7 %
Dry Unit Weight = 111.8pcf
Sample of: Weathered claystone/sandstone
From: Boring B-1 at 3'-0"

Swell-Consolidation Test Results

Fig. 6
Swell-Consolidation Test Results

Fig. 7
Moisture Content = 15.5%
Dry Unit Weight = 101.5 psf
Sample of: Weathered claystone/sandstone
From: Boring B-2 at 10'-0"
### TABLE I
**SUMMARY OF LABORATORY TEST RESULTS**

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Depth (feet)</th>
<th>Natural Moisture Content (%)</th>
<th>Natural Dry Density (pcf)</th>
<th>Gradation</th>
<th>Atterberg Limits</th>
<th>Water Soluble Sulfate Content (%)</th>
<th>Soil Type</th>
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<tr>
<td></td>
<td>B-1</td>
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