Cheyenne Belvoir Ranch Level II Study:

Phase III – V

EXECUTIVE SUMMARY

Prepared for:

Wyoming Water Development Commission
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Prepared by:

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(307) 432-4063

September 1, 2007
Project 15222.00
ENGINEERS STATEMENT

I hereby affirm that this Final Report for Cheyenne Belvoir Ranch Level II Study: Phase III – V was prepared under my direct supervision for the owners thereof.

Rocky L. Carns, Registered Professional Engineer
Wyoming Professional Engineer No. 9663
For and on behalf of JR Engineering, LLC

Paul G. Ivancic, Registered Professional Geologist
Wyoming Professional Geologist No. PG-171
For and on behalf of JR Engineering, LLC
INTRODUCTION

On May 27, 2004, JR Engineering, LLC (JR) entered into a contract with the Wyoming Water Development Commission (WWDC) to provide professional engineering services for the Cheyenne Belvoir Ranch Level II Study. The purpose of the Level II study is to characterize the present development of the ground water resources on and around the Cheyenne Belvoir Ranch as well as to determine the potential for future development of water resources. The Belvoir Ranch (the Ranch) consists of approximately 18,800 acres located to the west of the City of Cheyenne, Wyoming.

The report summarizes Phases III through V of the Level II Study (with the exception of the Aquifer Impact Study completed under separate cover) under WWDC contract 05SCO2902442. Phases I and II were addressed in the initial Cheyenne Ranch Level II Report entitled, Cheyenne Belvoir Ranch Level II Study, Final Report, December 2005. Below is a brief description of Phases II, IV and V of the contract.

PHASE I: MEETINGS, EXPLORATION PROGRAM

Task 1. Scoping Meeting and Project Meetings
Task 2. Aquifer Impact (Belvoir No. 5) and Area Monitoring
Task 3. Environmental Report
Task 4. Identification of Service Area, Demand Projections
Task 5. Land Use Compatibility, Permitting Requirements
Task 6. Area Water Resource Evaluation
Task 7. Geotechnical Analysis
Task 8. Ground Water Exploration Programs

PHASE II: TEST WELL PROGRAM

Task 1. Well Siting, Permits, Testing Program Development
Task 2. Bidding Specifications, Bidding Process
Task 3. Consultant Services during Well Construction
Task 4. Aquifer Testing
Task 5. Water Quality, Water Treatment, Reclamation
Task 6. Well Construction Subcontracts

PHASE III: SYSTEM DESIGN, COST ESTIMATES, REPORTS

Task 1. Aquifer Impact (Belvoir No. 5 and Belvoir No. 6)
Task 2. System Development Alternatives
Task 3. Selection of Preferred Alternatives
Task 4. Water System Development Master Plan
Task 5. Cost Estimates
Task 6. Economic Analysis and Project Financing
Task 7. Draft, Final and Executive Summary Reports
Task 8. Results Presentation, Public Hearing

Phases III and IV of the Level II Study produced a testing and development program for the Ogallala Aquifer, as well as a GIS based mapping project that addresses surface water, land and water ownership and infrastructure on the Belvoir Ranch.
The Belvoir No. 5 well was constructed in 2005. Pumping tests were conducted on the Belvoir No. 5 well from June 13-21, 2006. Test holes TH-3, TH-4, TH-5, TH-6, and TH-9 were utilized as observation wells during the pumping test.

GIS mapping of the Cheyenne Belvoir Ranch was largely accomplished in Phase III of the Level II study. JR produced a multi-layered mapping project that outlined all of the surface water components of the Ranch, including water tanks, holding ponds, water lines, land ownership, and specific structural aspects of the Ranch, including oil and gas infrastructure.

The primary goal of Phase IV of the Level II Study was to replicate the success of the Belvoir No. 5 and an additional production well of similar scope. The location of the TH-10 (MW-10) and subsequent Belvoir No.6 was determined in Phase III by the integration of the Belvoir No. 5 pumping test results with the results of the environmental report affirming future potential drill-sites. The pumping test results and Aquifer Impact Study addressing the Belvoir No. 5 and No. 6 (Phase V) are included as a separate report, Belvoir Wells No. 5 & 6, Pumping Test and Aquifer Impact Report, September 2007.

Other major tasks included in Phase V of the Belvoir Level II Study were: water system development alternatives (including water treatment measures that are deemed necessary for distribution into a potable water supply), selection of preferred alternatives, water system development master plan including a source water protection assessment, cost estimates, economic analysis including sources of project financing, report preparation and delivery of results. The final task of Phase V was a public presentation of these results at a public meeting, held on August 30, 2007.

**SYSTEM DEVELOPMENT ALTERNATIVES**

The system development alternatives include the preliminary well completion of Belvoir No. 5, No. 6 and the Lone Tree Creek Well No. 2. In addition, the various pipeline scenarios, treatment alternatives and easement costs are presented.

The estimated construction costs to complete each site are listed in the table below. The design pumping rate for the Belvoir No. 5 well is 500 gallons per minute (gpm) with an assumed 200 feet total dynamic head (TDH) resulting in a 40 horse power (HP) electric three-phase motor. The Belvoir No. 6 design pumping rate is 300 gpm with an assumed TDH of 200 feet resulting in a 25 HP electric three-phase motor. Based on the test hole data acquired from the Lone Tree Creek Well No. 2, a production well is estimated to produce 500 gpm at 350 feet of TDH, requiring a 50 HP electric three-phase motor.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belvoir No. 5 Well Completion</td>
<td>$270,255</td>
</tr>
<tr>
<td>Belvoir No. 6 Well Completion</td>
<td>$311,363</td>
</tr>
<tr>
<td>Lone Tree No. 2 Well Drilling</td>
<td>$301,300</td>
</tr>
<tr>
<td>Lone Tree No. 2 Well Completion</td>
<td>$602,400</td>
</tr>
</tbody>
</table>
ACCESS ROADS

Belvoir No. 5
Proposed access for the Belvoir No. 5 well site will be through the east entrance of the Belvoir Ranch via Otto Road/State Highway 225. A new 400-foot road will be required to access the well. This road will originate at the closest point on the existing access road that lies south of the well. The estimated cost is $91,600.

Belvoir No. 6
The proposed Belvoir No. 6 well site access road should extend north for approximately 1,500 feet from the existing access road that joins the east Belvoir Ranch entrance road. The existing access road, which has one railroad crossing, will likely need improvements over the 2.7 miles from the existing junction with the entrance road to the proposed junction with the well site access road. The estimated cost is $141,300.

Proposed Lone Tree Creek Well
The Lone Tree Creek Site access road as proposed will connect with an existing access road that enters Belvoir Ranch from Harriman Road/State Highway 102. The proposed access road will intersect with an existing access road approximately 2,300 feet to the east of the test bore (near the Kennedy No. 2 well). Improvements may be necessary on portions of the 3.2-mile access road route from Harriman Road. The estimated cost is $177,100.

The total estimated cost for the access roads is $410,000.

Power Utility Requirements
Power utility costs for the Belvoir No. 5, Belvoir No. 6 and the future Lone Tree Creek Well No. 2 were based on estimated values and service line distances given by either High West Energy or Black Hills Corporation. All service fees are for three-phase power, carrying at least 460 volts with the capacity to power a 50 HP electric motor. The following is the estimated cost to equip the wells:

<table>
<thead>
<tr>
<th>Well Site</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belvoir Well No. 5</td>
<td>$31,004</td>
</tr>
<tr>
<td>Belvoir Well No. 6</td>
<td>$68,750</td>
</tr>
<tr>
<td>Lone Tree Well No. 2</td>
<td>$43,000</td>
</tr>
<tr>
<td><strong>Total Est. Cost</strong></td>
<td><strong>$142,750</strong></td>
</tr>
</tbody>
</table>

PRELIMINARY PIPELINE DESIGN

Phase V of the Level II Study requires a preliminary design of the pipeline including capacity, routing scenarios and cost estimates. When the Belvoir No. 5 and No. 6 wells are completed and placed in service for production, the raw well water will be transported via pipeline to the existing Sherard water treatment plant. An additional pipeline extending to the northwestern part of the Belvoir Ranch will transport water from new wells in the vicinity of the Lone Tree Creek Well No. 2 to Sherard.
Pipeline Capacity
The proposed pipeline was designed assuming a conveyance capacity of 6,000 gpm of raw water from the Belvoir Ranch wells. It is assumed that one-half of this 6,000 gpm conveyance capacity will be provided by the Belvoir No. 5 and No. 6 wells, and from future wells located on the eastern half of the ranch. It is further assumed that the remaining 3,000 gpm is produced from the deeper Casper formation, found along the western reaches of the Ranch.

The incremental pipeline size of 36 inches will convey the design flow of 6,000 gpm with an additional conveyance capacity of 1,800 gpm. This additional capacity could be available to convey raw water from the Cheyenne BOPU Borie field wells. This includes the Borie No. 1, Finnerty No. 2, Elkar No. 7 and the Weber No. 1 wells. The existing raw water transmission lines from these wells are very old and Cheyenne BOPU proposes to construct connections from these existing wells to the new raw water transmission line.

Piping Scenarios and Costs
Well design production rates, piping scenarios and cost estimates are presented in the report. The scenarios are described below:

Scenario 1 – The minimum piping required to deliver water from the Belvoir No. 5 and 6 wells only. There is no extra capacity for future wells, or for any of the existing Borie field wells.

Scenario 2 – Minimum piping for Belvoir No. 5 and No. 6 wells, with additional capacity for future Belvoir wells, Lone Tree Creek Well No. 2 and existing Borie Field wells.

Scenario 3 – The same as Scenario 2, with the addition of a line out to a future well site near the Lone Tree Creek test hole in the northwestern part of the ranch.

Scenario 4 – A future phase, extending a pipeline from the Lone Tree Creek site to two potential future well sites on the western part of the ranch.

Scenario 5 – A future phase, extending piping from the Belvoir No. 5 to a possible well site near test hole TH-4, and from the main transmission line out to potential sites on the eastern portion of the Ranch. These lines are conceptual. There are no current plans to construct wells where these lines run.

Scenario 6 – This represents full build out. It is a combination of scenarios 3, 4, and 5.

Scenario 7 – This scenario is the same as Scenario 3 without any pipeline from the Belvoir No. 5 and 6 well sites to the main pipeline.

The following table presents a summary of the pipeline scenarios and costs:
<table>
<thead>
<tr>
<th>Scenario Number</th>
<th>Scenario Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Belvoir No. 5 and 6 Wells, minimum single pipe to deliver water. No extra capacity for future wells or existing Borie Field wells.</td>
<td>$2,958,375</td>
</tr>
<tr>
<td>2</td>
<td>Belvoir No. 5 and 6 Wells, single pipe up to Sherard. Design capacity for future 6000 GPM from Belvoir, plus existing Borie Field wells.</td>
<td>$7,014,529</td>
</tr>
<tr>
<td>3</td>
<td>Belvoir No. 5 and 6 Wells and Lone Tree Well No. 2, Single pipe from Belvoir up to Sherard. Design capacity for future 6000 GPM from Belvoir, plus existing Borie Field.</td>
<td>$13,919,025</td>
</tr>
<tr>
<td>4</td>
<td>Future Western Phase. Wells at Duck Creek &amp; Spottlewood Creek.</td>
<td>$2,998,625</td>
</tr>
<tr>
<td>5</td>
<td>Future Eastern Phase. Design capacity for future 3000 GPM from Eastern Belvoir.</td>
<td>$2,109,100</td>
</tr>
<tr>
<td>6</td>
<td>Full Buildout, single line to Sherard. Combination of Scenarios 3, 4, and 5.</td>
<td>$19,026,750</td>
</tr>
<tr>
<td>7</td>
<td>Full buildout of pipeline from Lone Tree Creek to Sherard Water Treatment Plant without Belvoir Pipelines.</td>
<td>$12,762,700</td>
</tr>
</tbody>
</table>
UTILITY CROSSINGS, EASEMENTS AND RIGHTS OF WAY

The pipeline proposed in Phase V of the Cheyenne Belvoir Level II Study will cross parcels belonging to several public and private entities. It will be necessary to coordinate all design and construction activities with the easement owners of these crossings.

TREATMENT

Based on discussions with Cheyenne BOPU, the treatment will be located at the Sherard WTP.

Existing Facilities

Current treatment for groundwater wells from the Borie and Happy Jack well fields consists of either:

- Direct chlorination of the well field supply prior to entering the King I or King II storage reservoirs and/or;
- Blending of well field supply with treated surface water from the surface treatment plant.

Groundwater from the Borie and Happy Jack well fields is also aerated for the removal of Radon prior to entering the King II reservoir. The radon removal aeration structure is additionally used for the removal of Trichloroethylene (TCE) from water procured via the Borie well field.

The Cheyenne BOPU proposes to build a new aeration facility (adjacent to the current facility), which would be capable of removing both radon and TCE. Two types of aeration facilities were considered: a poured-in-place concrete structure similar to the existing aeration facility and a prefabricated unit that would be housed in an enclosure. The cost of the new facilities ranges from $777,000 to $1,172,000.

The proposed addition of a second aeration facility has prompted the Cheyenne BOPU to evaluate what changes to the existing yard pipe may be necessary in order to allow flows from all well fields to be treated in either aeration unit and subsequently stored in either the King I or King II Reservoirs. The estimated cost for these modifications is $3,624,000.

WATER SYSTEM DEVELOPMENT MASTER PLAN

Current Water Sources

Based upon 1994-2005 data, 69% of Cheyenne’s water is supplied from surface water sources. The remaining 31% is derived from ground water. Currently, Cheyenne’s ground water system consists of 40 wells, of which 35 are active and five are currently out of service. The long-term sustainable yield from the well fields was evaluated in both the 1994 and 2003 Master Plans for the Cheyenne Board of Public Utilities. Using historical well field production data and the anticipated response of water levels to well field pumping, the 1994 and 2003 Master Plans estimated the sustainable annual yield of
Cheyenne’s well fields at 4,800 and 4,100 acre-feet respectively. This difference represents a decline of 700 acre-feet per year over the nine-year period (Cheyenne, 2006).

One objective of ongoing Master Plan efforts is to reevaluate the response of the High Plains Aquifer to the various factors that affect aquifer water levels and well yield. Data evaluation efforts are on-going, so final conclusions regarding the sustainable yield during periods of average and below average precipitation are not yet available. Based on well field production from 2002 to 2005, Cheyenne has averaged only 3,648 acre-feet per year. This is a decrease of about 450 acre-feet annually from the 2003 Master Plan estimate of 4,100 (Cheyenne, 2006).

Water Demand
With the completion of the 2003 Water and Wastewater Master Plans, the City of Cheyenne reassessed the quantity of water that will be required to accommodate future growth. The Master Plan also forecasts facilities and water supplies that may be needed to provide adequate and reliable water and wastewater services 20 to 50 years into the future. The 2003 Master Plans also provide a 10-year capital improvement plan for Cheyenne’s water and wastewater systems. According to the Cheyenne Metropolitan Planning Organization (2005), the current capacity of the Board of Public Utilities water system is 40 million gallons per day (mgd) or 122.7 acre feet per day (acfd). While average daily demand as of 2005 is 15 mgd (46 acfd), peak day demand is approximately 37 mgd (113.5 acfd) or roughly 92% of current capacity. Projected total water demand for the Cheyenne Water System is listed in the following table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Service Population Estimates</th>
<th>Per Capita Demand (gpcd)</th>
<th>Projected Total Water Use (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>67,221</td>
<td>245</td>
<td>18,460</td>
</tr>
<tr>
<td>2010</td>
<td>72,070</td>
<td>245</td>
<td>19,792</td>
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<tr>
<td>2020</td>
<td>79,610</td>
<td>245</td>
<td>21,863</td>
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<td>2030</td>
<td>87,939</td>
<td>245</td>
<td>24,150</td>
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<td>2040</td>
<td>97,129</td>
<td>245</td>
<td>26,674</td>
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<tr>
<td>2050</td>
<td>107,302</td>
<td>245</td>
<td>29,468</td>
</tr>
</tbody>
</table>

Belvoir Ranch Water Development Master Planning
The exploration and development of ground water from the Belvoir Ranch represents a significant component of Cheyenne’s future water development plans. The High Plains Aquifer has produced two high capacity wells, Belvoir No. 5 and Belvoir No. 6. Cheyenne has also been exploring the development potential of the Casper Aquifer on the western side of the Belvoir Ranch property. The Casper Aquifer appears to have significant development potential based on its potable quality and 600 to 800 gpm yield of the Lone Tree No. 1 test well. Ground water developed from the Casper Aquifer would be
commingled with ground water developed from the High Plains Aquifer and piped north to the Sherard Treatment Plant through a new pipeline to be installed parallel to the Borie well field line. Belvoir No. 5 and Belvoir No. 6 would be plumbed directly into the main line and completed with pipelines of sufficient diameter to allow for the addition of future pipeline extensions to the west, south, and east as additional wells in the well field are completed. Depending upon results of the White River exploration, additional pipelines could be extended from the main northern line south.

**Water Rights**
Cheyenne holds both surface and ground water rights on the Belvoir Ranch. These water rights have historically been used for stock and irrigation purposes at the ranch. Cheyenne can obtain new ground water rights on the property, or transfer the existing rights to municipal use subject to the limitation that only the portion that has historically been consumed can be transferred. Assuming no ground water regulation is established, Cheyenne would benefit most by obtaining new ground water rights and is currently moving forward in this direction. However, if regulation is established, there would be benefit to the City to transfer the historical consumptive use of the old rights to municipal use to obtain their earlier priority dates. According to Black and Veatch (2003), Cheyenne has surface and ground water rights of approximately 7.29 cubic feet per second that are tied to the irrigation of 510 acres.

While the Casper Aquifer has not been extensively developed to date along the eastern margin of the Laramie Range, obtaining water rights on the Casper Aquifer will depend upon potential interference with surface water rights that are tied to existing springs that emanate from the aquifer. A recent month long test of the Lone Tree No. 1 test well appeared to indicate that pumping from this well had no impact on Granite Springs.

**SOURCE AREA PROTECTION PLAN**

The Source Area Protection plan addresses concerns associated with the protection of surface and alluvial headwaters that contribute to the groundwater recharge of Belvoir Well No. 5, Belvoir Well No. 6, and Lone Tree Creek Well No. 1 (proposed location for municipal production well Lone Tree Creek Well No. 2). For each new municipal well in the State of Wyoming, the Wyoming Department of Environmental Quality (DEQ) requires that a Source Area Assessment and Protection (SWAP) Program be developed and implemented.

**Delineation of Well Head Protection Zones**
There are three different zones associated with the wellhead protection area (WHPA) of each well. These zones consist of the following:

- **Zone 1**, or the “Accident Prevention” area, consists of a radial buffer extending 100 feet from each well. This area is considered most susceptible to environmental impacts that could hinder the quality of the well water.
• **Zone 2** extends upstream/upgradient of Zone 1 and is called the “Attenuation Zone.” Zone 2 for groundwater systems consists of source water that is within a 2-year time of travel (TOT) from the well.

• **Zone 3** extends upstream/upgradient of Zone 2 and, as it relates to groundwater systems, consists of the source water furthest away from the well. This zone has up to a 5-year TOT.

**ECONOMIC ANALYSIS**

Task 7 of Phase V required JR to prepare an economic analysis, the purpose of which is to assist the Cheyenne BOPU in determining its ability to finance the preferred alternative. This effort incorporated a summary of the Cheyenne BOPU’s preferred funding alternatives, which include grants, loans and all WWDC eligible and non-eligible costs. In addition, this effort includes a summary of future maintenance costs and debt service requirements. JR has provided a preliminary design and cost summary of six alternatives.

**Alternative 1** consists only of the cost to construct and case the TH1, 2, 3, 4, 5, 6, 9, and 10 holes, and the Belvoir No. 5 and No. 6 wells. This expense was incurred directly by the WWDC and must be paid back by the Cheyenne BOPU.

**Alternative 2** comprises completion of pumping plant facilities for the Belvoir No. 5 and No. 6 wells, the pipeline system from both of these wells to the Sherard WTP, yard piping at Sherard and the Sherard WTP TCE/Radon treatment facility.

**Alternative 3** consists of drilling and casing the proposed Lone Tree Creek Well No. 2, the completion of the pumping plant facilities for the Lone Tree Creek Well No. 2, the completion of pumping plant facilities for the Belvoir No. 5 and No. 6 wells, the pipeline from the Lone Tree Creek Well No. 2 to Sherard and the pipelines necessary for the integration of the Belvoir No. 5 and No. 6 wells to the main pipeline to Sherard.

**Alternative 4** consists of drilling and casing the proposed Lone Tree Creek Well No. 2, the completion of the pumping plant facilities for the Lone Tree Creek Well No. 2, and the pipeline from the Lone Tree Creek Well No. 2 to Sherard. This alternative does not include the completion of Belvoir Wells No. 5 and No. 6 nor the pipelines necessary to integrate the Belvoir No. 5 and No. 6 wells to the main pipeline to Sherard. This alternative does, however, include the Sherard WTP TCE/Radon treatment facility.

**Alternative 5** consists of drilling and casing the proposed Lone Tree Creek Well No. 2, the completion of the pumping plant facilities for the Lone Tree Creek Well No. 2, and the pipeline from the Lone Tree Creek Well No. 2 to Sherard. This alternative does include the completion of the Belvoir Well No. 5 and No. 6 and the necessary pipelines to integrate the Belvoir No. 5 and No. 6 wells to the main pipeline to Sherard. This alternative also includes the Sherard WTP TCE/Radon treatment facility.
Alternative 6 integrates the costs of all construction expenses at full build out and includes the drilling and casing of the proposed Lone Tree Creek Well No. 2, the completion of the pumping plant facilities for the Lone Tree No. 2 well, the completion of pumping plant facilities for the Belvoir No. 5 and No. 6 wells, the pipeline from the Lone Tree Creek Well No. 2 to Sherard and the necessary pipelines to integrate the Belvoir No. 5 and No. 6 wells, as well as any future eastern and western wells to the main pipeline to Sherard. This alternative includes the Sherard WTP TCE/Radon treatment facility.
### Cheyenne Belvoir Ranch Level II Report
Cost Summary for Alternatives 1 through 6

<table>
<thead>
<tr>
<th>WWDC Eligible Costs</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Alternative 4</th>
<th>Alternative 5</th>
<th>Alternative 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Construction Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well Construction: TH 1, 2, 3, 4 5, 6, 9, 10 &amp; Belvoir No.5 &amp; No. 6</td>
<td>$218,000</td>
<td>$218,000</td>
<td>$218,000</td>
<td>$218,000</td>
<td>$218,000</td>
<td>$218,000</td>
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<tr>
<td>Engineering &amp; Legal Design Costs</td>
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<td></td>
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<tr>
<td>Preparation of Final Design and Specifications</td>
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<td>$2,030,938</td>
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<td>Permitting and Mitigation</td>
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<td>$3,100</td>
<td>$3,100</td>
<td>$3,100</td>
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<td>Legal Fees</td>
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<tr>
<td>Acquisition of Access and Rights of Way</td>
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<td>$110,800</td>
<td>$110,800</td>
<td>$110,800</td>
<td>$110,800</td>
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<table>
<thead>
<tr>
<th>Cost of Components</th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline Costs</td>
<td>$6,099,500</td>
<td>$12,103,500</td>
<td>$11,098,000</td>
<td>$12,103,500</td>
<td>$16,545,000</td>
<td></td>
</tr>
<tr>
<td>Pipeline Boring at Crossings from Belvoir No. 5 &amp; 6 to Sherard</td>
<td>$1,408,000</td>
<td>$1,408,000</td>
<td>$1,408,000</td>
<td>$1,408,000</td>
<td>$1,408,000</td>
<td></td>
</tr>
<tr>
<td>Belvoir 5 Well Completion</td>
<td>$235,004</td>
<td>$234,000</td>
<td>$234,000</td>
<td>$234,000</td>
<td>$234,000</td>
<td></td>
</tr>
<tr>
<td>Belvoir 6 Well Completion</td>
<td>$270,750</td>
<td>$270,750</td>
<td>$270,750</td>
<td>$270,750</td>
<td>$270,750</td>
<td></td>
</tr>
<tr>
<td>Lone Tree Well No. 2 Drilling and Casing</td>
<td>$502,000</td>
<td>$502,000</td>
<td>$502,000</td>
<td>$502,000</td>
<td>$502,000</td>
<td></td>
</tr>
<tr>
<td>Lone Tree Well No. 2 Completion</td>
<td>$262,000</td>
<td>$262,000</td>
<td>$262,000</td>
<td>$262,000</td>
<td>$262,000</td>
<td></td>
</tr>
<tr>
<td>Alternative Construction Cost Sub-Total #1</td>
<td>$0</td>
<td>$8,013,344</td>
<td>$14,780,250</td>
<td>$13,270,000</td>
<td>$14,275,500</td>
<td>$19,221,750</td>
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<tr>
<td>Engineering Costs = CCS#1 x 10%</td>
<td>$0</td>
<td>$801,334</td>
<td>$1,478,025</td>
<td>$1,327,000</td>
<td>$1,427,550</td>
<td>$1,922,175</td>
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<td>Sub-Total #2</td>
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<td>$8,814,678</td>
<td>$16,258,275</td>
<td>$14,597,000</td>
<td>$15,703,050</td>
<td>$21,143,925</td>
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<td>Contingency = Sub-Total #2 x 30%</td>
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<td>$4,877,483</td>
<td>$4,379,100</td>
<td>$4,710,915</td>
<td>$6,343,178</td>
</tr>
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<td>Construction Cost Total</td>
<td>$0</td>
<td>$11,495,082</td>
<td>$21,135,758</td>
<td>$18,976,100</td>
<td>$20,413,965</td>
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<td>Project Cost Total</td>
<td>$218,000</td>
<td>$12,756,834</td>
<td>$23,498,596</td>
<td>$21,112,400</td>
<td>$22,701,090</td>
<td>$30,516,166</td>
</tr>
<tr>
<td>67% Grant</td>
<td>$146,060</td>
<td>$8,547,079</td>
<td>$15,744,059</td>
<td>$14,145,308</td>
<td>$15,209,730</td>
<td>$20,445,831</td>
</tr>
<tr>
<td>33% Loan</td>
<td>$71,940</td>
<td>$4,209,755</td>
<td>$7,754,537</td>
<td>$6,967,092</td>
<td>$7,491,360</td>
<td>$10,070,335</td>
</tr>
</tbody>
</table>

1 Cost of well construction and casing for existing test holes and production wells - to be paid by Cheyenne BOPU.
2 15% of total construction costs from Tables 1, 7,9 & 10
3 All legal fees are assumed to be negligible give the Cheyenne BOPU owns the Belvoir Ranch and has an existing easement and good relationship with the owners of the King Ranch.