



TETRA TECH

Socioeconomic Impact Analysis Update

**Two Elk Project
Campbell County, Wyoming**

Two Elk Generation Partners, Limited Partnership

February 2008, Partial Update 2012

complex world

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**Two Elk Project
Socioeconomic Impact Analysis Update**

Prepared for:

**Department of Environmental Quality, Industrial Siting
Division**

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APPENDICES

- Appendix A. Legal Property Description for the Two Elk Project Site
- Appendix B. Quarterly and Annual Reports Submitted to ISC
- Appendix C. Water Supply Report for the Two Elk Project
- Appendix D. 2012 Environmental Summary

1.0 INTRODUCTION

1.1 Project Overview

This socioeconomic analysis update is provided to the Wyoming Department of Environmental Quality, Industrial Siting Division in accordance with a request dated July 18, 2003 for the Two Elk Generation Partners, Limited Partnership (TEGP) Project, Industrial Siting Council (ISC) Permit 97-02.

The managing partner of TEGP is Two Elk Power Company, a subsidiary of North American Power Group, Ltd. (NAPG). NAPG is a privately held company headquartered in Greenwood Village, Colorado. NAPG is a full member of the Western Electricity Coordinating Council (WECC). WECC is a regional power reliability group of 163 members, serving 14 western states, western Canada, and a portion of northern Mexico.

The name and address of the managing partner of TEGP is provided below:

Two Elk Power Company
2402 Pioneer Avenue
Cheyenne, Wyoming 82001

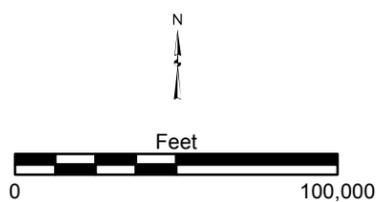
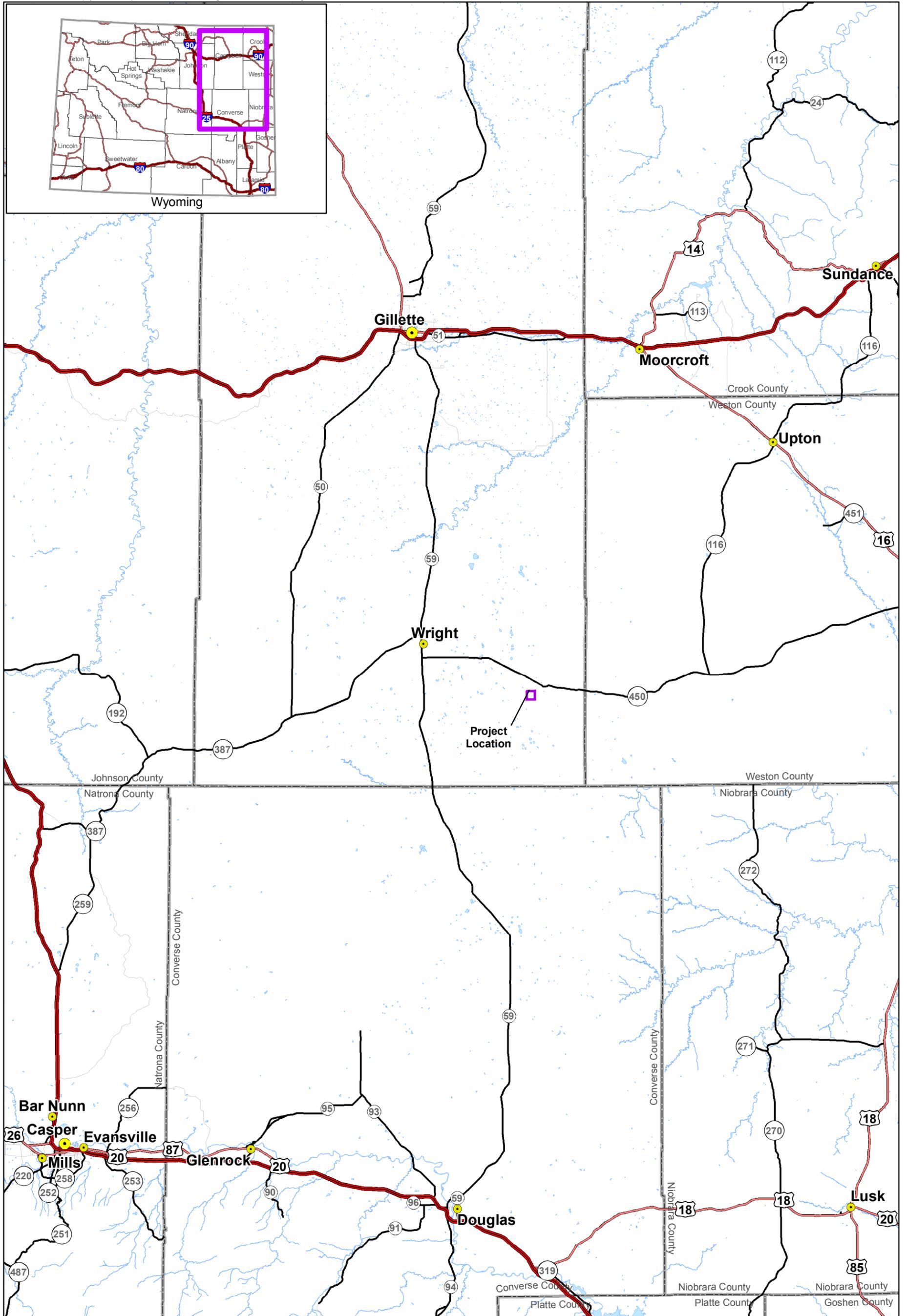
Mr. Brad Enzi, Vice President, is the designated contact for the Two Elk Project in the state of Wyoming. He can be reached at (307) 638-7200 and benzi@napg-ltd.com.

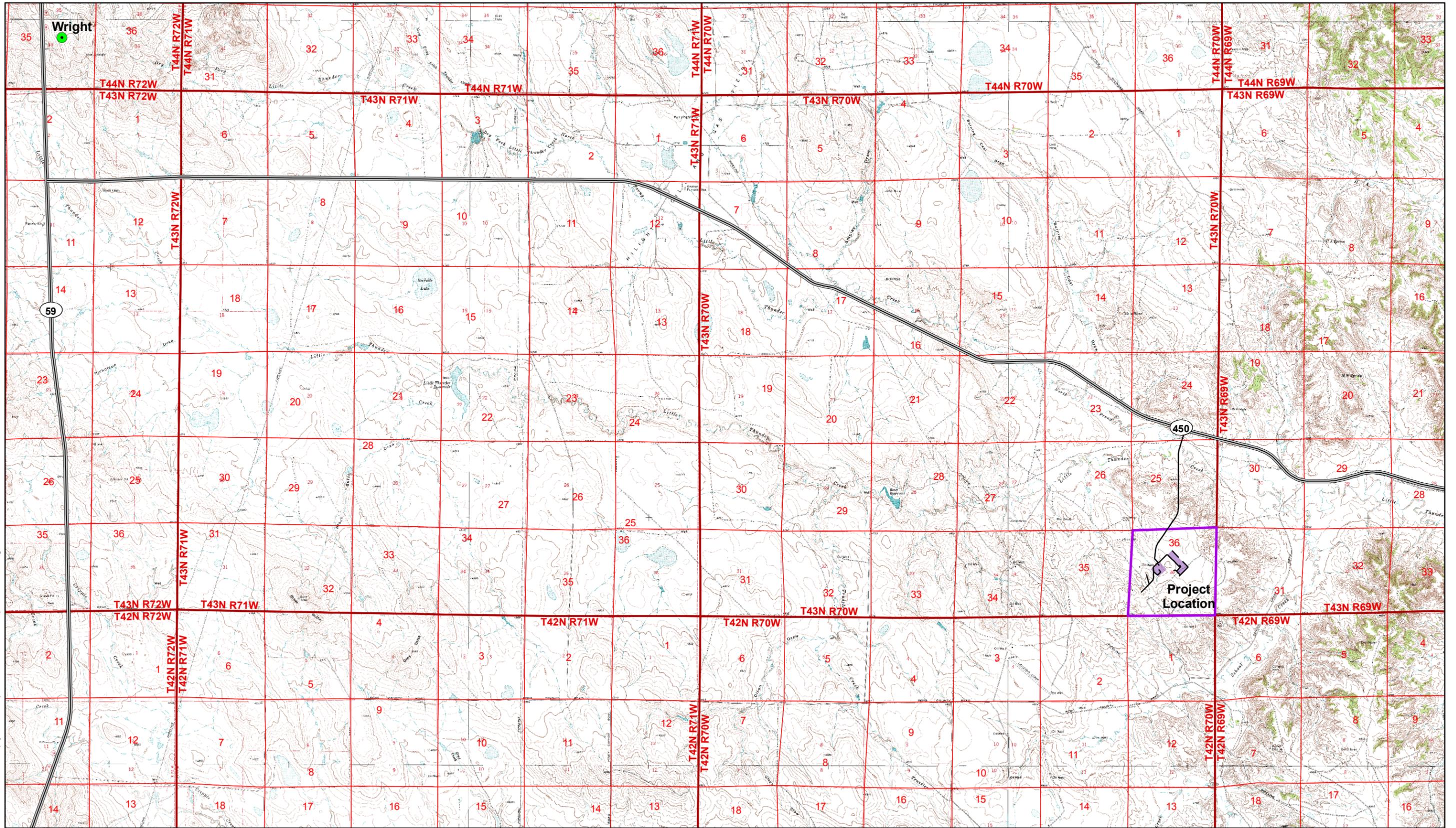
The legal description for the Two Elk site is included in **Appendix A**. The site is located within Section 36, Township 43 North, Range 70 West, West of the 6th Principal Meridian, Campbell County, State of Wyoming, Postal Zip Code 82718 (**Figures 1-1 and 1-2**). The parcel number is 33397, and the owner of the parcel is listed as North American Land & Livestock, LLC. North American Land & Livestock is owned by NAPG (Campbell County 2007).

TEGP is currently constructing an industrial facility (the "Project") in Campbell County, Wyoming. The Project, when complete, will be a solid waste disposal facility for recycling and reusing waste coal and cellulosic biomass with electrical generation equipment and related facilities. The Project is designed to recycle, reuse, and provide alternative disposal of non-commercial or "waste" coal, currently being put into open mine pits for later reclamation. This process uses a biomass product as fuel, similar to woodchips or other waste wood products, and acts as a carbon sink. It increases the efficiency of the coal mining process. The Project will alternatively dispose of approximately 1,800,000 tons per year of waste coal.

The Project site consists of approximately 40 acres, located approximately 14 miles southeast of the town of Wright, Wyoming, adjacent to three operating coal mines that produced and shipped more than 200 million tons of low-sulfur sub-bituminous coal in 2006. The Project site was selected based on the proximity to the Black Thunder Mine, North Antelope/Rochelle and Jacobs Ranch (and now planned School Creek) mines and the desire to use the waste coal generated by this mining activity. The Two Elk Project also is in the vicinity of other major coal mines in the southern Powder River Basin, including Antelope and Coal Creek. All of these mines are potential sources of waste coal that could serve as a fuel source for the Two Elk Project. In addition, there are a substantial amount of undeveloped coal reserves near the Project which could provide additional fuel for the Project.

Mining of waste coal occurs when drag lines extract coal that contains higher ash or overburden content than production coal. On average, this waste material contains higher ash content and



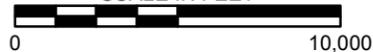


Legend

- Access Road
- == Highway
- ▭ Project Area/Section
- ▭ Facility Area Units



SCALE IN FEET



lower British thermal unit (BTU) value than production coal. The lower BTU value will not support the rail transportation costs to mid-western and eastern markets. Therefore, it is currently returned to the pit as a waste product. As such, the mines receive no economic value from the waste and state and local jurisdictions receive no severance tax, ad valorem tax or royalty revenues from this source.

Waste coal will be transported from the Black Thunder and other mines to the Two Elk site directly by mine haul truck over unpaved roads. Fuel unloading will consist of enclosed truck dump stations, grizzly hoppers and feeders. Waste coal will then be conveyed into a blending building and then delivered to the boiler block silos for storage and use.

Fuel will be gravity fed from the boiler block silos to an air-cooled pulverized-coal boiler. The boiler will produce steam to drive a steam turbine. The steam turbine is expected to produce approximately 325 megawatts (MW) of electric energy. The Project will incorporate emission controls to limit air emissions. Ash will be returned to the mines in enclosed four wheel off-road trucks or permanently stored in an adjacent permitted disposal facility. The overall Project development includes a paved access road, a paved parking lot, fencing and possibly a combustion turbine.

The Project is expected to nominally produce 325 MW of electrical energy while alternatively disposing of approximately 1.8 millions tons per year of waste.

Construction of the Project began in 2005 and current projections call for the Project to be completed by late 2016, coincident with electric transmission and interconnection upgrades being undertaken by PacifiCorp, with commercial operation to follow shortly thereafter. TEGP entered into an electrical interconnection agreement with PacifiCorp dated September 28, 2007. Under the agreement, which has been amended to coincide with the Two Elk construction schedule, PacifiCorp is expected to make upgrades to its electrical grid system to be completed by the first quarter of 2014 to interconnect the Project as a network electrical resource on the PacifiCorp transmission grid system.

It is estimated that employment will range from a high of approximately 579 workers during construction to approximately 45 workers during operation. The currently estimated cost to complete the Two Elk Project is \$750 million.

TEGP is developing a strategy to reduce greenhouse gas emissions from current and future activities and identify potential areas where early action can be taken to reduce emissions. Reduction in greenhouse gas emissions and the social and economic benefits from such reduction and from early action are not identified or quantified in this update.

This analysis will provide updated information evaluating the benefits and impacts to social and economic resources in the Study Area, including benefits related to:

- Tax revenues
- Direct employment opportunities
- Indirect job creation (jobs created as a result of the primary construction employment)

The analysis assesses social and economic impacts on the following elements:

- Population
- Housing
- Schools
- Healthcare
- Public safety
- Municipal services
- Transportation

TEGP has been conducting ongoing stakeholder meetings for the Project (**Table 1-1**). The meetings have included various elected officials in the Town of Wright, City of Gillette, and Campbell County. Project status updates, housing opportunities, and project questions have been addressed on an ongoing basis.

Table 1-1 Public Meetings held for the Two Elk Project

Date	Organization	Individuals	General Discussion
7-18-2006	Campbell County Commissioners	All Commission Members Present	Status of project and bonding
11-7-2006	Campbell County Commissioners	All Commission Members Present	Remarketing of TE bonds and TEFLA hearing
12-12-2006	Campbell County Commissioners	All Commission Members Present	Project update and housing questions
12-19-2007	Campbell County Commissioners	All Commission Members Present	Project update regarding PacifiCorp Transmission Interconnect
5-25-2007	Wyoming Industrial Siting Council	Public Meeting	Project update, road construction bid, ISC Socioeconomic Update
11-2-2007	Campbell County Commissioners	All Commission Members Present	Status of project, bond hearing
Ongoing	Town of Wright	Mayor and Elected Officials	Status updates, housing strategies
Ongoing	City of Gillette	Elected Officials	Status updates, housing strategies
Ongoing	Campbell County Commissioners	Members of Commission and Staff	Status updates, housing strategies

In addition to the public meetings discussed in **Table 1-1**, TEGP has conducted meetings with the following stakeholders:

- Town of Wright
- Town of Moorcraft
- Town of Newcastle
- City of Douglas

1.2 Purpose of the Socioeconomic Analysis Update

The purpose of this Socioeconomic Analysis Update is to provide updated information to the ISC regarding socioeconomic impacts and associated mitigation measures to communities affected by siting of the Two Elk Project. TEGP has been filing quarterly and annual reports with the ISC since 2005 (**Appendix B**).

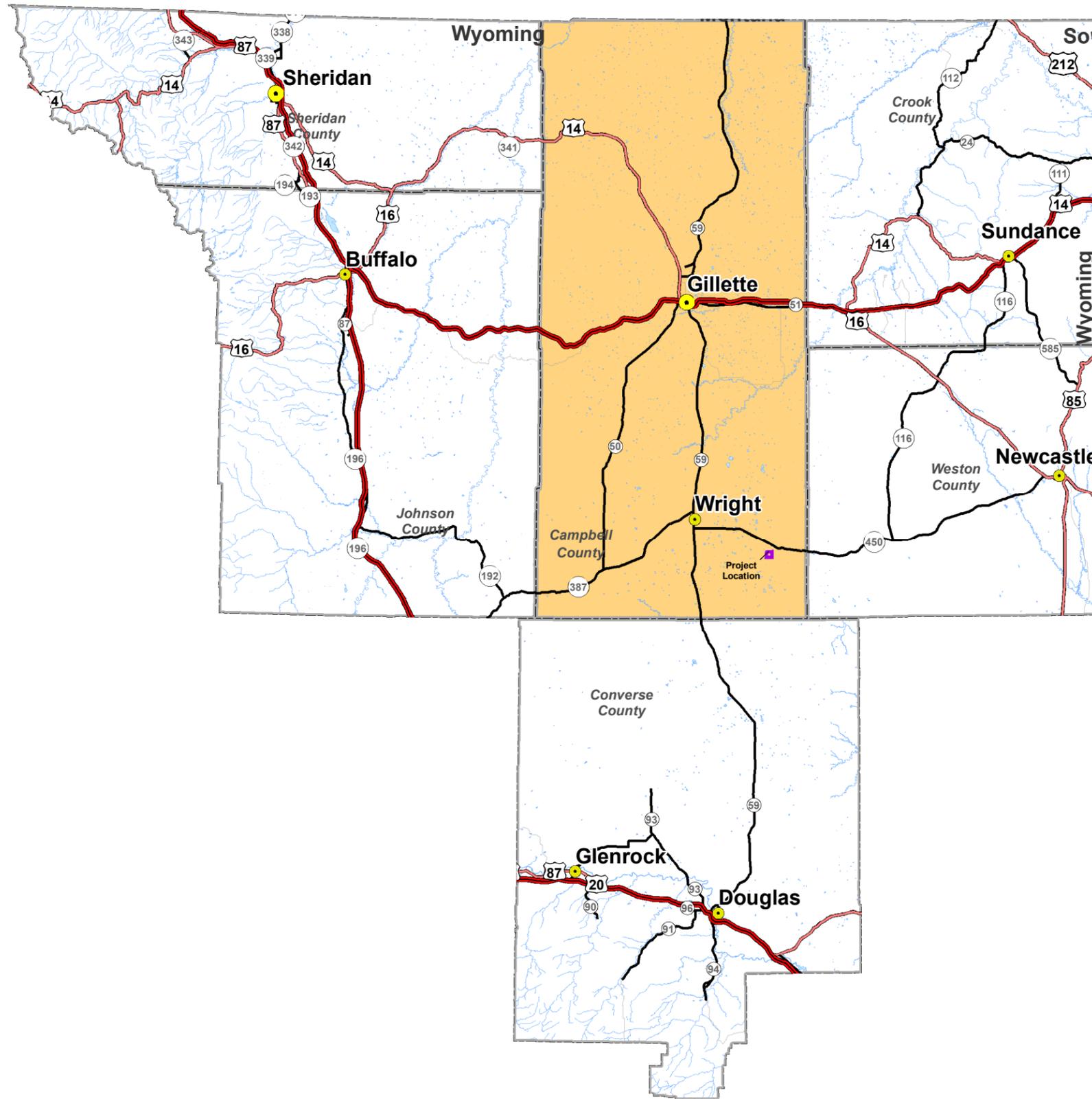
The analysis includes an assessment of the baseline conditions (without the Project) in a larger area of influence called the recommended study area or “Study Area”. The baseline includes a projection of the future conditions that are anticipated to occur without the Project. This study also includes an analysis of Project impacts in a narrower geographic region called the “Recommended Area of Impact.” The Study Area and Recommended Area of Impact are defined in Section 1.4 and shown in **Figure 1-3**.

This analysis compares the baseline and projected conditions *without* the Project to the expected conditions *with* the Project to determine the potential impacts of the Project.

1.3 Other Permits Required

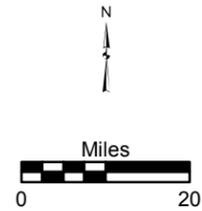
Construction of the Two Elk Project requires a number of permits from other State agencies. Environmental impacts from air emissions and waste water are regulated by other divisions of the Wyoming Department of Environmental Quality (WDEQ). The Project is designed to comply with all local ordinances. TEGP and others have received the following permits or waivers for the Project:

- Industrial Siting Council Permit: ISC 97-02
- Wyoming Department of Environmental Quality (Air Quality Division) Air Permit and Authority to Construct : CT 1352B
- The Black Thunder Mine amended its Land Quality Division Permit to Mine to allow disposal of ash from the Two Elk Project, effective August, 1998: Permit 233-T5,TFN 3 1/150 change number 32
- Wyoming State Engineer permits for groundwater for industrial use: Numbers U.W. 111938-111947-Grass 1-10
- Army Corps of Engineers Nationwide Permit 14: No. 200040051
- Federal Aviation Administration: Determination of No Hazard to Air Navigation, Aeronautical Study 00-ANM-2252-OE
- WDEQ (Water Quality Division) Discharge Permit: WYR 101299
- Wyoming Department of Environmental Quality (Solid and Hazardous Waste Division) Construction Permit: SHWD 20.640
- Wyoming State Historic Preservation Office (SHPO): SHPO concurred with a finding of no historic properties affected for construction of the proposed access road: #0305MDB041
- Federal Energy Regulatory Commission (FERC) Exempt Wholesale Generator: Dkt. No. EG01-3-000
- Environmental Protection Agency (EPA) SIP, WYDEQ Acid Rain Title IV: ORIS 55360



Legend

-  Project Location
-  Recommended Area of Impact
-  Study Area



DEC 28, 2007
FIGURE 1-3

TWO ELK PROJECT STUDY AREA AND RECOMMENDED AREA OF IMPACT
TWO ELK 010318

1.4 Methodology

The methodology for the socioeconomic impact analysis was as follows:

- Define the Study Area and Recommended Area of Impact
- Establish baseline conditions within the Study Area and projected conditions without the Two Elk Project
- Determine the number and characteristics of workers and family members who will relocate temporarily or permanently into the Study Area
- Characterize beneficial effects of the Project such as direct employment, indirect employment, and tax revenues
- Evaluate resources within the Study Area and determine inadequate or excess capacity
- Analyze future resource capacity burdens and impacts with and without the Project
- Analyze trade-offs between benefits and negative impacts
- Propose mitigation measures to minimize negative impacts.

For example, analyzing possible impacts to schools involves establishing the existing (baseline) and future (projected without the Project) capacities of affected school systems by determining current and historic enrollment, calculating student-teacher ratios, and comparing these ratios to acceptable or mandated student-teacher ratios. The capacities are then compared to the anticipated numbers of new students from Two Elk worker families to determine if school capacities are adequate. Any planned school expansions are taken into consideration to determine if resources will satisfy the anticipated demand created by the Project, and benefits such as additional tax revenues are evaluated. If the resources are likely to meet the new demands introduced by the Project, then no mitigation measures are proposed.

An overview of the socioeconomic analysis process is shown graphically in **Figure 1-4**. The Study Area for this report is defined as the six counties surrounding the Project Site, as shown in **Figure 1-3**:

- Campbell
- Johnson
- Crook
- Sheridan
- Converse
- Weston

These counties were selected based on their potential to be impacted by the Two Elk Project. The Project is located in Campbell County and although most of the county's current workforce (88 percent) resides in Campbell County, there is the possibility that workers will commute to the Two Elk site from these neighboring counties. All counties in the Study Area were included in census information regarding the most likely counties from which workers commute to work in Campbell County (USCB 2000). **Table 1-2** displays the origin, number, and percentage of the total number of workers who commute into Campbell County.

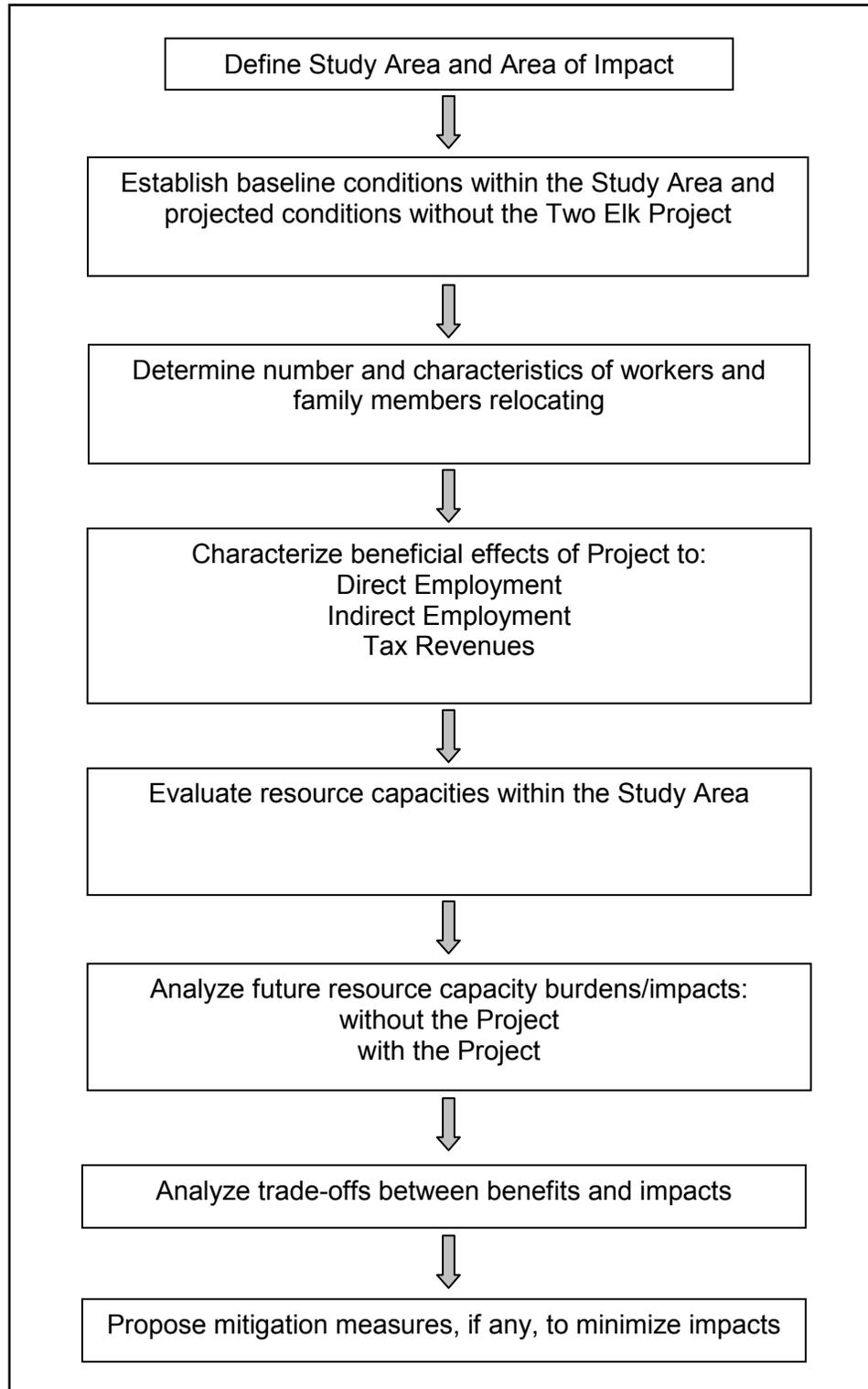


Figure 1-4. The Socioeconomic Analysis Process

Table 1-2. Current Commuting Into Campbell County for Employment, 2005

Campbell		Converse		Crook		Johnson		Sheridan		Weston		Unknown		Other Counties	
#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
19,901	69.5	575	2	825	2.8	216	0.75	546	1.8	737	2.5	3859	13.4	1950	8.2

Source: Wyoming Department of Employment, Research, and Planning (WDERP) 2007

The Recommended Area of Impact for this report is defined as Campbell County. It has been assumed for that most temporary and permanent workers and their families will reside within Campbell County. The primary impacts would occur in this county; a lesser degree of impact would occur to other counties within the Study Area. Because the primary work force is expected to reside in cities within Campbell County, cities in the surrounding counties were not included in the Recommended Area of Impact.

1.5 Contents of this Analysis

Section 2 describes the baseline conditions in the six-county Study Area by resource, while Section 3 presents the impact analysis, focused on the Recommended Area of Impact (Campbell County). Section 4 provides a comparative analysis, which discusses benefits as compared to impacts, and Section 5 contains any possible mitigation measures. References are provided in Section 6.

2.0 STUDY AREA

As described in Section 1.4 and shown on **Figure 1-3**, the Study Area includes the county that contains the Project site, Campbell County, and the surrounding counties: Converse, Crook, Johnson, Sheridan, and Weston Counties.

2.1 Population

Population trends and characteristics in the Study Area are important for several reasons. The location of population centers and the age distribution of the population are important factors in determining the availability of the local labor force. The distribution of the current population is also used to estimate where in-migrating workers and their families will reside, which, in turn, determines where impacts will occur. Finally, examining the amount of fluctuation over time provides insights into how well a community can accommodate large population changes.

2.1.1 Past Population Trends

Table 2-1 displays population by county from 1920 to 2000, along with the percent change from the previous decade for 1930 to 2000. As seen in the table, the amount of population change over the decades has fluctuated greatly and has differed among the counties in the Study Area. **Figure 2-1** illustrates these trends.

Table 2-1. Population Trends in Wyoming and the Study Area

Area	1920	1930	1940	1950	1960	1970	1980	1990	2000
WYOMING	194,402	225,565	250,742	290,529	330,066	332,416	469,557	453,588	493,782
% change		16%	11%	16%	14%	1%	41%	-3%	9%
Campbell	5,233	6,720	6,048	4,839	5,861	12,957	24,367	29,370	33,698
% change		28%	-10%	-20%	21%	121%	88%	21%	15%
Converse	7,871	7,145	6,631	5,933	6,366	5,938	14,069	11,128	12,052
% change		-9%	-7%	-11%	7%	-7%	137%	-21%	8%
Crook	5,524	5,333	5,463	4,738	4,691	4,535	5,308	5,294	5,887
% change		-3%	2%	-13%	-1%	-3%	17%	0	11%
Johnson	4,617	4,816	4,980	4,707	5,475	5,587	6,700	6,145	7,075
% change		4%	3%	-5%	16%	2%	20%	-8%	15%
Sheridan	18,182	16,875	19,255	20,185	18,989	17,852	25,048	23,562	26,560
% change		-7%	14%	5%	-6%	-6%	40%	-6%	13%
Weston	4,631	4,673	4,958	6,733	7,929	6,307	7,106	6,518	6,644
% change		1%	6%	36%	18%	-20%	13%	-8%	2%
Study Area	46,058	45,562	47,335	47,135	49,311	53,176	82,598	82,017	91,916
% change		-1%	4%	-0.4%	5%	8%	55%	-0.7%	12%

Source: Wyoming Department of Administration and Information (WDAI) 2007

The decades of the 1970s and the 1990s are the only ones in which all counties in the Study Area experienced population increases. The growth in population from 1970 to 1980 is generally attributed to the energy boom occurring during that decade. Growth in the years from 1990 to 2000 has been more modest, ranging from 2 percent in Weston County to 13 percent in

Sheridan County and 15 percent in Campbell and Johnson Counties. Population in the Study Area as a whole doubled between 1920 and 2000, from 46,058 to 91,916.

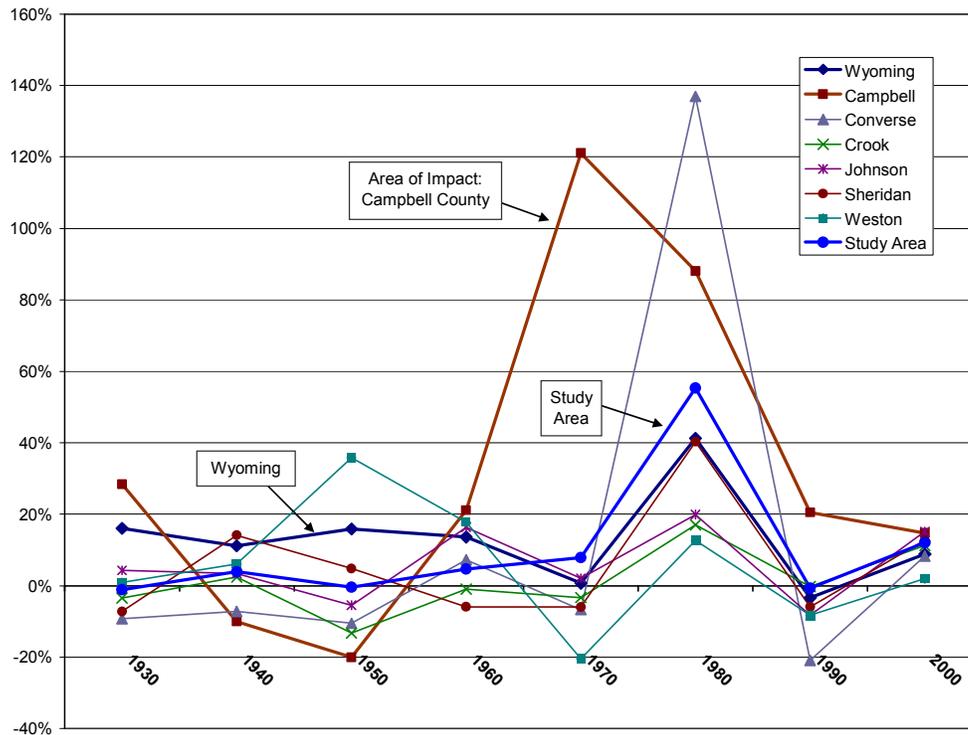


Figure 2-1. Percent Population Change from Previous Decade in Wyoming and the Study Area

Dramatic growth in Campbell County occurred in the 1960s and 1970s, when its population grew by 121 percent from 1960 to 1970, and by 88 percent from 1970 to 1980. Campbell County has experienced the greatest population growth by far within the Study Area, with its population increasing more than six-fold—from 5,233 in 1920 to 33,698 in 2000.

Converse County's population grew by 53 percent between 1920 and 2000, with the sharpest growth occurring from 1970 to 1980, when the number of residents in the county rose by 137 percent. However, in most other decades between 1920 and 1990 its population declined, and its 2000 population showed an 8 percent growth from 1990.

Sheridan County's population increased by 46 percent between 1920 and 2000, and it had the largest population in the six-county area until 1990, when Campbell County took the lead. Sheridan County saw very modest growth (or slight declines) in population from 1920 to 1970. Like the rest of the Study Area, Sheridan County experienced a significant increase in population between 1970 and 1980, growing by 40 percent. The following decade showed a decline, but the 1990s saw an increase of 13 percent.

Johnson County's population increased by 53 percent between 1920 and 2000, from 4,617 to 7,075. The county saw modest increases and decreases in population until 1950, when a decade of growth was followed by a decade of stability. The population in Johnson County rose 16 percent from 1950 to 1960, 20 percent from 1970 to 1980, and 15 percent from 1990 to

2000. The population in the county during the interim years ranged from 2 percent increases in 1960 and 1970, and an 8 percent loss from 1980 to 1990.

Crook County's population grew by only 7 percent between 1920 and 2000. It has been flat or posted modest decreases in the decades from 1920 to 1940, 1950 to 1970, and from 1980 to 1990. Crook County registered a significant population decrease during the 1940s, but saw increases of 17 percent from 1970 to 1980 and 11 percent from 1990 to 2000.

Weston County has also seen uneven growth over the past 80 years, with the largest population increases coming in the decades from 1940 to 1950 (36 percent), 1950 to 1960 (18 percent), and 1970 to 1980 (13 percent). Although its population grew by 46 percent between 1920 and 2000, from 1960 to 2000 population declined by 16 percent.

Overall, the Study Area has seen modest growth or declines in population from 1920 to 1950 and from 1980 to 1990, while experiencing the most dramatic growth from 1970 to 1980 and stable growth between 1990 and 2000.

2.1.2 Present Demographic Characteristics

This section examines the population, location, density, age, and migration patterns of the population in the Study Area. Census data is used to provide the latest reliable, consistent data for these characteristics.

2.1.2.1 Population, Density, and Location in 2000

With an average population density of 5.1 persons per square mile, Wyoming is the second-least densely populated state (after Alaska), compared to the United States population density of 79.6. The Study Area is even less densely populated than the state, with a density of 4.4. **Table 2-2** shows the population, land area, and urban-rural distribution for Wyoming, the Study Area, and the towns of Gillette, Wright, Douglas, and Sheridan.

Table 2-2. Land Area, Population Density, Urban and Rural Population: 2000

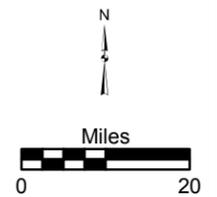
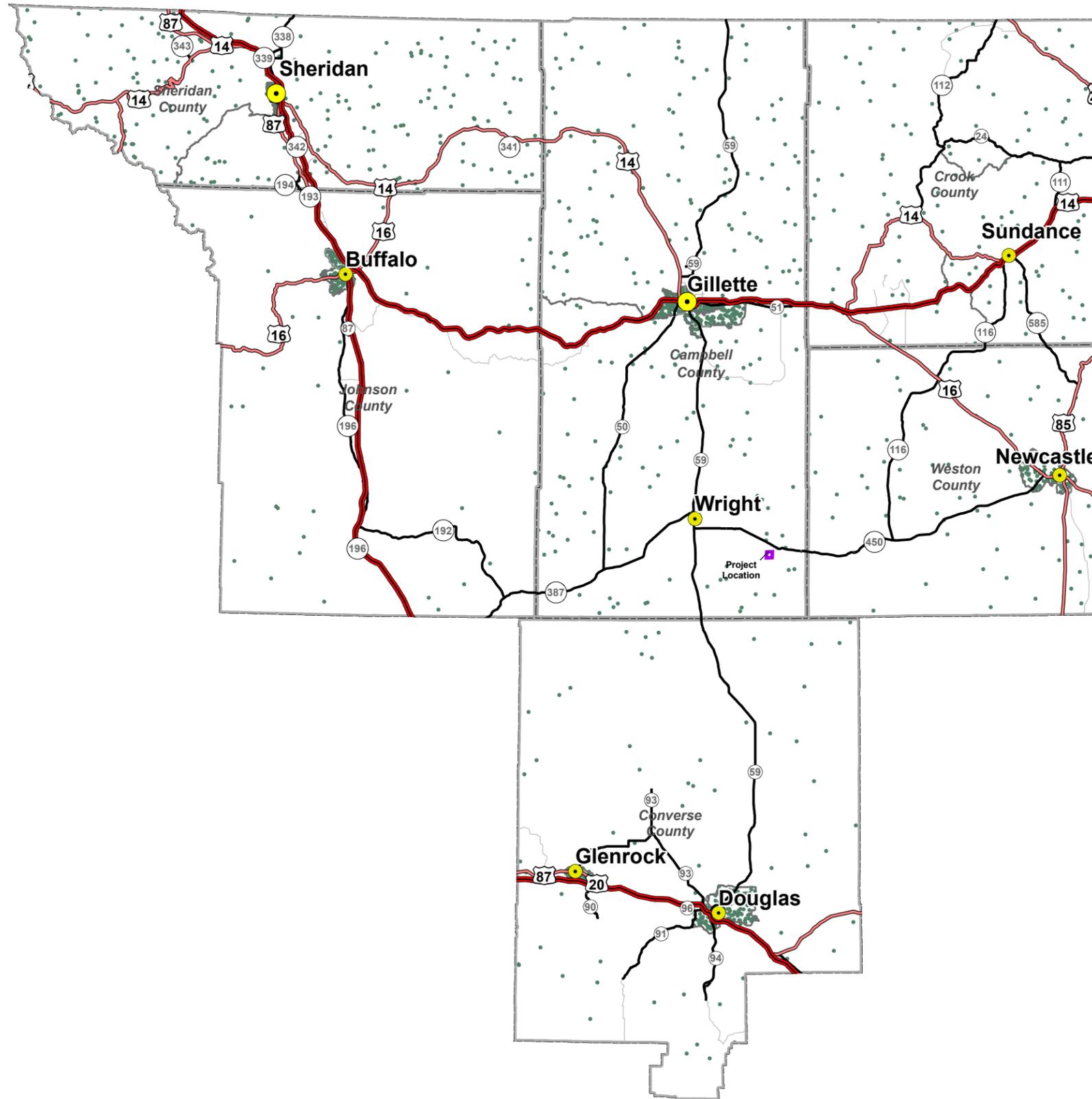
Area	Land area in square miles	Total population		Urban population*			Rural population	
		Number	Average per square mile	Total	In urbanized areas	In urban clusters	Total	Percent
WYOMING	97,100.00	493,782	5.1	321,344	125,921	195,423	172,438	34.9
County								
Campbell	4,796.74	33,698	7.0	20,560	0	20,560	13,138	39.0
Converse	4,254.70	12,052	2.8	5,324	0	5,324	6,728	55.8
Crook	2,858.58	5,887	2.1	0	0	0	5,887	100.0
Johnson	4,166.26	7,075	1.7	3,702	0	3,702	3,373	47.7
Sheridan	2,523.31	26,560	10.5	17,046	0	17,046	9,514	35.8
Weston	2,397.84	6,644	2.8	2,947	0	2,947	3,697	55.6
Study Area	20,997.43	91,916	4.4	49,579	0	49,579	42,337	46.1
Place								
Douglas	5.11	5,288	1,035.0	5,182	0	5,182	106	2.0
Gillette	13.37	19,646	1,469.5	19,115	0	19,115	531	2.7
Sheridan	8.49	15,804	1,862.4	15,750	0	15,750	54	0.3
Wright	2.75	1,347	490.0	0	0	0	1,347	100.0

*Urbanized areas are defined as those which contain at least 50,000 people, while urban clusters have populations of at least 2,500 but less than 50,000 persons (USCB 2007).

Source: USCB 2000

The Study Area's population is concentrated in or near these towns and other small communities that dot the region, as shown in **Figure 2-2**. Sheridan County has the greatest population density within the Study Area, with Campbell County second. The remaining four counties in the Study Area are very thinly populated.

Campbell is the largest county in both population and land area, accounting for 23 percent of the population and 37 percent of the land in the Study Area. Sheridan County accounts for 29 percent of the population, Converse County, for 13 percent, and the remaining counties together, for 21 percent. The three largest counties also contain the three largest towns in the region: Gillette, Sheridan, and Douglas.



Legend

-  1 Dot = 50
-  2005 Population
-  Project Location

As **Table 2-2** shows, the Study Area is far more rural than the United States, and somewhat more rural than the State of Wyoming, with nearly half of its population living outside of urban areas or urban clusters. The rural nature of the Study Area is demonstrated in **Table 2-3**, which shows the 2000 population, number of households, and average household size of the many small communities that dot the Study Area, as well as the larger towns, Wyoming, the six counties in the Study Area, and the Study Area total.

Table 2-3. Population, Households, and Average Household Size in the Study Area, 2000

Area		Total Population	Number of Households	Average Household Size*
WYOMING		493,782	193,608	2.5
Campbell County		33,698	12,207	2.7
Converse County		12,052	4,694	2.6
Crook County		5,887	2,308	2.5
Johnson County		7,075	2,959	2.4
Sheridan County		26,560	11,167	2.3
Weston County		6,644	2,624	2.4
Study Area		91,916	35,959	2.5
Towns in Study Area	County	Total Population	Number of Households	Average Household Size
Antelope Valley-Crestview	Campbell	1,642	545	3.0
Arvada	Sheridan	33	18	1.8
Big Horn	Sheridan	198	72	2.8
Buffalo	Johnson	3,900	1,718	2.2
Clearmont	Sheridan	115	50	2.3
Dayton	Sheridan	678	277	2.4
Douglas	Converse	5,288	2,118	2.5
Gillette	Campbell	19,646	7,390	2.6
Glenrock	Converse	2,231	925	2.4
Hulett	Crook	408	173	2.4
Kaycee	Johnson	249	103	2.4
Lost Springs	Converse	1	1	1.0
Moorcroft	Crook	807	325	2.5
Newcastle	Weston	3,065	1,253	2.4
Parkman	Sheridan	137	52	2.6
Pine Haven	Crook	222	102	2.2
Ranchester	Sheridan	701	277	2.5
Rolling Hills	Converse	449	135	3.3
Sheridan	Sheridan	15,804	7,005	2.2
Sleepy Hollow CDP	Campbell	1,177	361	3.3
Story	Sheridan	887	420	2.1
Sundance	Crook	1,161	476	2.3
Upton	Weston	872	359	2.4
Wright	Campbell	1,347	475	2.8
TOTAL		61,018	24,630	2.5

*Average household size is computed by subtracting the population housed in group quarters from the total population, and dividing the adjusted population by the number of households. Source: USCB 2000

The three largest towns in the Study Area—Gillette, Sheridan, and Douglas—constitute two-thirds of the population of the towns shown here. Excepting the community with one inhabitant, average household size in these communities ranges from 1.8 to 3.3, while the state and the Study Area both have an average of 2.5. The U.S. average is 2.6 persons per household.

2.1.2.2 Age Characteristics

The median age within the Study Area ranges from a low of 32.2 in Campbell County to a high of 43.0 in Johnson County. Except for Campbell County, all counties in the Study Area have higher median ages than Wyoming's median age of 36.2 (the U.S. median age is 35.3). Campbell County has a much lower percentage of people over age 65 and the highest proportion of people in the 25 to 44 age group. The Study Area as a whole is quite consistent with the state in its age distribution. **Table 2-4** provides the 2000 population, median age, and age distribution in the Study Area counties and the State of Wyoming.

Table 2-4. Year 2000 Population in Wyoming and Study Area Counties by Age

Area	Median Age	Total Population	Age Cohort					
			Under 5 years	5 to 17 years	18 to 24 years	25 to 44 years	45 to 64 years	65 and over
WYOMING	36.2	493,782	30,940	97,933	49,928	138,619	118,669	57,693
Cohort as % of Total		100.0%	6.3%	19.8%	10.1%	28.1%	24.0%	11.7%
Campbell	32.2	33,698	2,484	7,972	3,186	10,889	7,396	1,771
Cohort as % of Total		100.0%	7.4%	23.7%	9.5%	32.3%	21.9%	5.3%
Converse	37.5	12,052	770	2,660	845	3,392	3,056	1,329
Cohort as % of Total		100.0%	6.4%	22.1%	7.0%	28.1%	25.4%	11.0%
Crook	40.2	5,887	306	1,275	390	1,448	1,600	868
Cohort as % of Total		100.0%	5.2%	21.7%	6.6%	24.6%	27.2%	14.7%
Johnson	43.0	7,075	366	1,346	393	1,666	2,029	1,275
Cohort as % of Total		100.0%	5.2%	19.0%	5.6%	23.5%	28.7%	18.0%
Sheridan	40.6	26,560	1,407	5,005	2,123	6,711	7,193	4,121
Cohort as % of Total		100.0%	5.3%	18.8%	8.0%	25.3%	27.1%	15.5%
Weston	40.7	6,644	348	1,250	493	1,746	1,771	1,036
Cohort as % of Total		100.0%	5.2%	18.8%	7.4%	26.3%	26.7%	15.6%
Study Area		91,921	5,681	19,509	7,430	25,853	23,046	10,401
Cohort as % of Total		100.0%	6.2%	21.2%	8.1%	28.1%	25.1%	11.3%

Source: USCB 2000

2.1.2.3 Migration Patterns

The components of population change include births and deaths, known as natural increase, and in-migration and out-migration, which combine to yield net migration. To estimate these changes between decennial censuses, Wyoming Department of Transportation (WYDOT) data has been used. These data track drivers moving into Wyoming from other areas and those surrendering Wyoming driver's licenses when moving out of state (WCDA 2007). These numbers cannot precisely measure migration, because they represent only those with driver's

licenses and those who exchange their licenses in a timely manner. However, the data do reveal patterns and provide general information about the extent and direction of migration. **Table 2-5** displays net migration information by county and for the Study Area as a whole (as expressed in new and surrendered driver's licenses); **Figure 2-3** illustrates the changes and variations among the counties and for the total Study Area.

Campbell and Sheridan Counties had the highest amount of in-migration in the Study Area between 2000 and 2006. All of the counties show positive net migration, meaning that new driver's licenses exceeded surrendered licenses. As the graph illustrates, the Study Area and Campbell County experienced sharp increases from 2000 to 2001, with the more populous counties all showing significant decreases in 2004 before bouncing back in 2005 and 2006.

Table 2-5. Net Changes in New and Surrendered Driver's Licenses, 2000-2006

Area	2000	2001	2002	2003	2004	2005	2006	Total 2001-2006	% Change 2000-2006
Campbell County	333	565	448	236	130	341	795	2,848	138.7%
Converse County	51	108	92	68	52	89	72	532	41.2%
Crook County	20	56	60	32	27	41	58	294	190.0%
Johnson County	118	106	83	95	75	93	103	673	-12.7%
Sheridan County	226	232	178	174	29	155	326	1,320	44.2%
Weston County	9	30	34	25	12	3	86	199	855.6%
Study Area	757	1097	895	630	325	722	1440	5,866	90.2%

Source: WCDA 2007

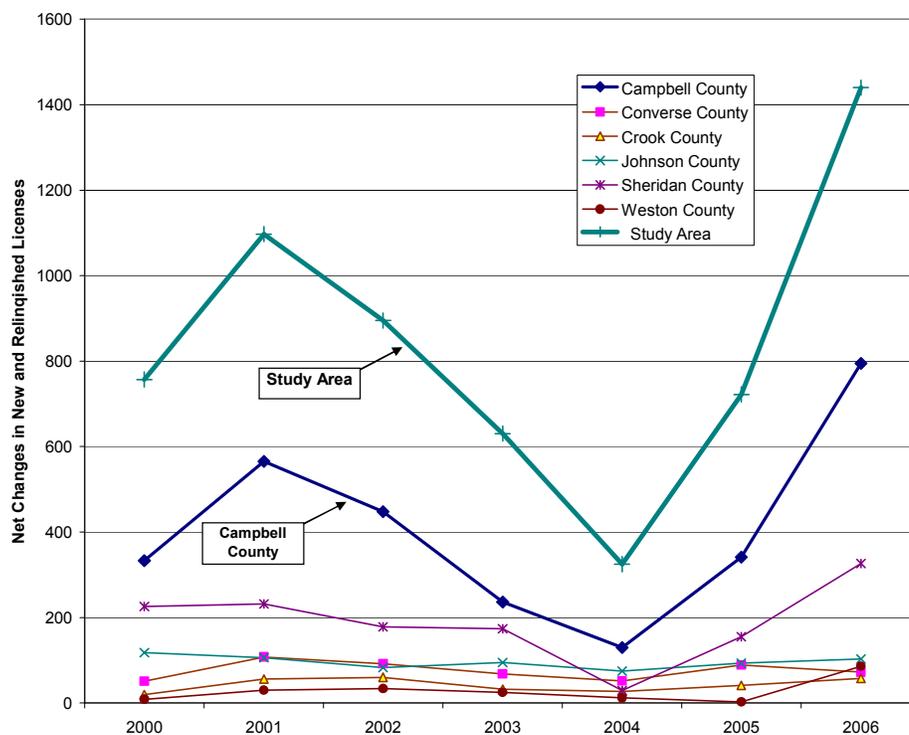


Figure 2-3. Net Migration as Shown by Driver's License Exchanges in the Study Area, 2000-2006

2.1.3 Population Estimates and Forecasts

The current boom in coal production, power generation, and related activities has led to substantial increases in the population of Campbell County and the towns of Gillette and Wright since the 2000 Census. A University of Wyoming (UW) study found that Campbell County was the second-fastest growing county in the state between 2000 and 2005, increasing by 11 percent while Wyoming grew by 3.1 percent (UW 2007). Campbell County's neighbor to the west, Johnson County, was the fourth-fastest growing county, while other counties in the Study Area increased by more modest amounts, from 5.9 percent for Converse County to only 0.4 percent for Weston County. Within Campbell County, the study found that almost-equal growth occurred in the City of Gillette and in the rural areas of the county. Campbell County's growth was balanced between in-migration and natural increase, while growth in Converse, Crook, Johnson, and Sheridan Counties stemmed primarily from in-migration.

Table 2-6 shows the 2000 Census population for the Study Area and Wyoming as a whole, along with the 2005 Census Bureau estimate and forecasts by the Wyoming Department of Administration & Information, Economic Analysis Division (WY EAD) (WDAI 2007b). These forecasts do not specifically consider the addition of the Two Elk Project, but do take into account trends and forecasts of economic activity. Town populations were forecast using the estimated county growth rates.

The WY EAD has forecast Campbell County's population to be 39,900 in 2007, nearly a 19 percent increase over its 2000 population, and expects it to reach 44,010 by 2011; the year construction is expected to be complete for the Two Elk Project. This would represent a 30.6 percent increase over 2000 and an annual average growth rate between 2000 and 2011 of 2.5 percent, the highest in the Study Area. Johnson County is forecast to increase to a population of 8,940, an increase of 26.4 percent. Except for Weston County, whose population will remain essentially stable, the remaining counties in the Study Area will experience moderate to low growth rates, while the Study Area as a whole will increase by 18.3 percent, reflecting an average annual growth rate of 1.5 percent.

Table 2-6. Population Projections for Wyoming and the Study Area, 2000 to 2011, Without Two Elk Project

Area	2000 Census	2005 Estimate	2007 Forecast	2011 Forecast	% increase 2000-2011	Average Annual % Change
WYOMING	493,782	509,294	522,620	544,400	10.3%	0.9%
Campbell County	33,698	37,405	39,990	44,010	30.6%	2.5%
Gillette	20,271	22,685	24,187	26,618	31.3%	2.5%
Wright	1,347	1,425	1,551	1,706	26.7%	2.2%
Converse County	12,052	12,766	13,020	13,500	12.0%	1.0%
Douglas	5,295	5,581	5,705	5,915	11.7%	1.0%
Glenrock	2,242	2,351	2,405	2,493	11.2%	1.0%
Rolling Hills	449	467	481	499	11.1%	1.0%

Table 2-6. Population Projections for Wyoming and the Study Area, 2000 to 2011, Without Two Elk Project (Cont.)

Area	2000 CENSUS	2005 Estimate	2007 Forecast	2011 Forecast	% increase 2000-2011	Average Annual % Change
Crook County	5,887	6,182	6,300	6,570	11.6%	1.0%
Hulett	408	429	434	453	10.9%	0.9%
Moorcroft	807	845	862	899	11.4%	1.0%
Pine Haven	222	317	291	304	36.9%	2.9%
Sundance	1,161	1,184	1,227	1,279	10.2%	0.9%
Johnson County	7,075	7,721	8,200	8,940	26.4%	2.1%
Buffalo	3,902	4,290	4,554	4,966	27.3%	2.2%
Kaycee	249	273	289	315	26.7%	2.2%
Sheridan County	26,560	27,389	28,040	28,980	9.1%	0.8%
Clearmont	115	117	120	124	8.2%	0.7%
Dayton	678	717	724	748	10.4%	0.9%
Ranchester	701	717	737	762	8.7%	0.8%
Sheridan	15,872	16,333	16,701	17,261	8.7%	0.8%
Weston County	6,644	6,671	6,730	6,720	1.1%	0.1%
Newcastle	3,248	3,221	3,265	3,261	0.4%	0.0%
Upton	872	857	873	872	0.0%	0.0%
Study Area	91,916	98,134	102,280	108,720	18.3%	1.5%

***Notes:**

2000 state, county and municipality population are 2000 Census data with official revisions included.

2001-2005 state, county, and municipality population estimates were produced by U.S. Census Bureau.

2006 to 2020 state and county population forecasts were developed based on trends of demographic and economic variables.

Municipality population forecasts were simply calculated by applying the place/county ratios to the appropriate county population forecasts.

Source: WDAI 2007b

2.2 Economic Conditions

Section 2.2.1 presents the economic characteristics of the Study Area, including historic patterns, employment diversification, labor force participation, community trends, average weekly wages, current labor force, and the construction trades required. Note that data from different sources may not agree due to differences in collection and calculation methodology.

Section 2.2.2 presents the income characteristics of the Study Area.

2.2.1 Employment Characteristics and Industry Sector Diversification

This section discusses historic and current employment and examines industry sector diversification and growth, average weekly wages, and how wages compare to state averages. It also presents the current labor force in the Study Area and the construction trades required.

2.2.1.1 Historic Patterns

Over time within a region, each sector's share of total employment will change as economic activity changes, and the area may see an increase in the absolute amount of employment within a sector while that sector's proportion of total employment declines. For the U.S., Wyoming, and the Study Area, **Table 2-7** displays the employment in each industry sector in 1970 and 2000, each sector's share of the total, and each sector's change in employment over the 30-year period.

As the table shows, some sector shifts in the Study Area followed national trends. As a percent of total employment, farm and agricultural services jobs declined sharply in all areas. The services sector in Wyoming and the Study Area increased, although not to the same extent as nationally. Government employment's share declined in all areas shown except for Campbell County, where it is likely that the County's population increase of 160 percent between 1970 and 2000 led to a requirement for more education and other government service providers.

Table 2-7. Industry Sector Employment and Change in the United States, Wyoming, and the Study Area, 1970 and 2000

Area	1970		2000		% Change in Employment, 1970-2000
	Employment	% of Total	Employment	% of Total	
United States					
Total	91,281,600	100.0%	167,465,296	100.0%	83.5%
Farm & Ag. Services	4,486,300	4.9%	5,269,800	3.1%	17.5%
Mining	743,900	0.8%	795,400	0.5%	6.9%
Manufacturing	19,687,400	21.6%	19,106,900	11.4%	-2.9%
Services & Professional	45,892,200	50.3%	109,947,900	65.7%	139.6%
Construction	4,398,800	4.8%	9,604,300	5.7%	118.3%
Government	16,073,000	17.6%	22,741,000	13.6%	41.5%
WYOMING					
Total	159,385	100.0%	330,657	100.0%	107.5%
Farm & Ag. Services	15,586	9.8%	18,314	5.5%	17.5%
Mining	12,811	8.0%	19,286	5.8%	50.5%
Manufacturing	7,741	4.9%	13,631	4.1%	76.1%
Services & Professional	77,131	48.4%	190,843	57.7%	147.4%
Construction	9,320	5.8%	25,044	7.6%	168.7%
Government	36,796	23.1%	63,539	19.2%	72.7%
Campbell County					
Total	6,026	100.0%	23,523	100.0%	290.4%
Farm & Ag. Services	732	12.1%	800	3.4%	9.3%
Mining	1,221	20.3%	5,677	24.1%	364.9%
Manufacturing	29	0.5%	555	2.4%	1813.8%
Services & Professional	2,667	44.3%	11,031	46.9%	313.6%
Construction	592	9.8%	2,057	8.7%	247.5%
Government	785	13.0%	3,403	14.5%	333.5%

Table 2-7. Industry Sector Employment and Change in the United States, Wyoming, and the Study Area, 1970 and 2000 (Cont.)

Area	1970		2000		% Change in Employment, 1970-2000
	Employment	% of Total	Employment	% of Total	
Converse County					
Total	2,763	100.0%	7,092	100.0%	156.7%
Farm & Ag. Services	611	22.1%	629	8.9%	2.9%
Mining	182	6.6%	756	10.7%	315.4%
Manufacturing	20	0.7%	200	2.8%	900.0%
Services & Professional	1,165	42.2%	3,694	52.1%	217.1%
Construction	242	8.8%	499	7.0%	106.2%
Government	543	19.7%	1,314	18.5%	142.0%
Crook County					
Total	2,084	100.0%	3,709	100.0%	78.0%
Farm & Ag. Services	693	33.3%	710	19.1%	2.5%
Mining	143	6.9%	240	6.5%	67.8%
Manufacturing	140	6.7%	283	7.6%	102.1%
Services & Professional	613	29.4%	1,537	41.4%	150.7%
Construction	94	4.5%	237	6.4%	152.1%
Government	401	19.2%	702	18.9%	75.1%
Johnson County					
Total	2,640	100.0%	4,891	100.0%	85.3%
Farm & Ag. Services	554	21.0%	687	14.0%	24.0%
Mining	105	4.0%	150	3.1%	42.9%
Manufacturing	97	3.7%	140	2.9%	44.3%
Services & Professional	1,176	44.5%	2,721	55.6%	131.4%
Construction	257	9.7%	364	7.4%	41.6%
Government	451	17.1%	829	16.9%	83.8%
Sheridan County					
Total	8,460	100.0%	16,696	100.0%	97.4%
Farm & Ag. Services	913	10.8%	1,204	7.2%	31.9%
Mining	223	2.6%	111	0.7%	-50.2%
Manufacturing	388	4.6%	619	3.7%	59.5%
Services & Professional	4,323	51.1%	10,301	61.7%	138.3%
Construction	665	7.9%	1,471	8.8%	121.2%
Government	1,948	23.0%	2,990	17.9%	53.5%
Weston County					
Total	2,950	100.0%	4,805	100.0%	62.9%
Farm & Ag. Services	361	12.2%	398	8.3%	10.2%
Mining	544	18.4%	613	12.8%	12.7%
Manufacturing	116	3.9%	272	5.7%	134.5%
Services & Professional	1,284	43.5%	2,520	52.4%	96.3%
Construction	99	3.4%	254	5.3%	156.6%
Government	546	18.5%	748	15.6%	37.0%

Table 2-7. Industry Sector Employment and Change in the United States, Wyoming, and the Study Area, 1970 and 2000 (Cont.)

Area	1970		2000		% Change in Employment, 1970-2000
	Employment	% of Total	Employment	% of Total	
Study Area					
Total	24,923	100.0%	60,716	100.0%	143.6%
Farm & Ag. Services	3,864	15.5%	4,428	7.3%	14.6%
Mining	2,418	9.7%	7,547	12.4%	212.1%
Manufacturing	790	3.2%	2,069	3.4%	161.9%
Services & Professional	11,228	45.1%	31,804	52.4%	183.3%
Construction	1,949	7.8%	4,882	8.0%	150.5%
Government	4,674	18.8%	9,986	16.4%	113.6%

Source: WDAI undated

Some counties in the Study Area, however, contradict national trends in the mining and manufacturing sectors. There were substantial increases in Campbell and Converse Counties in mining employment, although other Study Area counties did not share this growth. Campbell, Converse, Crook, and Weston Counties all saw moderate to substantial growth in manufacturing employment, while that sector's proportion of employment declined somewhat in Johnson and Sheridan Counties.

Compared to the U.S. and Wyoming, construction's share of jobs grew only slightly in the Study Area, led by Crook, Sheridan, and Weston Counties. Construction as a percentage of total employment declined in Campbell, Converse, and Johnson Counties. However, the number of construction jobs grew strongly.

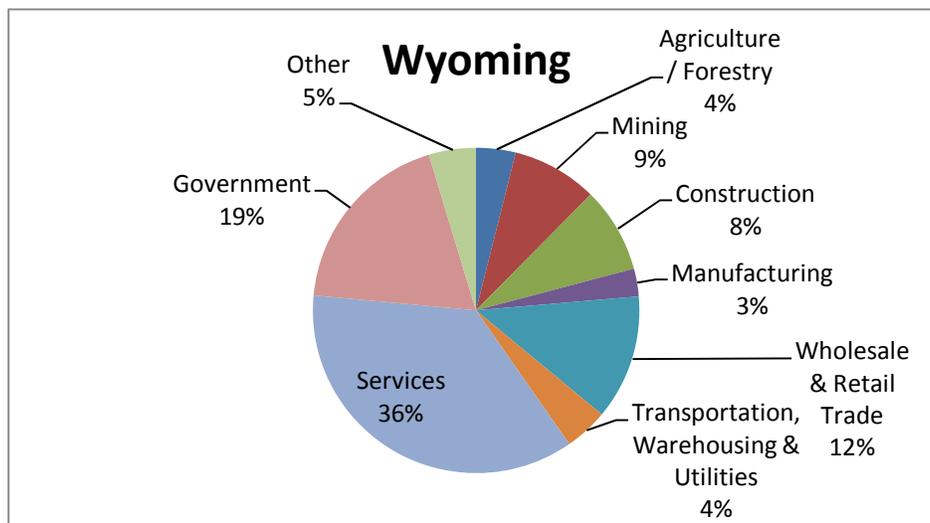
2.2.1.2 Current Employment and Sector Diversification

Wyoming and the Study Area experienced healthy growth between 2001 and 2009, as shown in **Table 2-8**. Johnson and Campbell Counties experienced the greatest change, exceeding Wyoming's 18.6 percent growth, as did Sheridan and Johnson Counties and the Study Area as a whole. Crook County saw moderate growth, while Weston County's was more modest.

Table 2-8. Wyoming and Study Area Employment, 2001-2009

Area	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change, 2001-2009	
										Amount	%
WYOMING	330,878	333,771	336,901	344,343	355,201	371,472	390,073	401,501	392,431	61,553	18.6%
Campbell County	24,844	25,291	25,012	25,679	27,471	30,307	32,454	34,636	34,302	9,458	38.1%
Converse County	6,885	6,977	6,908	7,067	7,302	7,437	7,830	8,403	8,366	1,481	21.5%
Crook County	3,578	3,570	3,589	3,686	3,802	3,991	4,199	4,247	4,232	654	18.3%
Johnson County	4,889	5,017	5,056	5,178	5,387	5,678	5,976	6,254	6,106	1,217	24.9%
Sheridan County	16,970	17,424	17,426	17,887	18,241	19,139	20,368	21,002	20,551	3,581	21.1%
Weston County	4,781	4,661	4,718	4,662	4,839	4,950	5,225	5,448	5,550	769	16.1%
Study Area	61,947	62,940	62,709	64,159	67,042	71,502	76,052	74,542	79,107	17,160	27.7%

Source: USBEA 2011

**Figure 2-4. Wyoming Employment by Sector, 2009**

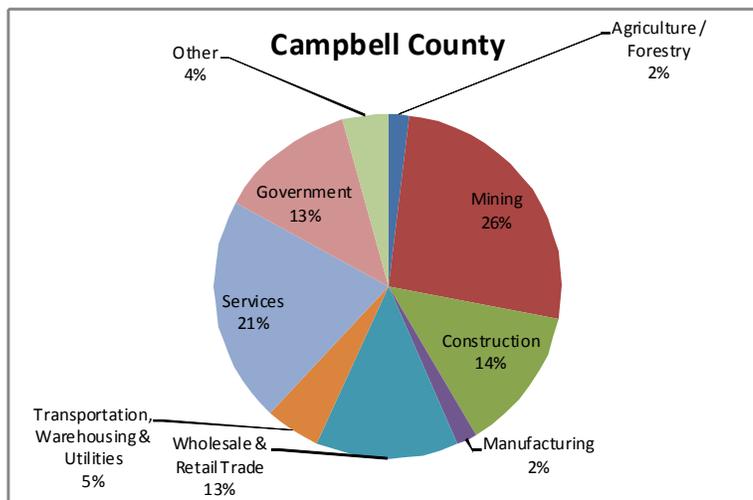
Wyoming's employment in 2009 was dominated by the services sector, which accounted for more than 36 percent of state jobs. The government sector followed with 19 percent of jobs, and wholesale and retail trade, with 12 percent. The mining sector provided 9 percent of Wyoming employment, and the construction sector, 8 percent. In comparison, the mining sector in the United States economy provides less than 1 percent of employment, and construction accounts for 6 percent of U.S. jobs. Wyoming's sector diversification is illustrated in **Figure 2-4**. **Table 2-9** shows employment by sector for Wyoming and Campbell County.

Table 2-9. 2009 Employment by Sector, Wyoming and Campbell County

Sector	Wyoming		Campbell County	
	Employment	% of Total	Employment	% of Total
Total Employment	392,431	100%	34,302	100%
Agriculture / Forestry	15,324	3.9	688	2.0
Mining	33,273	8.5	8,898	25.9
Construction	33,273	8.5	4,602	13.4
Manufacturing	10,788	2.7	643	1.9
Wholesale & Retail Trade	48,774	12.4	4,567	13.3
Transportation, Warehousing & Utilities	16,797	4.3	1,705	5.0
Services	141,922	36.2	7,242	21.1
Government	73,916	18.8	4,349	12.7
Other	18,364	4.7	1,462	4.3

Source: USBEA 2011

Total employment numbers may not add up due to data gaps in some employment statistics

**Figure 2-5. Campbell County Employment by Sector, 2009**

In Campbell County, the employment picture is quite different from the state, as **Figure 2-5** shows. Mining is the largest sector, providing 26 percent of employment, followed by services at 21 percent, government with 13 percent, and trade with 13 percent. The construction sector accounted for 14 percent of jobs in the County.

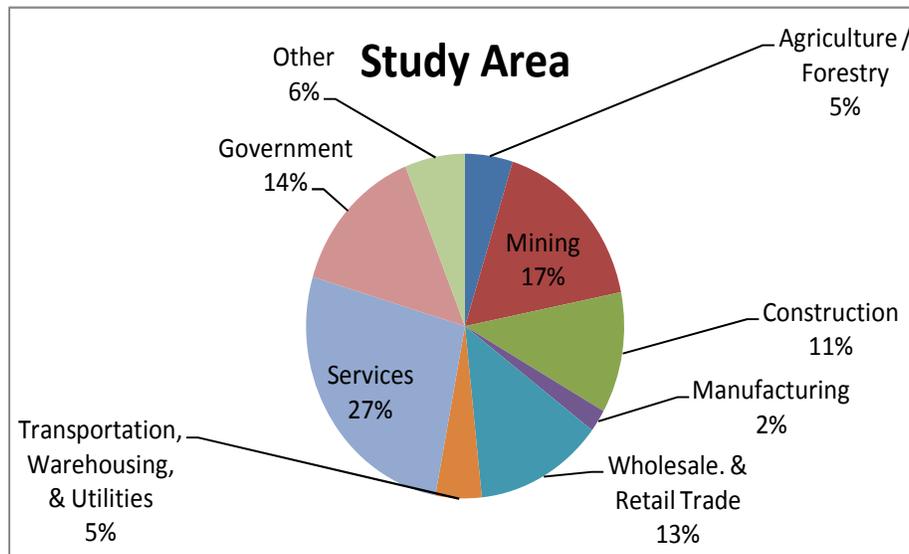


Figure 2-6. Study Area Employment by Sector, 2009

As seen in **Figure 2-6**, the Study Area is somewhat more balanced in its employment diversification than Campbell County alone, with 27 percent of its jobs in services, 14 percent in government, and 13 percent in trade. Mining is still a major contributor, providing 17 percent of jobs, and the construction sector accounts for 11 percent of employment. **Table 2-10** below shows 2009 employment by sector for the Study Area.

Table 2-10. 2009 Employment by Sector, Study Area

Sector	Campbell	Converse	Crook	Johnson	Sheridan	Weston	Study Area	
							Number	% of Total
Total Employment	34,302	8,366	4,232	6,106	20,551	5,550	79,107	100%
Agriculture / Forestry	688	607	627	533	910	343	3,708	4.7
Mining	8,898	1,191	440	580	885	1,024	13,018	16.5
Construction	4,602	914	397	647	1,815	337	8,712	11.0
Manufacturing	643	136	176	77	420	161	1,613	2.0
Wholesale & Retail Trade	4,567	1,184	333	593	2,695	583	9,955	12.6
Transportation, Warehousing & Utilities	1,705	487	123	188	838	253	3,594	4.5
Services	7,242	1,384	471	1,906	8,380	999	20,382	25.8
Government	4,349	363	763	1,032	3,547	872	10,926	13.8
Other	1,462	1,484	176	248	1,061	251	4,682	5.9

Source: USBEA 2011

Total employment numbers may not add up due to data gaps in some employment statistics Source: USBEA 2011

Total employment numbers may not add up due to data gaps in some employment statistics

2.2.1.3 Labor Force Participation and Unemployment

For this study, labor force participation is defined as the total labor force (employed and unemployed) divided by the total population. Participation rates will generally be lower when a population contains a higher proportion of people above and below the working age, i.e. retired persons or children. Rates will be higher when a larger proportion of a population is within the working years (roughly 18 to 65), and when greater numbers of women, teens, and retirement-age persons join the labor force. Participation rates may also be higher when better-paying jobs are available to attract a larger part of the population into the labor force. **Table 2-11** provides the total, employed, and unemployed labor force for Wyoming and the Study Area, along with rates for unemployment and labor force participation based on an annual average for 2010.

Table 2-11. Annual Average Employment and Unemployment in Wyoming and the Study Area, 2010 (not seasonally adjusted)

Location	Labor Force	Employed	Unemployed	Unemployment Rate	Labor Force Participation*
WYOMING	293,769	273,313	20,456	7.0%	52%
Campbell County	27,531	25,888	1,643	6.0%	60%
Converse County	7,529	7,093	436	5.8%	54%
Crook County	3,486	3,284	202	5.8%	49%
Johnson County	3,908	3,582	326	8.3%	46%
Sheridan County	16,032	14,787	1,245	7.8%	55%
Weston County	3,267	3,060	207	6.3%	45%
Study Area	355,522	331,007	24,515	7.0%	55%

*An estimated labor force participation rate is calculated by dividing the labor force by the estimated total population for 2010 (population estimates are from US Census 2010).

Source: Wyoming Department of Workforce Services (WDWS), 2010

According to the Wyoming Department of Workforce Services (WDWS), Wyoming's average workforce during 2010 was 293,769. This reflects a labor force participation rate of 52 percent, compared to approximately 64.3 percent for the United States as of December, 2010.

The Study Area has a total labor force of 355,522, and its labor force participation rate is consistent with Wyoming's, at 55 percent. Within the Study Area, participation rates and labor force sizes vary from Weston County's low of 45 percent with a labor force of 3,267, to Campbell County's high of 60 percent with a labor force of 27,531. Campbell County's participation rate is substantially higher than the other counties in the Study Area, in part reflecting its age distribution characteristics: lower median age, small proportion of persons above age 65, and nearly two-thirds of its population being of working age (18 to 64).

Typically, states in the Northern Plains have lower unemployment rates than the national average. Wyoming's average annual unemployment rate for 2010 was 7 percent, well under the U.S. value of 9.6 percent. The 2010 unemployment rate in the Study Area is also at 7.0 percent. The rates for the six counties range from a low of 5.8 percent in Converse and Crook counties to a high of 8.3 percent in Johnson County.

A February 2012 update compiled by Community Builders, Inc., shows recent slight declines in employment. As of December 2011, 25,667 members of the Campbell County labor force were employed, which was 0.6 percent less than the previous month. The annual average employment in 2011 of 25,715 also was 0.7 percent less than the previous year's level. In December 2011, the unemployment rate in Campbell County (4.2 percent) was well below the national rate by between two and four percent, and it was also below the average for Wyoming. Campbell County's December unemployment rate was marginally higher than that of the previous month (4.1 percent). However the 2011 annual average of 4.5 percent was lower than the 2010 rate of 6.0 percent (CBI 2012).

2.2.1.4 Commuting into Campbell County

At the request of the North East Wyoming Economic Development Coalition, the Wyoming Department of Employment, Research, and Planning (now the WDWS) studied Campbell County's resident and nonresident labor force to determine the number of Campbell County workers who resided in Crook County. They found that Campbell County's labor force contains a substantial number of commuters from outside the county (WDERP 2006). **Table 2-12** shows yearly averages of the quarterly employment data from the report. The "Nonresident Commuters" category includes those for whom the residence was unknown.

Table 2-12. Commuters as Part of Campbell County's Labor Force, 1992-2005

Year	Campbell County Employment					Crook County Commuters to Campbell County	
	Total	Campbell County Residents		Nonresident Commuters			
		Number	%	Number	%	Number	% of Campbell County commuters
1992	16,403	13,077	79.70%	3,326	20.30%	269	8.10%
1993	16,848	13,242	78.60%	3,607	21.40%	283	7.80%
1994	17,208	13,520	78.60%	3,689	21.40%	304	8.20%
1995	17,377	13,669	78.70%	3,708	21.30%	298	8.00%
1996	17,889	13,895	77.70%	3,994	22.30%	361	9.00%
1997	18,150	14,168	78.10%	3,982	21.90%	347	8.70%
1998	18,540	14,533	78.40%	4,007	21.60%	358	8.90%
1999	19,334	15,028	77.70%	4,306	22.30%	414	9.60%
2000	20,699	15,948	77.00%	4,752	23.00%	496	10.40%
2001	22,595	16,701	73.90%	5,894	26.10%	617	10.50%
2002	22,919	17,256	75.30%	5,663	24.70%	643	11.30%
2003	22,844	17,287	75.70%	5,558	24.30%	640	11.50%
2004*	25,679	19,227	74.90%	6,452	25.10%	788	12.20%
2005*	27,471	20,320	74.00%	7,151	26.00%	854	11.90%
2006*	30,307	21,616	71.30%	8,691	28.70%	969	11.20%

Table 2-12. Commuters as Part of Campbell County's Labor Force, 1992-2005, (Cont.)

Year	Campbell County Employment					Crook County Commuters to Campbell County	
	Total	Campbell County Residents		Nonresident Commuters		Number	% of Campbell County commuters
		Number	%	Number	%		
2007*	32,454	23,076	71.10%	9,378	28.90%	1,038	11.10%
2008*	34,636	24,023	69.40%	10,613	30.60%	1,106	10.40%
2009*	34,302	23,952	69.80%	10,350	30.20%	1,060	10.20%

Quarterly data from reports were averaged to obtain a yearly figure.

Source: WDERP 2006

* WDWS, 2011.

The table shows that over the period, both the number and the proportion of nonresident commuters have generally increased; including those from Crook County (other origins were not reported). The report's authors suggest that the commuting pattern may be due in part to the housing shortage in Gillette. The findings show that workers from outside of Campbell County are willing to drive some distance to partake of the county's expanding economy and higher wages, which are discussed in the following section.

2.2.1.5 Average Weekly Wages

Average weekly wages vary among the Study Area counties relative to state average weekly wages for each sector, as shown in **Table 2-13**. In Campbell County, wages are higher than the state average in many sectors. The higher-than-average wages, taken in conjunction with very low unemployment rates and the county's rapid economic growth, suggest that demand for labor exceeds supply, and that workers will continue to relocate or commute to the area in response to higher income opportunities as long as strong economic activity persists.

Table 2-13. Study Area Average Weekly Wage Amounts and Percentage of State Average, Fourth Quarter 2010

Sector	Campbell		Converse		Crook		Johnson		Sheridan		Weston	
	Avg Wkly Wage	% of State Avg*	Avg Wkly Wage	% of State Avg	Avg Wkly Wage	% of State Avg	Avg Wkly Wage	% of State Avg	Avg Wkly Wage	% of State Avg	Avg Wkly Wage	% of State Avg
Agriculture	\$776	119%	\$732	112%	\$525	80%	\$604	92%	\$803	123%	\$690	106%
Mining	\$1,497	95%	\$1,381	88%	\$931	59%	\$833	53%	\$1,269	81%	\$933	60%
Utilities	\$1,628	97%	ND	ND	ND	ND	\$1,667	99%	ND	ND	\$1,923	115%
Construction	\$1,311	127%	\$922	89%	\$714	69%	\$855	83%	\$934	90%	\$913	88%
Manufacturing	\$1,313	124%	\$848	80%	\$978	93%	\$311	29%	\$922	87%	\$1,500	142%
Wholesale Trade	\$1,431	119%	\$667	55%	\$1,033	86%	\$447	37%	\$959	80%	\$683	57%
Retail Trade	\$600	117%	\$442	86%	\$487	95%	\$421	82%	\$513	100%	\$428	84%
Transportation	\$907	98%	\$829	89%	\$786	85%	\$787	85%	\$806	87%	\$830	89%
Information	\$754	91%	\$597	72%	\$519	63%	\$518	62%	\$886	107%	\$461	56%
Finance/Ins	\$1,053	105%	\$681	68%	\$874	87%	\$882	88%	\$998	99%	\$666	66%
Real Estate	\$943	110%	\$361	42%	\$719	84%	\$2,116	246%	\$491	57%	\$753	88%
Prof. Services	\$1,562	128%	\$774	63%	\$1,129	92%	\$862	71%	\$1,112	91%	\$988	81%
Management	\$1,789	98%	ND	ND	ND	ND	ND	ND	ND	ND	\$1,264	69%
Admin Services	\$579	99%	\$806	138%	\$572	98%	\$353	61%	\$538	92%	ND	ND
Health Care	\$1,092	131%	\$713	86%	\$648	78%	\$559	67%	\$826	99%	\$537	65%
Arts/Entertainment	\$215	53%	\$239	59%	\$416	103%	ND	ND	\$385	95%	ND	ND
Accommodations	\$297	91%	\$248	76%	\$216	66%	\$269	83%	\$279	86%	\$198	61%
Other Services	\$1,034	156%	\$429	65%	\$494	75%	\$483	73%	\$461	70%	\$651	98%
Government	\$967	112%	\$797	92%	\$691	80%	\$784	91%	\$940	109%	\$707	82%
Total	\$1,140	131%	\$863	99%	\$714	82%	\$649	75%	\$778	89%	\$696	80%

ND – No Data

*Percent of State Weekly Average Wage for Sector

Source: WDWS, 2011b

In the fourth quarter of 2010, average wages in Campbell County were \$1,497 per week for mining jobs, \$1,311 for construction jobs, and \$776 for agricultural jobs, representing nearly 95 percent, 127 percent, and 119 percent respectively, of the state average. Of agricultural jobs in the remaining five counties, Converse County and Weston County also exceeded the state average.

The average wages for the construction trades required to build power generation facilities are generally higher than the average annual construction worker wages reported above. **Table 2-14** displays information for construction specialty trade areas, including total employment and wage information for Wyoming's Northeast Region labor market area for March 2010. The Northeast Region includes Campbell, Crook, Johnson, Sheridan, and Weston Counties but excludes Converse County. These construction specialty trades are similar to those that are required to build power generation facilities.

Table 2-14. Hourly Compensation Rates for Selected Construction Trades, Northeast Region Labor Market Area, Wyoming, March 2010

Occupation	Est. Empl.	Mean wage	Mean of Lower 1/3	Mean of Upper 2/3	10th Percentile	25th Percentile	Median wage	75th Percentile	90th Percentile
Construction and Extraction Occupations	10,370	\$43,189	\$30,430	\$49,569	\$28,068	\$33,553	\$40,374	\$51,584	\$62,671
		\$20.76	\$14.63	\$23.83	\$13.49	\$16.13	\$19.41	\$24.80	\$30.13
First-Line Supervisors/Managers of Construction Trades and Extraction Workers	1,130	\$58,270	\$42,316	\$66,247	\$39,577	\$44,698	\$52,272	\$68,173	\$87,030
		\$28.02	\$20.35	\$31.85	\$19.02	\$21.49	\$25.13	\$32.78	\$41.84
Carpenters	560	\$38,477	\$30,485	\$42,472	\$28,397	\$32,687	\$38,064	\$43,592	\$49,555
		\$18.50	\$14.66	\$20.42	\$13.66	\$15.72	\$18.30	\$20.95	\$23.82
Cement Masons and Concrete Finishers	270	\$35,111	\$25,983	\$39,675	\$23,907	\$29,579	\$35,335	\$42,123	\$46,751
		\$16.88	\$12.49	\$19.07	\$11.49	\$14.22	\$16.99	\$20.26	\$22.48
Construction Laborers	870	\$31,380	\$26,888	\$33,625	\$25,588	\$28,036	\$31,265	\$34,951	\$38,181
		\$15.09	\$12.93	\$16.16	\$12.30	\$13.48	\$15.03	\$16.81	\$18.36
Operating Engineers and Other Construction Equipment Operators	2,550	\$43,247	\$34,005	\$47,868	\$31,131	\$36,004	\$41,330	\$50,635	\$58,384
		\$20.79	\$16.34	\$23.01	\$14.97	\$17.31	\$19.87	\$24.35	\$28.07
Electricians	750	\$49,139	\$35,172	\$56,123	\$33,762	\$37,075	\$49,354	\$60,099	\$66,506
		\$23.62	\$16.91	\$26.99	\$16.23	\$17.83	\$23.73	\$28.90	\$31.97
Painters, Construction and Maintenance	70	\$38,160	\$28,913	\$42,783	\$27,287	\$31,287	\$35,984	\$41,422	\$55,905
		\$18.34	\$13.90	\$20.57	\$13.12	\$15.04	\$17.30	\$19.91	\$26.88
Plumbers, Pipefitters, and Steamfitters	410	\$39,249	\$26,682	\$45,532	\$23,604	\$30,796	\$37,089	\$47,706	\$59,451
		\$18.87	\$12.83	\$21.89	\$11.35	\$14.81	\$17.83	\$22.93	\$28.58
Structural Iron and Steel Workers	280	\$41,858	\$36,111	\$44,731	\$34,157	\$37,060	\$42,333	\$47,295	\$50,271
		\$20.12	\$17.36	\$21.51	\$16.42	\$17.82	\$20.36	\$22.74	\$24.17

Table 2-14. Hourly Compensation Rates for Selected Construction Trades, Northeast Region Labor Market Area, Wyoming, March 2010 (Cont.)

Occupation	Est. Empl.	Mean wage	Mean of Lower 1/3	Mean of Upper 2/3	10th Percentile	25th Percentile	Median wage	75th Percentile	90th Percentile
Helpers--Carpenters	70	\$39,970	\$24,307	\$47,801	\$22,162	\$26,212	\$33,362	\$55,436	\$70,597
		\$19.21	\$11.68	\$22.98	\$10.65	\$12.60	\$16.04	\$26.65	\$33.94
Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	NA	\$53,033	\$40,338	\$59,380	\$34,317	\$47,951	\$56,525	\$61,570	\$64,546
		\$25.50	\$19.40	\$28.54	\$16.50	\$23.06	\$27.18	\$29.60	\$31.03
Construction and Building Inspectors	20	\$33,801	\$29,930	\$35,738	\$28,027	\$30,891	\$34,120	\$37,342	\$39,841
		\$16.25	\$14.39	\$17.18	\$13.47	\$14.85	\$16.40	\$17.95	\$19.15

Source: WDWS, 2011c

2.2.1.6 Current Construction Labor Force

The WDWS reported that the State's average monthly construction employment had decreased by 691 workers (a loss of 2.9 percent) from fourth quarter 2009 to fourth quarter 2010, with a 2010 total of 22,540 construction workers. The state agency also reported that Campbell County's average monthly construction employment decreased by 5.5 percent, or 215 jobs, between fourth quarter 2009 and fourth quarter 2010. **Table 2-15** shows the number of construction workers in the fourth quarter of 2010 for the Study Area. As noted above, the 5,822 workers employed in the construction sector represent approximately 9.4 percent of the total workforce in the Study Area. Campbell County's construction workers make up 13.3 percent of its employment, but only 7.7 percent of the state's labor force and 7 percent of the nation's labor force are construction workers.

Table 2-15. Average Monthly Construction Labor Force in the Study Area, 2010

Area	Construction Labor Force, Fourth Quarter 2010
Campbell County	3,678
Converse County	380
Crook County	193
Johnson County	332
Sheridan County	1,063
Weston County	176
Study Area	5,822

Source: WDWS, 2011d

2.2.2 Income Characteristics

Table 2-16 presents personal and per capita income and poverty status for the U.S., Wyoming, and the Study Area. As the table shows, Campbell County had the highest total personal income, followed by Sheridan County. Wyoming's per capita income (PCI) of \$48,302 is 111

percent of the U.S. PCI, and the PCI for the Study Area is nearly the same as for Wyoming. Within the Study Area, the highest PCI is found in Sheridan and Campbell Counties, and the lowest in Converse County. However, none of the Study Area counties has a PCI below 91 percent of Wyoming's PCI or less than 107 percent of the U.S. PCI.

Table 2-16. Population, Income, Per Capita Income, and Poverty Status, 2009

Location	Est. Population 2009*	Est. Population 2010**	Total Personal Income (\$Million- 2009)*	Per Capita Income (PCI- 2009)			
				Amount*	% of State PCI	% of U.S. PCI	% Below Poverty**
United States	307,006,550	308,745,538	\$ 12,168,161.0	\$39,635			14.3%
WYOMING	544,270	563,626	\$ 26,289.1	\$48,302			10.2%
Campbell	43,967	46,133	\$ 2,127.9	\$48,398	100.2%	121.9%	6.4%
Converse	13,578	13,833	\$ 601.3	\$44,283	91.7%	111.7%	8.9%
Crook	6,653	7,083	\$ 295.3	\$44,386	91.9%	112.0%	8.3%
Johnson	8,531	8,569	\$ 364.1	\$42,681	88.4%	107.7%	8.9%
Sheridan	29,163	29,116	\$ 1,555.4	\$53,334	110.4%	134.6%	9.4%
Weston	7,009	7,208	\$ 298.9	\$42,647	88.3%	107.6%	9.9%
Study Area	108,901	111,942	\$ 5,205.5	\$46,897	97.1%	118.3%	8.6%

Sources: *USBEA 2011b; ** U.S. Census Bureau 2011

A February 2012 update compiled by Community Builders, Inc., provides a comparison of median household income (MHI) and poverty for 2010. The median household income measurement provides an indicator that is less likely to be skewed by exceptionally high or low incomes, as compared to average measurements. It is the level at which half of all households incomes are higher and half are lower. In general, poverty rates are higher in areas where the MHI is lower. Within the study area, Crook County is an exception to this rule. It had an MHI of \$53,961, which was close to the state average, but a poverty rate of 8.2 percent, which was below the state average of 11.4 percent. Campbell, Converse and Johnson Counties each had an MHI that was higher than the state level and poverty rates below the state average. Campbell County had the highest MHI at \$76,441 and lowest poverty rate at 6.8 percent. Sheridan and Weston Counties both had MHIs that were lower than the state average, but their poverty rates also were below the state average. Of the study area counties, Weston County had the lowest MHI at \$48,653 and a poverty rate of 9.9 percent (CBI 2012).

The percentage of Wyoming residents living below the poverty level was lower than the national rate. The Study Area and its individual counties had even lower rates than Wyoming. Campbell

County had the lowest rate at 6.4 percent, while the other five counties ranged from 8.3 to 9.9 percent.

2.2.3 Government Revenues

The State of Wyoming has no personal income tax. The following sections describe property and sales taxes, two of the major sources of revenues for local and state governments.

2.2.3.1 Property Taxes

Property taxes, also known as *ad valorem* taxes, are a major source of revenues for local governments, and are based on assessed property values. In Wyoming, properties are assessed at both the county and the state level. The state assesses mineral properties as well as utilities and other non-mineral categories, while the counties assess agricultural, residential, commercial, and industrial properties.

Mill levies, determined by the taxing jurisdiction, are applied to the assessed property values to determine the tax amounts for property owners. In 2010, the average mill levy for Wyoming was 66.9, while levies in the Study Area counties ranged from 60.1 in Campbell County to 72.3 in Weston County.

Property taxes support a number of county and municipal operations and services, including airports, fire protection, hospitals, libraries, museums, public health, recreational systems, special districts, and education. **Table 2-17** displays the major beneficiaries of property taxes in the state.

Total assessed land values in 2010 for the six-county Study Area were \$7.6 billion. **Table 2-18** shows the Study Area's assessed property values by property type for 2010.

Table 2-17. Beneficiaries of Property Taxes in Wyoming, 2010

Recipient	Percent of Total
Schools	53.86%
Counties	18.06%
Foundation Program	18.78%
Special Districts	7.66%
Municipalities	1.64%

Source: Wyoming Department of Revenue (WDR) 2010

Table 2-18. Assessed Property Values by Type of Property, Study Area, 2010

Area	Locally Assessed				State-Assessed		Total
	Agricultural Land	Residential Land	Commercial Land	Industrial Land	Utilities and other Non-Mineral Properties	Mineral Properties	
WYOMING	219,355,299	4,266,913,699	1,119,226,914	1,921,646,804	1,205,519,361	12,583,815,584	21,316,477,661
Campbell	8,928,134	226,636,849	72,432,605	454,143,355	174,809,862	4,079,716,109	5,016,666,914

Table 2-18. Assessed Property Values by Type of Property, Study Area, 2010 (Cont.)

Area	Locally Assessed				State-Assessed		Total
	Agricultural Land	Residential Land	Commercial Land	Industrial Land	Utilities and other Non-Mineral Properties	Mineral Properties	
Converse	10,658,967	78,593,584	18,187,681	70,753,127	143,388,394	371,845,621	693,427,374
Crook	11,497,955	43,981,734	8,523,491	9,451,454	7,195,546	86,300,948	166,951,128
Johnson	13,689,578	79,248,384	17,196,562	114,100,096	5,496,473	903,368,230	1,133,099,323
Sheridan	11,979,006	262,602,908	55,653,884	39,770,510	14,548,815	155,312,161	539,867,284
Weston	4,312,803	33,291,076	4,792,586	8,104,981	14,925,241	51,589,137	117,015,824
Study Area	61,066,443	724,354,535	176,786,809	696,323,523	360,364,331	5,648,132,206	7,667,027,847

Source: WDR 2010

Within the Study Area's total \$7.6 billion of assessed property value, Campbell County had by far the highest assessed property values, with a total of \$5.0 billion, over 65 percent of the entire Study Area. Much of this is attributed to the \$4.0 billion of assessed value for mineral properties, which represents 81 percent of the county's assessed value. Over 73 percent of the Study Area's assessed value is for mineral properties (WDR 2010).

Industrial land in Campbell County accounts for 9 percent of the total, while residential constitutes slightly over 4.5 percent. Total mineral properties in the state (12.5 billion) account for 59 percent of the State's total assessed property value of 21 billion. State assessed values for mineral properties in Campbell County attributed 19 percent (4 billion) to this state total and 81 percent of the county's assessed value. The other five Study Area counties mineral property values range from 0.4 to 4.2 percent of the total state-assessed value for Wyoming. When compared to Campbell County, the other counties in the Study Area tend to have a somewhat more balanced distribution among property types, with higher proportions in the residential, commercial, and industrial categories. Converse and Weston Counties have higher proportions of property in the utility category.

2.2.3.2 Sales and Use Taxes

The State of Wyoming levies a 4 percent sales and use tax. Counties have the option of levying additional sales and use taxes up to 2 percent and a lodging option tax. All of the counties in the Study Area levy an additional 1 percent county sales tax. Sheridan is the only county that also levies an additional 1 percent use tax. Additionally, all counties in the Study Area also levy a lodging tax between 2 and 4 percent (with the exception of Sheridan County, which levies a 4 percent lodging option tax in the town of Sheridan only, but is not imposed county-wide). Sales and use tax revenue collections in the Study Area for 2010 are shown in **Table 2-19**. Approximately 54 percent of the total sales and use taxes collected in 2010 went to the state's general fund, and 46 percent was redistributed locally.

Table 2-19. Sales and Use Tax Revenue by County, FY 2010

County	State Sales Tax Collections	State Use Tax Collections	County Sales and Use Tax Collections	County Lodging Tax Collections	Total County Distribution
Campbell	\$97,217,470	\$11,436,610	135,500,613	\$ 415,355	48,854,624
Converse	\$14,615,139	\$2,084,189	20,874,144	\$ 155,361	7,215,035
Crook	\$3,601,510	\$740,637	6,512,528	\$ 57,836	4,182,623
Johnson	\$9,602,877	\$524,856	12,659,659	\$ 139,703	5,359,870
Sheridan	\$20,226,294	\$2,299,041	33,787,516	\$ 519,447	15,642,488
Weston	\$3,232,872	\$839,354	5,090,274	\$ 64,735	2,046,318
Total	\$148,496,162	\$17,924,687	214,424,734	\$1,352,437	\$ 83,300,958

Source: WDR 2010

2.2.4 Future Economic Conditions

The Wyoming Department of Workforce Services projects the industry sectors that will realize the highest level of growth between 2009 and 2019 are health care & social assistance, natural resources & mining, public administration, and leisure & hospitality. Job losses are projected in the manufacturing, retail trade, and information industries. Job growth is projected in all regions of Wyoming. The regions of the state with the highest levels of employment in the natural resources & mining and leisure & hospitality industries are projected to see the highest growth during this period. The Northeast region of Wyoming – which includes Campbell, Crook, Johnson, Sheridan, and Weston counties – is projected to add 9,980 jobs (WDWS 2011).

Factors contributing to these trends, as noted by the State of Wyoming, include, but are not limited to the following:

- The aging population will likely increase the demand for health services and potentially increase health care employment opportunities and job openings in the state.
- The maturing population will also decrease the mobility of the labor force, making job-related migrations less likely than in the previous decade.
- The low wage structure in the services-producing sector and the instability in the goods-producing sector (such as mining and construction) do not produce enough sustained demand to attract new labor. Therefore, the state's resident labor force will represent most of the labor available for work.
- Competition with neighboring states for labor may intensify as economies of neighboring states become more diversified and provide higher wages.
- Wyoming's natural resource industry, association with a strong performance in the retail sector, allowed Wyoming to withstand the recession in 2001. However, limited economic diversity leaves the economy vulnerable to upset.

The Wyoming DOE supplemented its 2010 projections with *Outlook 2010 Revisited: Wyoming's Labor Market at Mid-Decade* in May 2006 (WDERP 2006). The document concluded the following:

- Early- and mid-decade employment growth is increasingly sustained by a market-based reallocation of workers supported by an increasing number of nonresident workers.
- The present and foreseeable employment growth and the human resource reallocation process raise the question of the physical availability of a trainable workforce.
- The state continues to export younger, educated persons while producing jobs requiring on-the-job training as the minimum skill set. A defining feature of Wyoming's market is not only the large volume of movement among workers finding employment in the state but the large number leaving the market as well.
- The availability of workers in Wyoming, to a significant degree, depends upon regional competition. Persistent growth in neighboring states will intensify the competition for workers in Wyoming.
- Labor shortages are likely to be a feature of the Wyoming market.

2.2.4.1 Future Employment Growth

Growth in the construction sector is highly dependent on population growth and governmental spending on infrastructure. Population growth in Wyoming is expected to slow in the next decade. Therefore, growth in construction employment is also expected to decline, slowing from 5.1 percent on an average annual basis between 1990 and 2000 to 0.73 percent between 2008 and 2018.

Table 2-20 displays employment forecasts for the construction industry in Wyoming to 2018. Projections indicate that the number of general contractors and specialty trade contractors are expected to increase slightly more than the construction industry as a whole.

Table 2-20. Construction Employment in Wyoming, 1990, 2000, 2008, and 2018

	1990	2000	2008 Actual Employment	2018 Projected	Change 1990 to 2000	Projected Change 2000 to 2018	Average Annual Change 1990 to 2000	Projected Change 2008 to 2018
General Contractors	2,099	4,285	5,007	5,300	2,908	1,015	7.40%	0.60%
Heavy Construction	3,866	5,301	9,660	10,450	5,794	5,149	3.20%	0.80%
Special Trade Contractors	4,815	8,085	13,518	14,658	8,703	6,573	5.30%	0.80%
Total Construction	10,779	17,671	28,185	30,408	17,406	12,737	5.10%	0.73%

Source: WDWS, 2011d

2.2.4.2 Future Labor Characteristics and Availability

As of 2005, there were 6,287 construction workers in the Study Area, according to the Bureau of Economic Analysis (USBEA 2011), and the construction labor force grew to 8,712 by 2009, an average growth rate of almost 9 percent. The annual average growth rates were used to project construction employment through 2012. **Table 2-21** displays the potential labor force within the Study Area, assuming that the growth rates in the next few years are similar to those between

2005 and 2009. Based on this assumption, the Study Area will have a construction labor force of nearly 11,267 workers in 2012.

Table 2-21. Construction Employment Estimates, 2005 to 2012

	2005	2006	2007	2008	2009	Average Annual Growth Rate, 2007-2009	Projected Employment Based on 2010-2012 Growth Rate		
							2010	2011	2012
WYOMING*	29,356	33,248	36,363	37,976	33,273	-4.25%	31,859	30,506	29,210
Campbell	2,735	3,307	3,981	4,751	4,602	7.80%	4,961	5,348	5,765
Converse	600	606	702	983	914	15.10%	1,052	1,211	1,394
Crook	340	421	463	419	397	-7.13%	369	342	318
Johnson	566	665	626	727	647	1.68%	658	669	680
Sheridan	1,696	1,909	2,100	2,139	1,815	-6.79%	1,692	1,577	1,470
Weston*	350	(D)	372	382	337	-4.70%	321	306	292
Study Area	6,287	6,908	8,244	9,401	8,712	2.84%	8,959	9,214	9,475

Source: USBEA 2011, Tetra Tech Calculations 2011

A 2005 study by the Wyoming DOE found that turnover for all employees in the construction sector during the third quarter of 2003 was 34.6 percent (WDERP 2005c). Based on this rate, in 2012 there would be 1,995 construction workers available for hire in Campbell County, and 3,278 in the Study Area.

In the past decade, other projects have been able to hire a significant amount of the required workforce locally including:

- The Request for Waiver of Permit for the Uinta County Wind Farm, June 2003, indicated the potential to hire 25 percent of the workforce locally.
- The Request for Waiver of Permit for the Basin Electric Dry Fork Substation, dated May 2006, anticipated that 1,019 construction workers would be employed during peak construction activities and 75 full-time employees would be required.
- The Request for Waiver of Permit for the Wygen II Power Generation Facility, dated May 2005, anticipated that peak monthly employment would be 352, a significant amount of which would be supplied from Gillette.
- The Wygen III Power Generation Facility is anticipated to employ 315 workers at peak construction in September, 2009.

Information about the available construction workforce was determined based on data provided by the Department of Workforce Services Employment Services Division. Information about the required construction workforce can be found in Section 3.2.

2.3 Housing

This section discusses the housing stock by the type of structure, age of structure, and occupancy. Most data is from the US Census Bureau, 2005-2009 American Community Survey.

These values represent an average collected over a period of 60 months and represent the most comprehensive and comparable recent data available for the study area. This data is supplemented with 2010 Census data.

2.3.1 Housing Units by Type of Structure

The 2010 U.S. Census found a total of 50,978 housing units in the Study Area (USCB 2010a). A U.S. Census intercensal estimate presented by the Wyoming Housing Data Base Partnership indicates a total of 46,902 units as of July 2009. The 2005-2009 averages presented in the American Community Survey shown **Table 2-22** provides a breakdown of the housing inventory by the type of structure for occupied housing units.

Table 2-22. Study Area Occupied Housing Stock by Type of Structure, 2005-2009 Average

Area	Total Units	Single-Family Units	Duplexes	Tri- and Four-plexes	Multi-family Units	Mobile home or other
WYOMING	208,269	146,621	5,415	9,789	16,245	30,407
% of Total	100%	70%	3%	5%	8%	15%
Campbell County	13,797	7,878	345	548	1,297	3,739
% of Total	100%	57%	3%	4%	9%	27%
Converse County	5,284	3,720	58	164	449	893
% of Total	100%	70%	1%	3%	8%	17%
Crook County	2,524	1,880	0	10	38	596
% of Total	100%	75%	0%	0%	2%	24%
Johnson County	3,251	2,220	114	59	306	553
% of Total	100%	68%	4%	2%	9%	17%
Sheridan County	12,295	9,025	320	750	836	1,365
% of Total	100%	73%	3%	6%	7%	11%
Weston County	2,917	1,908	85	82	41	799
% of Total	100%	65%	3%	3%	1%	27%
Study Area	40,068	26,631	922	1,613	2,967	7,945
% of Study Area	100%	66%	2%	4%	7%	20%

Source: USCB 2010b

Campbell County, with the highest population, had the greatest number of housing units with a total 13,797, constituting nearly 35 percent of the housing stock in the Study Area. It was followed by the second-most populated, Sheridan County, with 12,295 units. These two counties contain over 60 percent of the Study Area's housing stock (USCB 2010a).

Single-family units made up nearly two-thirds of the Study Area's occupied housing. Proportions ranged from 75 percent in Crook County to only 57 percent in Campbell County, which also had the highest number of multi-family units (apartment complexes). It is interesting

to note the high proportion of mobile homes in the Study Area—20 percent of all housing units, compared to Wyoming’s 15 percent (and 6 percent in the U.S. as a whole). Campbell County had the greater number of mobile homes, boats, RVs, or vans. In all, these two categories of “mobile” housing totaled nearly 7,945 occupied units in the Study Area.

Tables 2-23 and **2-24** show the breakdown of housing type for owner-occupied and renter-occupied units, respectively, while **Figures 2-7** and **2-8** illustrate the distribution.

Table 2-23. Owner-Occupied Housing Stock by Type of Structure, Study Area, 2005-2009 Average

Area	Total Occupied Housing Units	Total Owner-occupied Units*	Single-Family*	Duplex*	Tri- and Four-plex*	Multi-family*	Mobile home or other *
WYOMING	208,269	145,585	121,127	1,019	437	874	22,129
% of Total	100%	69.9%	83.2%	0.7%	0.3%	0.6%	14.6%
Campbell	13,797	10,668	7,286	75	21	85	3,200
% of Total	100%	77.3%	68.3%	0.7%	0.2%	0.8%	30.0%
Converse	5,284	3,803	3,176	23	23	0	586
% of Total	100%	72.0%	83.5	0.6%	0.6%	0.0%	15.4%
Crook	2,524	1,920	1,463	0	0	0	457
% of Total	100%	76.1%	76.2%	0.0%	0.0%	0.0%	23.8%
Johnson	3,251	2,393	1,864	57	0	0	471
% of Total	100%	73.6%	77.9%	2.4%	0.0%	0.0%	19.7%
Sheridan	12,295	8,294	7,290	91	41	0	871
% of Total	100%	67.5%	87.9	1.1%	0.5%	0.0%	10.5%
Weston	2,917	2,228	1,604	0	0	11	613
% of Total	100%	76.4%	72.0%	0.0%	0.0%	0.5%	27.5%
Study Area	40,068	29,306	22,683	246	85	96	6,198
% of Total	100%	73.1%	77.4%	0.8%	0.3%	0.3%	21.1%

*The percentage shown for Total Owner-occupied units represents the percentage of Total Occupied Housing Units. Percentages shown for each type of structure are percentages of the total owner-occupied units. Source: USCB 2010b

Table 2-24. Renter-Occupied Housing Stock by Type of Structure, Study Area, 2005-2009 Average

Area	Total Occupied Housing Units	Total Rental Units*	Single-Family*	Duplex*	Tri- and Four-plex*	Multi-family*	Mobile home or other *
WYOMING	208,269	62,684	25,450	4,513	9,277	15,295	8,149
% of Total	100%	30.1%	40.6%	7.2%	14.8%	24.4%	13.0%
Campbell	13,797	3,129	591	278	519	1,211	529
% of Total	100%	22.7%	18.9%	8.9%	16.6%	38.7%	16.9%
Converse	5,284	1,481	545	37	141	452	307
% of Total	100%	28.0%	36.8%	2.5%	9.5%	30.5%	20.7%
Crook	2,524	604	416	0	11	38	139

Table 2-24. Renter-Occupied Housing Stock by Type of Structure, Study Area, 2005-2009 Average (Cont.)

Area	Total Occupied Housing Units	Total Rental Units*	Single-Family*	Duplex*	Tri- and Four-plex*	Multi-family*	Mobile home or other *
% of Total	100%	23.9%	68.9%	0.0%	1.8%	6.3%	23.0%
Johnson	3,251	858	355	57	59	305	82
% of Total	100%	26.4%	41.4%	6.6%	6.9%	35.6%	9.6%
Sheridan	12,295	4,001	1,728	232	712	832	492
% of Total	100%	32.5%	43.2%	5.8%	17.8%	20.8%	12.3%
Weston	2,917	689	305	86	82	29	187
% of Total	100%	23.6%	44.2%	12.5%	11.9%	4.2%	27.1%
Study Area	40,068	10,762	3,940	690	1,524	2,867	1,736
% of Total	100%	26.9%	36.6%	6.4%	14.2%	26.6%	16.1%

*The percentage shown for Total Renter-occupied units represents the percentage of Total Occupied Housing Units. Percentages shown for each type of structure are percentages of the total owner-occupied units. Source: USCB 2010b

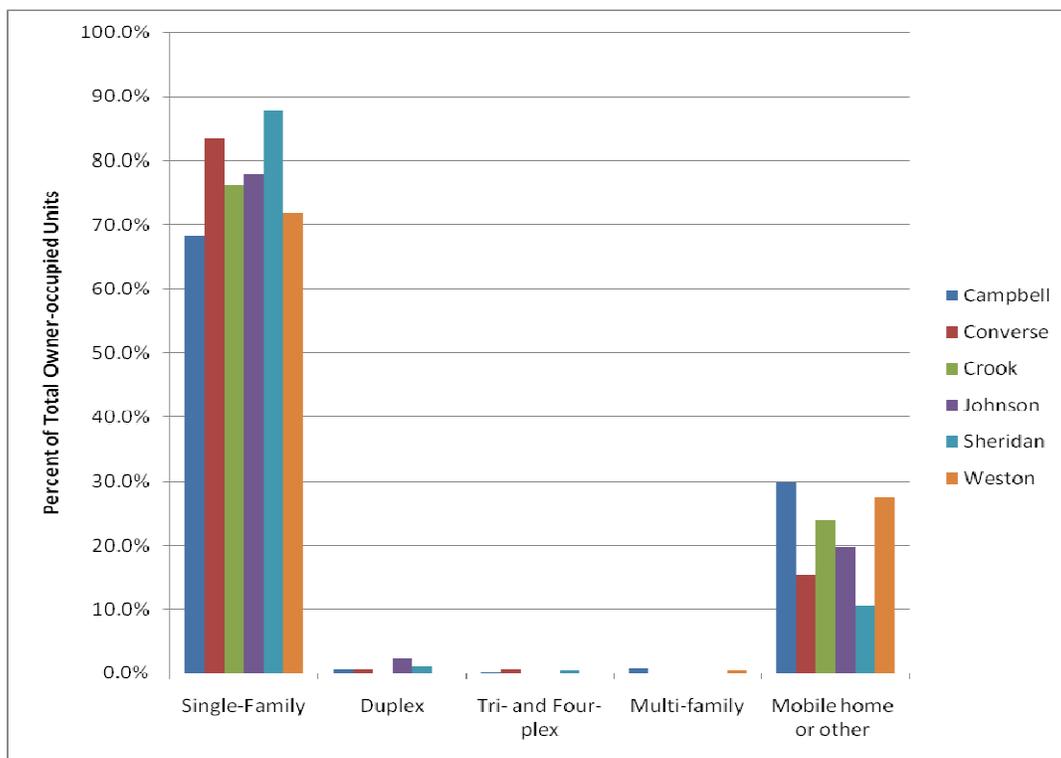


Figure 2-7. Owner-occupied Housing Units by Type of Structure, 2005-2009 Average

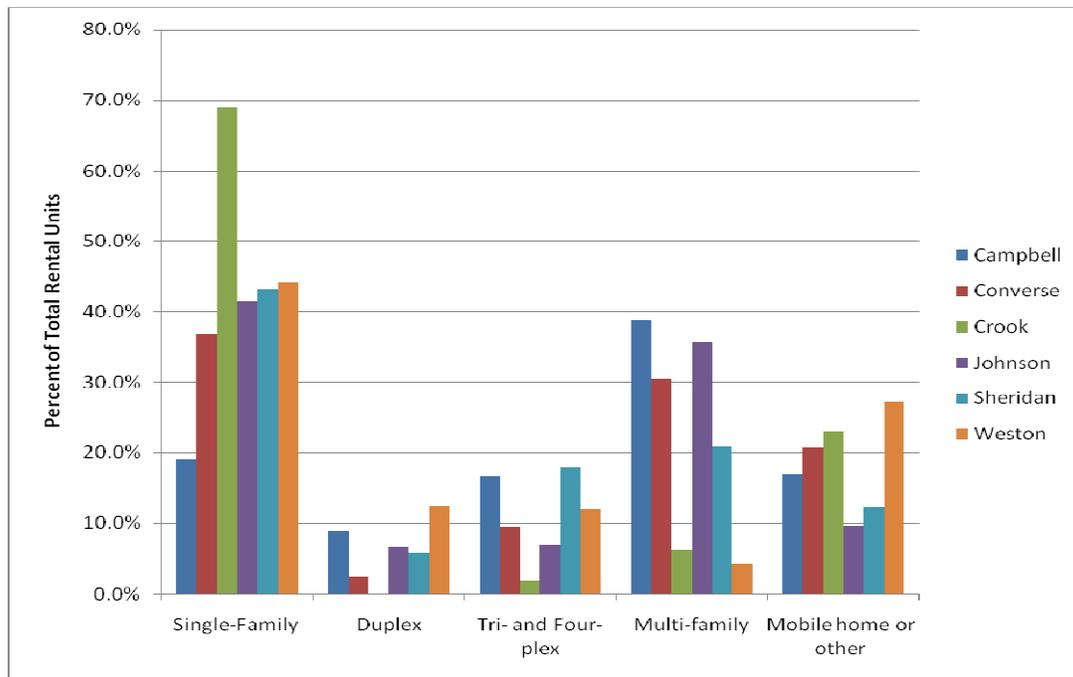


Figure 2-8. Renter-occupied Housing Units by Type of Structure, 2005-2009 Average

The difference between owner- and renter-occupied housing structures is vividly illustrated in the two graphs. Owner-occupied housing is nearly all single-family units or mobile homes. Sheridan, Converse, and Johnson Counties have the greatest percentage of owner-occupied single-family homes, while Campbell, Weston, and Crook Counties have the highest number of owner-occupied mobile homes. Duplex, three- or four-plex, and multi-family units together comprise only about 1.5 percent of owner-occupied housing in the Study Area.

Renter-occupied housing is spread among more types of structures, and the distribution varies quite a bit among the Study Area counties. In Campbell County, single-family units are less than one-fourth of renter-occupied housing, the lowest proportion within the Study Area. Proportions in the other counties varied from Converse County's 36.8 percent to Crook County's 68.9 percent.

Duplex units constitute a small percentage of rental housing throughout the Study Area (6.4 percent), ranging from zero percent in Crook County to 12.5 percent in Weston County. Three- and four-plex units provide about 14.2 percent of rental housing in the Study Area, with the greatest percentage found in Sheridan County with 17.8 percent; other counties range from about 1.8 to 16.6 percent. Renters occupy essentially all of the Study Area's multi-family units, which comprise over one-fourth of the Study Area's housing stock. Campbell County has by far the greatest proportion of this type, with about 38.7 percent, followed by Johnson County's 35.6 percent and Converse County's 30.5 percent. Mobile homes provide roughly 16 percent of rental housing in the Study Area. The proportion of renter-occupied mobile homes ranges from a high of 27.1 percent in Weston County to a low of 9.6 percent in Johnson County.

2.3.2 Housing Units by Age of Structure (“Year Built”)

Table 2-25 and **Figure 2-9** below illustrate the age of housing in the Study Area counties, and also reveal when building “booms” have occurred. In the Study Area, 76 percent of its occupied housing has been built since 1960, with 43 percent being constructed since the 1980.

Table 2-25. Study Area Occupied Housing Stock by Age of Structure, 2005-2009 Average

	1939 or earlier	1940s and 1950s	1960s and 1970s	1980s	1990s	2000 or later	Total
Campbell	400	497	4,815	3,297	2290	2483	13,797
Converse	692	629	2,203	819	560	370	5,284
Crook	381	278	810	414	437	207	2,524
Johnson	566	345	1,076	361	406	497	3,251
Sheridan	2,422	2,004	3,701	1,623	1,230	1,303	12,295
Weston	426	668	761	458	391	210	2,917
Study Area	4,887	4,421	13,366	6,972	5,314	5,070	40,068
% of Total Study Area	12%	11%	33%	17%	13%	13%	100%

Source: USCB 2010b

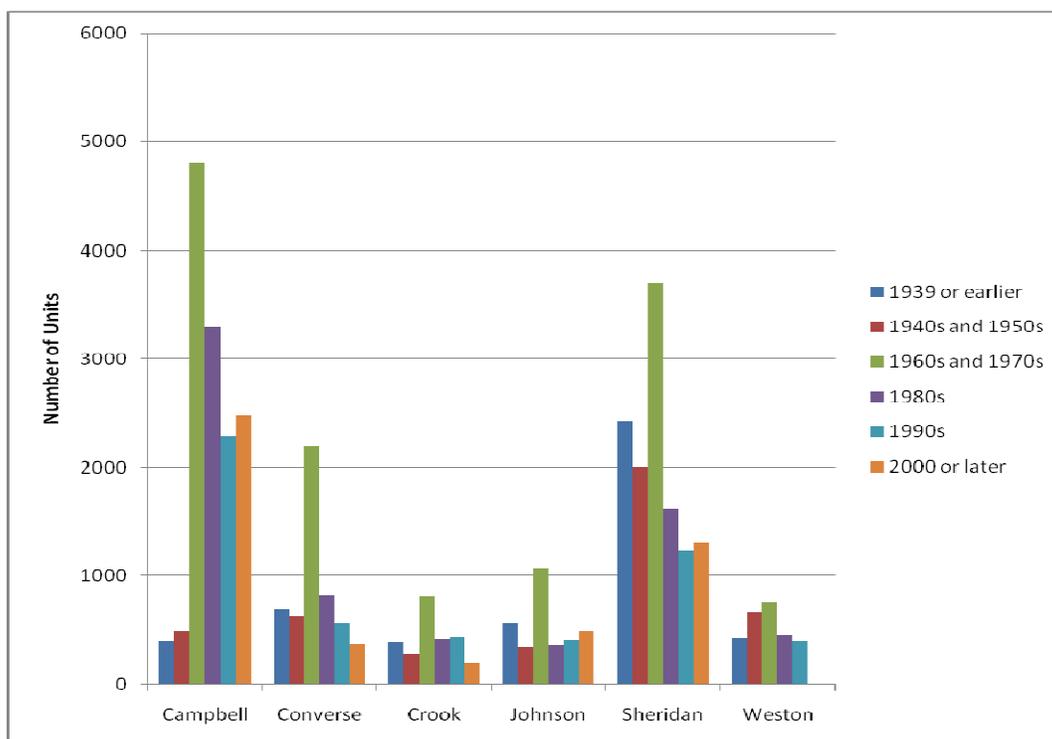


Figure 2-9. Age of Occupied Housing Stock in Study Area, 2005-2009 Average

2.3.3 Housing Units by Tenure and Occupancy

Table 2-26 shows housing in the Study Area by tenure (owner or renter) and occupancy (occupied or vacant) as of the 2010 Census. The Study Area is consistent with Wyoming and the nation, with roughly 60 percent of all housing units occupied by owners. Vacancy rates were somewhat high, as measured in the 2010 Census, ranging from 26 percent of units in Converse County to 9 percent in Campbell County.

Table 2-26. Study Area Housing by Tenure and Occupancy, 2010

Area	Total Units	Occupied			Vacant Units
		Total Occupied	Owner Occupied	Renter Occupied	
WYOMING	261,868	226,879	157,077	69,802	34,989
% of total	100%	87%	60%	27%	13%
Campbell	18,955	17,172	12,595	4,577	1,783
% of total	100%	91%	66%	24%	9%
Converse	8,576	6,388	4,552	1,836	2,188
% of total	100%	74%	53%	21%	26%
Crook	6,403	5,673	4,083	1,590	730
% of total	100%	89%	64%	25%	11%
Johnson	3,595	2,921	2,317	604	674
% of total	100%	81%	64%	17%	19%
Sheridan	17,796	15,455	11,006	4,449	2,341
% of total	100%	87%	62%	25%	13%
Weston	5,972	5,311	3,740	1,571	661
% of total	100%	89%	63%	26%	11%
Study Area	61,297	52,920	38,293	14,627	8,377
% of total	100%	86%	62%	24%	14%

USCB 2010a

2.4 Schools

2.4.1 Location and Characteristics of Educational Facilities

The six-county Study Area contains ten school districts, shown in **Table 2-27**. Of the 79 facilities, the majority (45) are elementary schools, 16 are junior highs/middle schools, and 18 are high schools. Campbell County District # 1 is the largest, with 20 schools, followed by Sheridan District 2 and Crook District # 1, with ten each.

Table 2-27. Public Schools in Study Area

School District	Elementary	Jr. High/ Middle School	High School	Total
Campbell District #1	15	2	3	20
Converse District #1	6	1	1	8
Converse District #2	3	1	1	5

Table 2-27. Public Schools in Study Area (Cont.)

School District	Elementary	Jr. High/ Middle School	High School	Total
Crook District #1	3	3	4	10
Johnson District #1	3	2	2	7
Sheridan District #1	3	2	2	7
Sheridan District #2	6	2	2	10
Sheridan District #3	2	1	1	4
Weston District #1	3	1	1	5
Weston District #7	1	1	1	3
Study Area Total	45	16	18	79

Source: WDOE 2007a

Table 2-28 presents historic enrollments in each Study Area school district. Despite population gains over the past decade, enrollment in Campbell County District #1 has remained steady, with an overall decline over the decade of less than 1 percent. The only school district whose enrollment actually increased over the period is Sheridan #1, which increased by only 1.5 percent. Other districts have declined by 1.9 to 24 percent, with the largest decreases in the Weston #7 and Converse #2 Districts. **Figure 2-10** illustrates the enrollment trends.

Table 2-28. Historic Enrollment in Study Area School Districts, 1997-2006

Location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	% Change 1997- 2006
Campbell #1	7,684	7,710	7,580	7,488	7,441	7,368	7,234	7,198	7,337	7,617	-0.9%
Converse #1	1,747	1,747	1,715	1,660	1,663	1,688	1,582	1,587	1,584	1,617	-7.4%
Converse #2	909	879	860	783	792	771	743	739	713	691	-24.0%
Crook #1	1,300	1,269	1,211	1,176	1,142	1,122	1,087	1,075	1,035	1,080	-16.9%
Johnson #1	1,337	1,336	1,306	1,307	1,257	1,257	1,222	1,221	1,234	1,261	-5.7%
Sheridan #1	905	920	914	895	885	871	866	894	901	919	1.5%
Sheridan #2	3,386	3,404	3,207	3,247	3,250	3,172	3,065	2,952	2,941	3,016	-10.9%
Sheridan #3	103	101	102	117	113	95	104	93	91	101	-1.9%
Weston #1	1,057	994	969	907	869	847	822	833	777	817	-22.7%
Weston #7	342	301	292	257	265	261	261	242	249	259	-24.3%

Source: WDOE 2007a

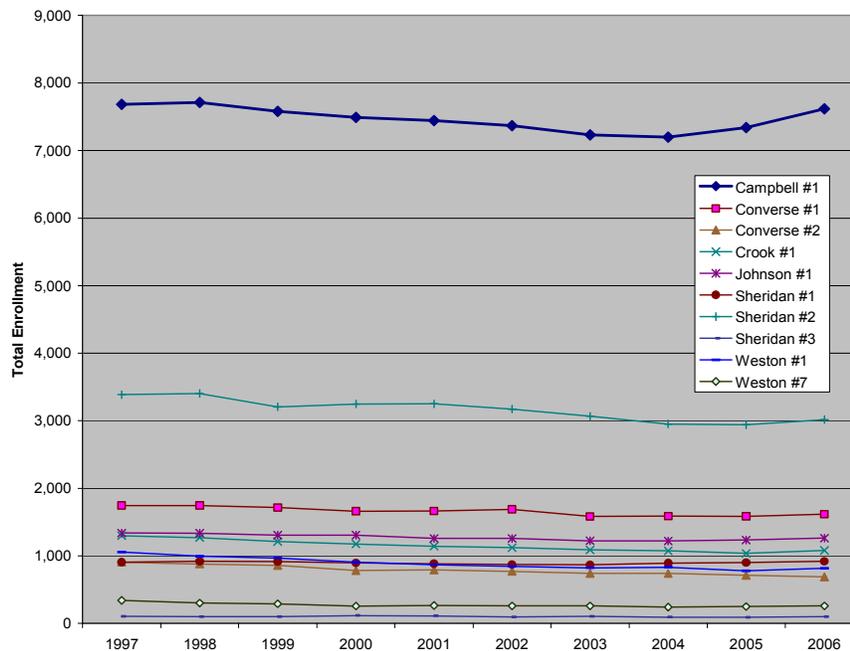


Figure 2-10. Public School K-12 Enrollment Trends, Study Area, 1997-2006

2.4.2 Pupil-Teacher Ratios

The pupil-teacher ratio, calculated by dividing a school's or district's enrollment by its number of full-time equivalent (FTE) teachers, is a commonly used measure to compare school districts, since educators and parents believe that lower ratios are conducive to improved learning. Wyoming's pupil-teacher ratio tends to be one of the lower ones in the United States. In statistics for 2004, the latest year for which national data are available, the U.S. Department of Education found Wyoming's ratio to be the fifth-lowest in the nation.

Within the Study Area, the 2006 pupil-teacher ratios are well below the national average and lower or equal to Wyoming's ratio of 13.2 in all school districts except in Campbell District #1, whose ratio is 14.8, and Weston District #1, with a ratio of 13.3. **Table 2-29** shows the Study Area's historic pupil-teacher ratios by school district, along with those for Wyoming and the U.S.

Table 2-29. Pupil-Teacher Ratios, Public School Districts in Study Area, 1997-2006¹

Location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
U.S.	16.8	16.4	16.1	16.0	15.9	15.9	15.9	15.8	NA	NA
WYOMING ²	14.5	14.2	13.3	13.3	12.5	13.4	13.2	12.9	12.7	13.2
Campbell #1	15.0	14.7	14.1	14.3	13.7	13.6	13.5	12.8	13.0	14.8
Converse #1	13.6	13.2	13.0	12.8	13.4	13.3	12.5	12.7	12.2	12.9
Converse #2	12.9	12.6	12.4	11.3	12.2	11.9	11.4	11.4	10.9	11.7
Crook #1	12.9	13.2	12.2	11.7	11.3	11.6	11.0	11.2	10.6	12.0
Johnson #1	13.8	13.2	13.0	12.7	12.1	12.1	11.5	11.0	10.8	10.8
Sheridan #1	11.5	11.2	10.6	10.3	10.1	10.3	10.1	9.8	10.0	10.9
Sheridan #2	17.5	14.7	11.9	11.9	11.9	12.0	11.8	11.4	12.7	13.2
Sheridan #3	6.3	6.0	6.5	7.4	6.8	5.8	6.3	5.5	5.4	6.1

**Table 2-29. Pupil-Teacher Ratios, Public School Districts in Study Area, 1997-2006¹
(Cont.)**

Location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Weston #1	13.3	12.7	12.4	11.6	11.7	12.2	12.3	12.3	11.6	13.3
Weston #7	12.9	12.2	10.5	9.7	10.2	10.1	10.2	9.2	9.3	9.7

¹ Data are for October of each year.

² All data are ratio of enrollment to full-time equivalent (FTE) instructional staff, except WY, which is ratio of enrollment to full-time equivalent (FTE) staff.

Source: WDOE 2007b

The pupil-teacher ratios were used to estimate the capacity of the Study Area's school districts, by determining the number of students that could be added to a district before its pupil-teacher ratio exceeded the Wyoming or national level. **Table 2-30** shows these estimates, based on Wyoming's ratio for 2006 and the U.S. ratio for 2004, the latest year for which national data are available. When compared to the lower Wyoming ratio, the Study Area could add 91 students; compared to the higher U.S. ratio, enrollment could increase by 3,532 students. Note that this methodology does not take into account facility constraints in increasing capacity (i.e. adding more classrooms or other school facilities). Given the stable or declining enrollment trends in the Study Area, it seems likely that enrollments would have to increase substantially before additional classroom space would be required.

Table 2-30. Capacity Estimates for Study Area School Districts, Based on Pupil-Teacher Ratios

District	Total FTE 2006	Enrollment 2006	Pupil-Teacher Ratio in 2006	Number of Students who could be added before exceeding:	
				2006 WY ratio (13.2)	2004 US ratio (15.8)
Campbell District #1	513.62	7,617	14.8	-837	498
Converse District #1	125.74	1,617	12.9	43	370
Converse District #2	58.96	691	11.7	87	241
Crook District #1	90.23	1,080	12.0	111	346
Johnson District #1	117.19	1,261	10.8	286	591
Sheridan District #1	84.08	919	10.9	191	409
Sheridan District #2	228.59	3,016	13.2	1	596
Sheridan District #3	16.69	101	6.1	119	163
Weston District #1	61.52	817	13.3	-5	155
Weston District #7	26.78	259	9.7	95	164
Study Area		17,378		91	3,532

Sources: WDOE 2007b, USDE 2006. Calculations by Tetra Tech 2007

2.4.3 Current Plans for Expansion

A number of school districts in the Study Area have plans to update their facilities in anticipation of future needs and expected population growth. **Table 2-31** shows these plans, taken from district Capital Improvement Plans (WSFC 2005).

Table 2-31. Major Capital Improvement Projects for School Districts within the Study Area

District Name	School Name*	Building Name*	Project Description
Campbell District #1	Recluse ES/MS (K-8)	Main Building	Replace school.
Converse District #1	Douglas MS (6-8)	Douglas MS	Office relocation.
Converse District #1	Douglas Primary	Douglas Primary	Birch Street extension to alleviate parking lot congestion and facilitate safety; a drive-through from the parking lot to the east end of Birch Street.
Converse District #2	Oregon Trail ES/ Central Administration	Oregon Trail ES	Oregon Trail ES under construction. To be completed in 2006.
Converse District #2	Oregon Trail ES/ Central Administration	Oregon Trail ES	Additional construction contingency to be held by School Facilities Commission.
Converse District #2	Oregon Trail ES/ Central Administration	Oregon Trail ES	Elementary students move into new Oregon Trail ES in August 2006.
Converse District #2	Glenrock Intermediate/ MS (5-8)	Glenrock Intermediate/MS	Programming and design fees.
Converse District #2	Glenrock HS (9-12)	Glenrock HS	Asphalt paving and building shell upgrades.
Crook District #1	Hulett ES/MS/HS (K-12)	Hulett Main Bldg	Partial demolition, reconstruction, and renovation of existing school.
Sheridan District #1	Big Horn ES	Main Building	Construction of new elementary school/remodel current facility to middle school use.
Sheridan District #1	Tongue River MS	Main Building	Track/football field improvements.
Sheridan District #1	Tongue River MS	Central Office	Construction of bus barn facility.
Sheridan District #3	Arvada-Clearmont Jr/ Sr High	Main Building	PK-6 addition to create a PK-12 school.
Sheridan District #3	Arvada ES	Main Building	New school comprised of four connected modular units.

ES = Elementary School; MS = Middle School; PK = Pre-Kindergarten; sf = square feet
Source: WSFC 2005

2.5 Health Care

The following section provides information on health care professionals and facilities in the Study Area. The data are primarily from the *Wyoming Medical Professional Survey*, prepared for the Wyoming Office of Rural Health (WORH) in October 2004, and are generally the latest data available (WORH 2004).

2.5.1 Health Care Facilities

The Study Area contains seven hospitals, located within the major towns in each county. There are two hospitals in Sheridan County, and one in each of the other counties within the Study Area. **Figure 2-11** shows the hospital locations.

The characteristics of Study Area hospitals are shown in **Table 2-32**. The largest hospital in the study is Campbell County Memorial Hospital, with 90 acute care beds, 155 swing beds, and nearly 21,000 outpatient visits in 2002. The hospital offers 24-hour ambulance and emergency-response services and also serves residents in surrounding counties. This hospital also serves the Town of Wright with the Wright Clinic, staffed by a Board Certified Family Physician. In addition, the Wright Clinic offers laboratory, physical therapy, ambulance and counseling services to area residents (NEWEDC 2007).

The next-largest hospital in the Study Area is Memorial Hospital of Sheridan County, with 64 beds. This facility had the largest number of acute admissions and more than 10,000 emergency room visits in 2002. The hospital recently added a new patient wing. Sheridan is also home to a Veterans Affairs Hospital that serves military veterans in the area.

The hospitals in Converse, Crook, Johnson, and Weston Counties are smaller, but provide acute medical services, general surgery, emergency, outpatient services, and diagnostic services.

Table 2-32. Study Area Hospital Characteristics

	Campbell County	Converse County	Crook County	Johnson County	Sheridan County	Weston County
Number of Hospitals	1	1	1	1	2	1
Number of Acute Care Beds	90	34	16	29	64	25
Average Bed Occupancy	22%	ND	22%	ND	ND	17.60%
Number of Acute Admissions per Year	3,125	670	228	532	12,332	263
Number of Long-Term Admissions per Year	90-100	ND	25	ND	ND	Included in # above
Number of Outpatient Visits	20,680	20,828	4,105	11,476	ND	1,359
Number of Inpatients	13,715	2,318	283	1,515	ND	891
Number of Surgeries	142	ND	NA	ND	2,520	53
Number of Emergency Room Visits per Year	17,444	4,010	853	1,630	10,100	1,681
Number of Swing Beds	155	20	45	65	0	10

Source: CH2MHill 2006

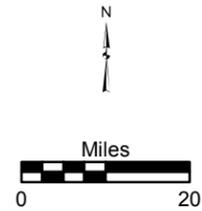
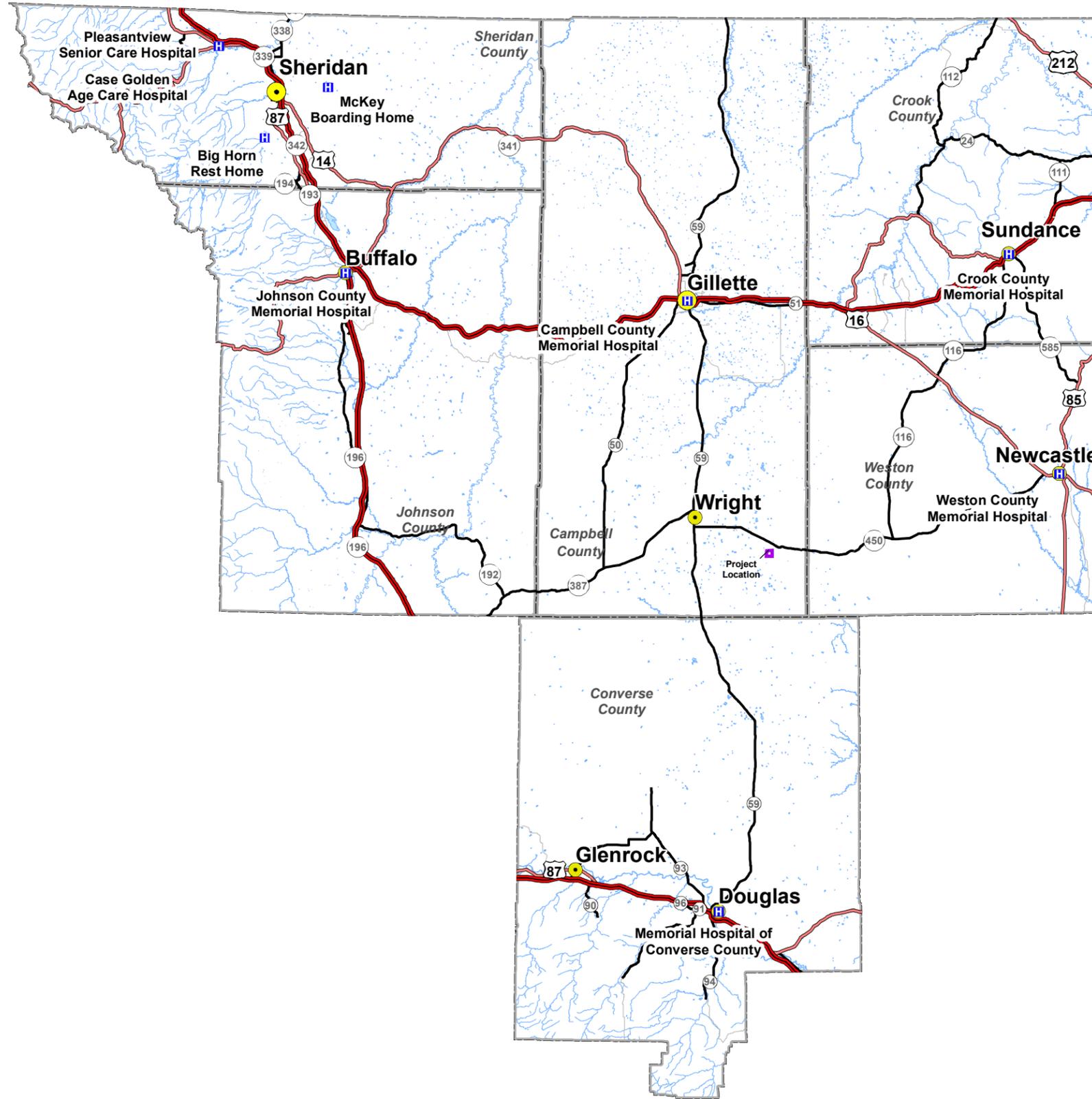
2.5.2 Physicians and Medical Staff

The Wyoming Healthcare Commission (WHC 2006) recently completed an extensive study of Wyoming's healthcare professionals and issued the *Wyoming Healthcare Commission Statistical Handbook*. The findings for Wyoming and the Study Area are presented in **Table 2-33** and **Figure 2-12**. With 64 doctors, Campbell County has the largest number of physicians, both full- and part-time, followed by Sheridan County with 58 doctors. The other counties have from 4 to 18 doctors. There are more physician assistants, dentists, and pharmacists in Sheridan County, and the number of advanced practice nurses is the same in Sheridan and Campbell County. All Study Area counties have at least one of each profession, except for Johnson County, which has no advanced practice nurses.

Table 2-33. Health Care Providers in Wyoming and the Study Area, 2006

Location	Total Physicians	Full-Time Physicians	Part-Time Physicians	Physician Assistants	Advanced Practice Nurses	Dentists	Pharmacists
WYOMING	961	701	260	131	145	266	399
Campbell	64	50	14	2	8	15	22
Converse	18	9	9	2	4	4	6
Crook	4	3	1	1	1	1	2
Johnson	10	6	4	1	0	4	4
Sheridan	58	48	10	7	8	20	33
Weston	4	3	1	2	1	3	5
Study Area	158	119	39	15	22	47	72

Source: WHC 2006



Legend

- Hospitals
- Project Location

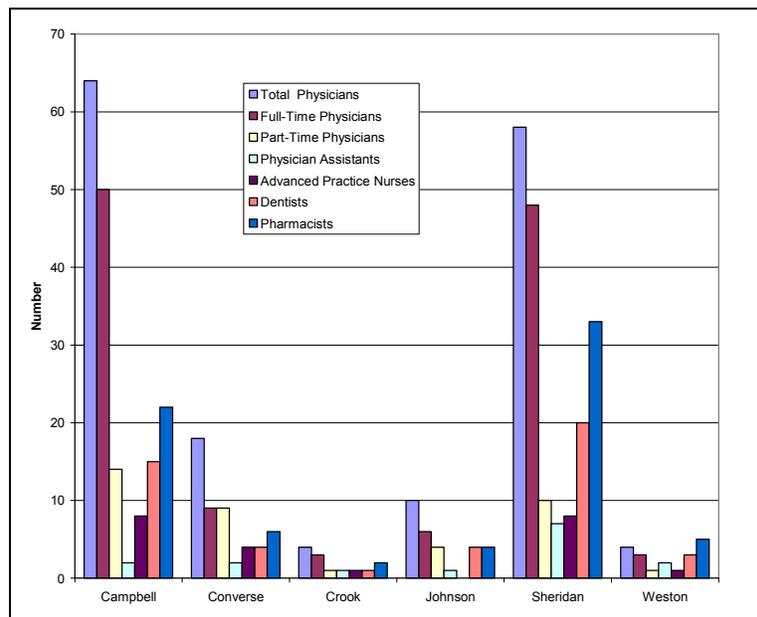


Figure 2-12. Health Care Providers by Type, Study Area, 2006

Table 2-34 and **Figure 2-13** provide information on primary care and specialist physicians in each county within the Study Area as well as the ratio of physicians to the county population for 2006. Sheridan County has the highest ratio of specialists and primary care physicians to population in the Study Area. Campbell County has the next highest ratio of total physicians and specialists to population, but its ratio of primary care physicians to population is lower than some of the less-populated counties, probably because the doctors in the less-populated counties tend to be in primary care practices.

Table 2-34. Physicians per Population in Wyoming and the Study Area, 2006

Area	Population (2006) ¹	Total Physicians		Specialists ²		Primary Care Physicians ²	
		Number	per 1,000 Population	Number	per 1,000 Population	Number	per 1,000 Population
WYOMING	515,410	961	1.86	664	1.29	297	0.58
Campbell	38,890	64	1.65	50	1.29	14	0.36
Converse	12,860	18	1.40	12	0.93	6	0.47
Crook	6,210	4	0.64	0	0.00	4	0.64
Johnson	7,990	10	1.25	3	0.38	7	0.88
Sheridan	27,720	58	2.09	39	1.41	19	0.69
Weston	6,700	4	0.60	1	0.15	3	0.45
Study Area	100,370	158	1.57	105	1.05	53	0.53

¹Population estimates for 2006 are used because the physician data are from 2006.

²Primary care is defined by the source document as family practice, general practice, and internal medicine. Specialists are defined as any specialty other than family practice, general practice, and internal medicine.

Source: WHC 2006

Calculations by Tetra Tech 2007

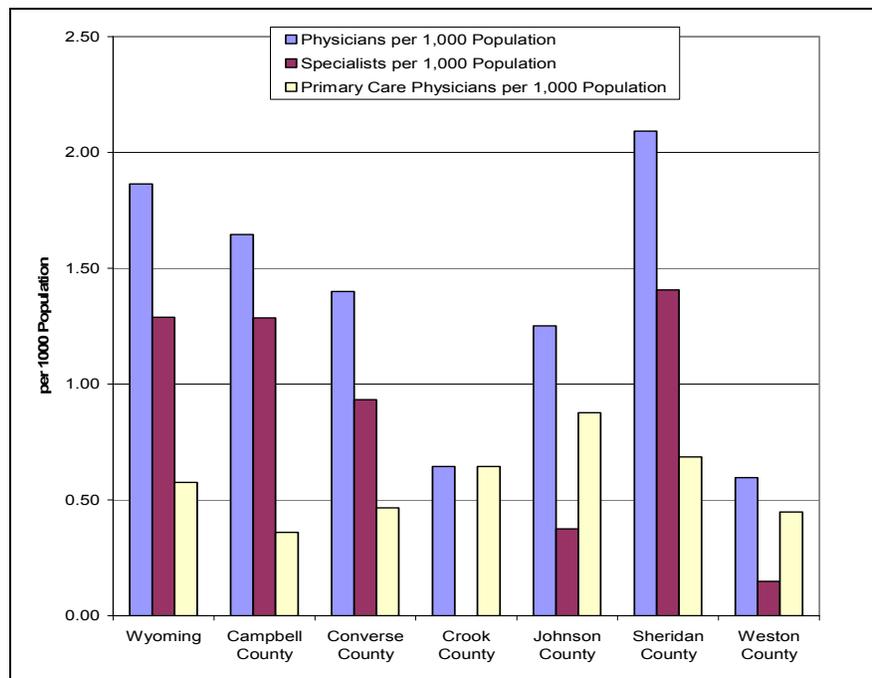


Figure 2-13. Physicians by Type per Population, Study Area, 2006

2.5.3 Emergency Medical Services

According to the Wyoming Department of Health, Office of Emergency Medical Services (WDHEMS 2007), as of 2005 there were 13 ambulance services with 40 vehicles in the Study Area; one service with seven vehicles was in Campbell County. As **Table 2-35** shows, there were more than 8,500 ambulance runs reported for the Study Area (one service in Converse County did not report to the State), with the greatest numbers in Sheridan County (3,546) and Campbell County (2,563). At that time, the Study Area contained 204 certified ambulance attendants, half of which were located in Sheridan or Campbell County.

Wyoming had 2.0 certified ambulance attendants per 1,000 population in 2005. Campbell County had only 1.2 attendants per 1,000 population, the lowest rate in the Study Area, and Converse County had only 1.3. The remaining counties in the Study Area exceeded Wyoming's rate, with numbers ranging from 2.2 to 4.7 attendants per 1,000 population.

The low rates per population for Campbell and Converse Counties are also reflected in their higher numbers of square miles per certified attendant. Campbell County makes up nearly one-fourth of the Study Area's land, and with the larger number of certified attendants has an average coverage for each one of 108.1 square miles. However, in Converse County, which comprises one-fifth of the Study Area's land, each certified attendant covers over 250 square miles. Sheridan County has the highest number of ambulances and certified attendants, each of which covers an average of only 42.2 square miles.

Table 2-35. Emergency Medical Services in the Study Area, 2005

Area	Area Data		Ambulance Data			Certified Attendants		
	2005 Population Estimate	Square Miles	Services Reporting	Number of Vehicles	Runs*	Number	Number per 1,000 people	Square miles per Certified Attendant
WYOMING	508,798	97,100	71	180	51,677	1,018	2.0	95.4
Campbell	37,420	4,756	1	7	2,563	44	1.2	108.1
Converse	12,743	4,277	1	3	752	17	1.3	251.6
Crook	6,168	2,897	3	7	501	29	4.7	99.9
Johnson	7,785	4,179	2	6	668	35	4.5	119.4
Sheridan	27,341	2,532	3	10	3,546	60	2.2	42.2
Weston	6,642	2,407	3	7	537	19	2.9	126.7
Study Area	98,134	21,048	13	40	8,567	204	2.1	103.2

*One ambulance service in Converse County did not report.

Source: USCB 2000, WDHEMS 2007

2.5.4 Current Health Needs

The level of service currently provided by each county's health services appears to be adequate. Crook County Memorial Hospital is planning an expansion and is building a wellness center that will bring its physical therapy and rehabilitation division onto the main campus. Weston County is also planning to expand its physical therapy and rehabilitation space. A 2004 study found that citizens of Campbell County were generally satisfied with the Campbell County Memorial Hospital, with more than 62 percent of citizens ranking the facility as excellent or good. When asked to rank physician's services, 42 percent of the citizens responded good and nearly 31 percent ranked the services as fair (CH2MHill 2006).

2.6 Public Safety

The Study Area is generally well-covered by fire and police services. The area has 18 fire stations, one fire department training center, 10 police stations, and six sheriff's departments, one for each county. The following sections discuss fire protection, law enforcement, and crime statistics.

2.6.1 Fire Protection

Table 2-36 displays the Study Area's fire departments and all stations located in Campbell County, which has 10 facilities. Gillette has eight fire stations, and there is one fire station in Wright. Campbell County is also home to the only fire training facility in the Study Area.

Table 2-36. Location of Fire Stations and Facilities in the Study Area

Name	Address	City	County
Campbell County Fire Department	Nickelson's Little Farms	Gillette	Campbell
Campbell County Fire Department	917 East Warlow Drive	Gillette	Campbell
Campbell County Fire Department	121 Union Chapel Road	Gillette	Campbell

Table 2-36. Location of Fire Stations and Facilities in the Study Area (Cont.)

Name	Address	City	County
Campbell County Fire Department	98 Freedom Road	Gillette	Campbell
Campbell County Fire Department	200 Rohan Avenue	Gillette	Campbell
Campbell County Fire Department	2909 South Douglas Highway	Gillette	Campbell
Campbell County Fire Department	515 Wright Boulevard	Wright	Campbell
Fire Department Training Center	600 West Warlow Drive	Gillette	Campbell
Gillette Fire Department	917 East Warlow Drive	Gillette	Campbell
Gillette Fire Department	2909 South Douglas Highway	Gillette	Campbell
Douglas Fire Department	230 North 2nd Street	Douglas	Converse
Glenrock Fire Department	5 on 55 Ranch Road	Glenrock	Converse
Glenrock Fire Department	703 West Birch Street	Glenrock	Converse
Sundance Fire Department	700 Cleveland	Sundance	Crook
Moorcroft Fire Department	104 North Big Horn	Moorcroft	Crook
Buffalo Fire Department	639 Fort Street	Buffalo	Johnson
Sheridan Fire Department	55 East Grinnell Street	Sheridan	Sheridan
Upton Fire Department	Unknown	Upton	Weston
Newcastle Fire Department	19 Fairgrounds Road	Newcastle	Weston

Source: CH2MHill 2006

Table 2-37 shows the number of firefighters and facilities in the Study Area. There are a total of 31 full-time and 175 volunteer firefighters reported for the Study Area (Converse County did not report the number of firefighters). Of the reported totals, Campbell County accounts for over one-third of the full-time and all of the part-time firefighters. The remaining full-time personnel are all in Sheridan County. Presumably, the other four counties are served by volunteers.

Table 2-37. Fire Protection Personnel and Facilities in the Study Area

Location	Full-Time Fire Fighters	Volunteer Fire Fighters	Number of Fire Stations	Fire-Training Centers
Campbell	11	175	9	1
Converse	NA	NA	3	0
Crook	0	NA	2	0
Johnson	0	NA	1	0
Sheridan	20	NA	1	0
Weston	NA	NA	2	0
Study Area	31	175	18	1

Source: CH2MHill 2006

2.6.2 Law Enforcement

Campbell County is home to the Gillette Police Department and the Campbell County Sheriff's Department, which is located in Gillette but also has an office in Wright. The Sheriff's Department services include investigations and patrol, K-9 units, animal control, and communications, in addition to law enforcement in Wright and rural areas of the county. The department also provides the Crime Stoppers program for Campbell County. **Table 2-38** shows the location of law enforcement agencies within the Study Area.

Table 2-38. Location of Police Stations and Sheriff's Departments in the Study Area

Name	Address	City	County
Gillette Police Department	201 East 5th Street	Gillette	Campbell
Campbell County Sheriff, Wright	515 Wright Boulevard	Wright	Campbell
Douglas Police Department	101 North 4th Street	Douglas	Converse
Glenrock Police Department	219 South 3rd Street	Glenrock	Converse
Converse County Sheriff's Department	107 North 5th Street	Douglas	Converse
Moorcroft Police Department	104 North Big Horn	Moorcroft	Crook
Sundance Police Department	213 Main Street	Sundance	Crook
Hulett Police Department	123 Hill Road	Hulett	Crook
Crook County Sheriff's Department	309 Cleveland	Sundance	Crook
Buffalo Police and Sheriff Department	639 Fort Street	Buffalo	Johnson
Sheridan Police Department	45 West 12 th Street	Sheridan	Sheridan
Sheridan County Sheriff's Department	54 West 13 th Street	Sheridan	Sheridan
Newcastle Police and Sheriff Department	25 North Summer Avenue	Newcastle	Weston
Upton Police Department	520 Pine Street	Upton	Weston

As **Table 2-39** shows, Campbell County accounts for more than half of the police officers and nearly one-half of deputy sheriffs in the Study Area, and has the second-highest ratio of citizen-to-police ratio, after Johnson County.

Table 2-39. Law Enforcement in the Study Area

Area	Number of Police Officers	Number of Deputy Sheriffs	Number of Police Stations	Number of Sheriff's Stations	Police to Citizen Ratio per 1,000 Citizens (2001)
Campbell*	57	40	1	1	2.9
Converse	20	6	2	1	2.2
Crook	9	4	3	1	2.4
Johnson	9	12	1	1	3.1

Table 2-39. Law Enforcement in the Study Area (Cont.)

Area	Number of Police Officers	Number of Deputy Sheriffs	Number of Police Stations	Number of Sheriff's Stations	Police to Citizen Ratio per 1,000 Citizens (2001)
Sheridan	30	20	1	1	1.9
Weston	8	6	2	1	NA
Study Area	107	88	10	6	--

*Campbell County had 18 non-sworn officers. All other police officers in the Study Area were sworn officers.
Source: CH2MHill 2006

2.6.3 Crime Statistics

There were a total of 585 crimes reported in the Study Area counties by the Federal Bureau of Investigation in its county crime statistics for 2006 (FBI 2007). Of these, 12 percent (68) were violent crimes (crimes against persons) and 88 percent (517) were property crimes. Campbell County accounted for 68 percent of the Study Area's violent crime in 2006, and 18 percent occurred in Sheridan County.

As **Figure 2-14** vividly demonstrates, larceny-theft is by far the prevalent crime throughout the Study Area, followed by burglaries. As would be expected, the largest counties in population experienced the most incidents, with Campbell County accounting for 56 percent of all property crimes, 13 percent of burglaries, and 37 percent of larcenies. Sheridan County accounted for 19 percent of all property crimes, only 3 percent of burglaries, and 15 percent of larcenies.

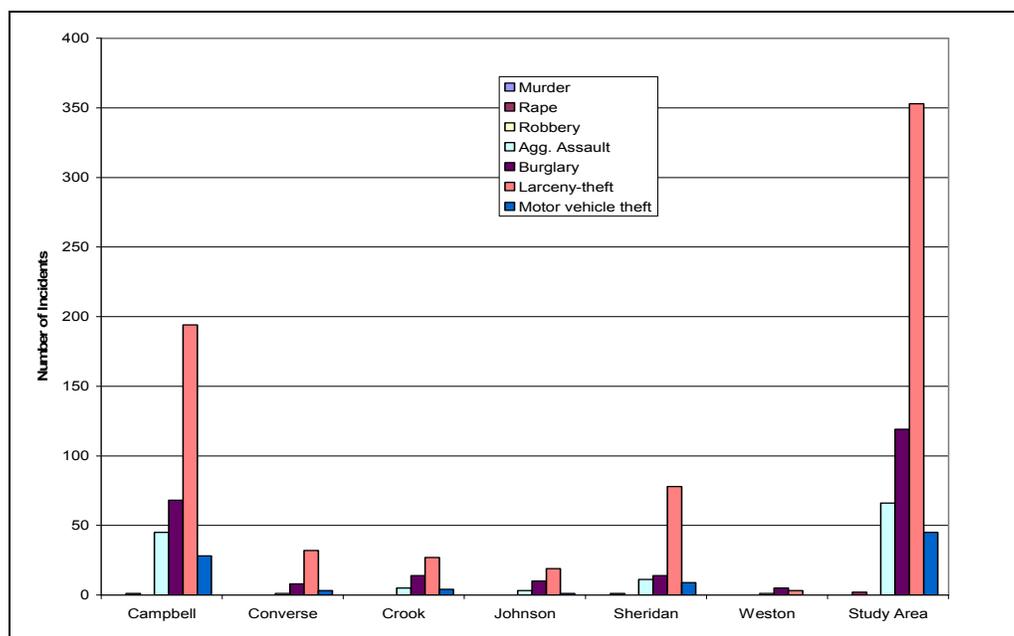
**Figure 2-14. Incidence of Crime in the Study Area, 2006**

Table 2-40. Study Area Crime Statistics, 2006

County	All Crimes	Violent crime					Property Crime			
		Total	Murder	Rape	Robbery	Agg. Assault	Total	Burglary	Larceny-theft	Motor vehicle theft
Campbell	336	46	0	1	0	45	290	68	194	28
Converse	44	1	0	0	0	1	43	8	32	3
Crook	50	5	0	0	0	5	45	14	27	4
Johnson	33	3	0	0	0	3	30	10	19	1
Sheridan	113	12	0	1	0	11	101	14	78	9
Weston	9	1	0	0	0	1	8	5	3	0
Study Area	585	68	0	2	0	66	517	119	353	45

Source: FBI 2007

2.7 Municipal Services

This section describes existing utility services in the Study Area and reviews local capital improvement plans to describe upcoming changes in services.

2.7.1 Existing Utility Services

The following sections discuss the primary municipal utility services provided to residents within the six-county Study Area, including electricity and natural gas, water, wastewater treatment, and waste disposal.

2.7.1.1 Electricity and Natural Gas

Table 2-41 lists the electricity and natural gas suppliers within the Study Area and the counties and number of customers served, where available. There are ten primary suppliers of electricity for the six-county area. PRECorp and Pacific Power and Light Corporation are the two largest suppliers in the Study Area, with the former serving 19,000 customers in Campbell, Crook, Johnson, and Weston Counties, and the latter serving customers in Converse and Johnson Counties. The largest natural gas supplier in the Study Area is KN Energy, serving customers in the Cities of Gillette and Wright in Campbell County, Glenrock and Douglas in Converse County, and the Town of Moorcroft in Crook County.

Table 2-41. Electricity and Natural Gas Suppliers within the Study Area

Company	Counties Served	Service	Number of Customers
City of Gillette	Campbell	Electricity	10,000
Powder River Energy Corporation (PRECorp)	Campbell, Crook, Johnson, Sheridan, Weston	Electricity	19,000
Pacific Power and Light Corporation	Converse (western portion including Douglas); Johnson (Buffalo)	Electricity	NA
Niobrara Electric Association (NEA)	Converse (eastern portion)	Electricity	NA
High Plains Power (HPP)	Johnson (southwestern portion)	Electricity	NA

Table 2-41. Electricity and Natural Gas Suppliers within the Study Area (Cont.)

Company	Counties Served	Service	Number of Customers
Black Hills Power & Light (BHPL)	Weston (Newcastle and Upton)	Electricity	NA
Rocky Mountain Power	Converse, Johnson (southeast corner)	Electricity	NA
Montana Dakota Utilities (MDU)	Campbell, Crook, Converse, Johnson (north-central portion), Sheridan, Weston	Electricity, Natural Gas	NA
MGTC	Crook (Moorcroft)	Natural Gas	NA
KN Energy / Kinder Morgan	Converse (Glenrock and Douglas),	Natural Gas	NA
Northern Gas of Wyoming	Campbell (Gillette), Johnson (southeast portion), Weston (Newcastle, Upton)	Natural Gas	NA
Wyoming Gas Company	Crook	Natural Gas	NA
Big Horn Rural Electric Company (BHREC)	Sheridan, four other Wyoming counties and two Montana counties	Electricity	3,300
Big Horn County EC	Sheridan (northwest corner)	Electricity	NA

Source: Wyoming Public Service Commission (WPSC) 2007

2.7.1.2 Water

Water in the Study Area is provided through municipal water services in cities and more densely populated areas. In Campbell County, the City of Gillette operates the municipal water supply, maintaining five pump stations, nine storage reservoirs, and about 200 miles of water pipe. The City currently has 19 million gallons of water storage for peak demands and fire protection. The annual average water production is 4.4 million gallons per day (MGD) and peak water production is 13.6 MGD (COG 2007a). Other cities and towns in the Study Area that operate and maintain a municipal water supply include Wright in Campbell County; Glenrock and Douglas in Converse County; Moorcroft, Pine Haven, Hulett, and Sundance in Crook County; Kaycee and Buffalo in Johnson County; the City of Sheridan in Sheridan County; and Newcastle and Upton in Weston County. Private wells serve the remaining, more rural portions of each of these counties.

2.7.1.3 Wastewater

Table 2-42 lists the wastewater treatment facilities in the Study Area (excluding facilities that do not serve permanent populations, such as those at schools). Wastewater in more rural areas is discharged to private leach fields or septic systems.

Campbell County, with the largest population, has 37 facilities serving 37,224 customers, the largest number of wastewater treatment facilities in the Study Area. The largest facility is the City of Gillette wastewater treatment plant, which serves almost 25,000 customers and treats an average of 2.5 MGD. The City's wastewater division operates and maintains about 200 miles of sewer pipe and six lift stations (COG 2007a).

Sheridan County, with the second-highest number of customers, has six facilities serving 17,400 persons. The largest facility is in the City of Sheridan, serving 15,500 persons. Converse County's six wastewater treatment facilities serve 8,516 customers, the third highest number of customers within the Study Area, and Weston County has seven facilities with 5,275 customers.

Johnson County has the fewest number of facilities with our treatment plants serving 4,054 customers, while Crook County's six facilities serve the least number of customers, at 3,065. **Figure 2-15** illustrates the distribution of wastewater facilities within the Study Area.

Table 2-42. Water and Wastewater Facilities within the Study Area

Water System Name	Principal County Served	Population Served	Primary Water Source Type	System Status
American Road Water & Sewer District	Campbell	215	Groundwater	Active
Antelope Mobile Home Park	Campbell	351	Groundwater	Active
Antelope Valley	Campbell	1,280	Groundwater	Active
Bennor Subdivision	Campbell	174	Groundwater	Active
Cedar Hills Water Association	Campbell	258	Groundwater	Active
Cook Road Water District	Campbell	256	Groundwater	Active
Countryside Water Users, Inc.	Campbell	360	Groundwater	Active
Crestview Estates Subdivision	Campbell	482	Groundwater	Active
Eastview Manufactured Home Community	Campbell	418	Purchased-Groundwater	Active
Eight Mile Subdivision	Campbell	87	Groundwater	Active
Force Road Joint Powers Board	Campbell	244	Groundwater	Active
Fox Park Subdivision	Campbell	843	Groundwater	Active
Freedom Hills Subdivision	Campbell	400	Groundwater	Active
Gillette, City Of	Campbell	24,999	Groundwater	Active
Glory Hole Homeowners Association	Campbell	75	Groundwater	Active
Green Valley Estates Improvement District	Campbell	70	Groundwater	Active
Heritage Village Subdivision	Campbell	750	Groundwater	Active
Highview MHP (Affordable Res Comm)	Campbell	145	Groundwater	Active
Hitching Post Trailer Court	Campbell	50	Groundwater	Active
Hoy Mobile Home Park	Campbell	100	Groundwater	Active
Lemaster Enterprises	Campbell	70	Groundwater	Active
Meadow Springs Service & Improvement District	Campbell	25	Groundwater	Active
Westridge Water Users Association	Campbell	264	Groundwater	Active
Westview Manufactured Home Community	Campbell	260	Purchased-Groundwater	Active
Wrangler Estates	Campbell	150	Groundwater	Active
Wright Water & Sewer District	Campbell	1,500	Groundwater	Active
County Total	37 Facilities	37,224		
Douglas, Town Of	Converse	5,400	Surface water	Active
Douglas KOA Campground / Pine Meadows MHP	Converse	150	Groundwater	Active
Fairway Estates	Converse	100	Groundwater	Active
Glenrock, Town Of	Converse	2,283	Groundwater	Active
Ridgewater Improvement District	Converse	143	Purchased Surfacewater	Active
Rolling Hills, Town Of	Converse	440	Groundwater	Active
County Total	6 Facilities	8,516		
Hulett, Town Of	Crook	409	Groundwater	Active
Moorcroft, Town Of	Crook	806	Groundwater	Active
Pine Haven, Town Of	Crook	350	Groundwater	Active

Table 2-42. Water and Wastewater Facilities within the Study Area (Cont.)

Water System Name	Principal County Served	Population Served	Primary Water Source Type	System Status
Roberts Trailer Park	Crook	40	Groundwater	Active
Sundance, City Of	Crook	1,200	Groundwater	Active
Vista West Subdivision	Crook	260	Groundwater	Active
County Total	6 Facilities	3,065		
Bald Mountain Trailer Court	Johnson	150	Groundwater	Active
Bighorn Mountain Campground	Johnson	30	Groundwater	Active
Buffalo, City Of	Johnson	3,625	Surface water	Active
Kaycee, Town Of	Johnson	249	Groundwater	Active
County Total	4 Facilities	4,054		
Clearmont, Town of	Sheridan	119	Groundwater	Active
Dayton, Town of	Sheridan	680	Surface Water	Active
Downer Neighborhood I&S District	Sheridan	400	Purchased Surfacewater	Active
Ranchester, Town of	Sheridan	700	Surface Water	Active
Sheridan, City of	Sheridan	15,500	Surface Water	Active
VET ADM Medical Center	Sheridan	405	Surface Water	Active
County Total	6 Facilities	17,399		
Cambria Improvement & Service Dist	Weston	165	Purchased groundwater	Active
Newcastle, City Of	Weston	3,003	Groundwater	Active
Osage Water District	Weston	200	Groundwater	Active
Salt Creek Water District	Weston	555	Groundwater	Active
Upton, Town Of	Weston	872	Groundwater	Active
Water Unlimited, Inc.	Weston	255	Groundwater	Active
West End Water District	Weston	225	Groundwater	Active
County Total	7 Facilities	5,275		

Source: EPA 2006

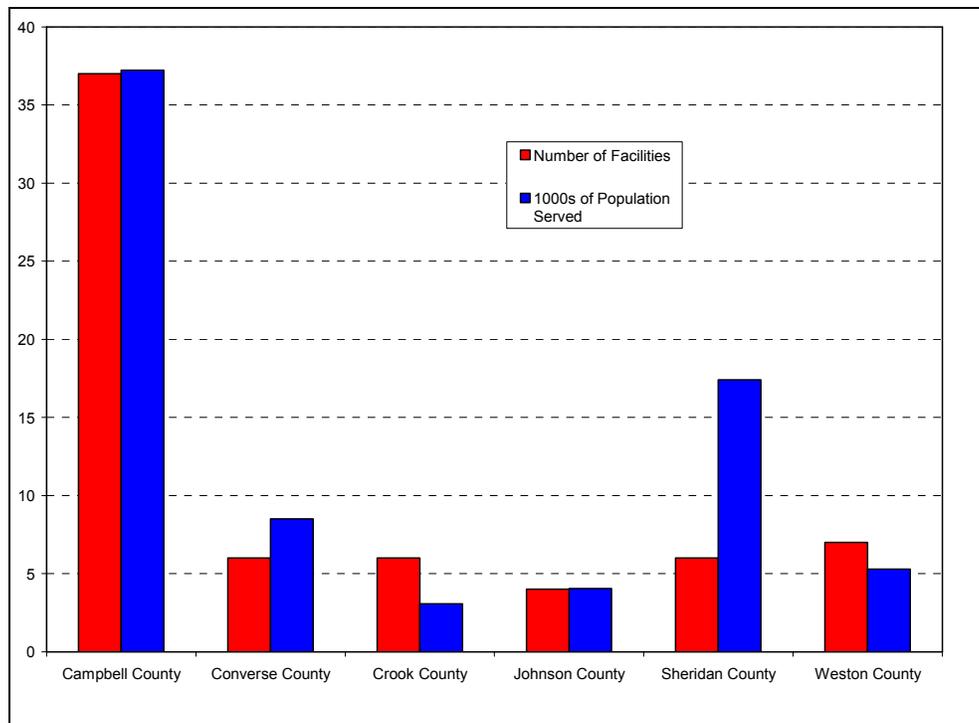


Figure 2-15. Distribution of Wastewater Facilities in the Study Area

2.7.1.4 Waste Disposal Facilities

The Study Area contains a number of waste disposal facilities of different types. **Table 2-43** lists the characteristics of these facilities, including the type of waste treated and the facility's status and location. The types of facilities listed include industrial landfills; solid waste treatment, storage and disposal (SWTSD) facilities; and Type I and Type II municipal waste facilities.

Table 2-43. Waste Disposal Facilities within the Study Area

Facility Name	Facility Type	Permit Status	County
Black Hills Trucking Gillette Terminal	SWTSD	Active	Campbell
Empire Field	Industrial Landfill	Historic	Campbell
Envirotank	SWTSD	Active	Campbell
Fox Park Sludge Disposal - Rozet - Proposed	Industrial Landfill	Closed	Campbell
Orchid	Industrial Landfill	Historic	Campbell
Thunder Creek	Industrial Landfill	Historic	Campbell
Wright Disposal Service - Proposed	Industrial Landfill	Closed	Campbell
L & H Industrial	SWTSD	Closed	Campbell
Oil Recovery Limited	SWTSD	Closed	Campbell
Campbell County - Balefill #1	Type I Municipal	Active	Campbell
Campbell County - Balefill #2	Type I Municipal	Active	Campbell
Two Elk Ash Landfill	Industrial Landfill	Active	Campbell
Wright - Proposed Site	Type II Municipal	Historic-Proposed	Campbell
Conoco - Big Muddy	Industrial Landfill	Historic	Converse
Dave Johnston Plant	Industrial Landfill	Active	Converse

Table 2-43. Waste Disposal Facilities within the Study Area (Cont.)

Facility Name	Facility Type	Permit Status	County
Dave Johnston Plant Expansion - Proposed	Industrial Landfill	Closed	Converse
LLE - Shawnee and Douglas Gas Plants	Industrial Landfill	Historic	Converse
Morton Gas Plant	Industrial Landfill	Closed	Converse
Interline Resources Corp - Proposed	SWTSD	Closed	Converse
Douglas San #1	Type I Municipal	Active	Converse
Glenrock #1	Type II Municipal	Active	Converse
Glenrock #2 - Proposed	Type II Municipal	Historic-Proposed	Converse
Beulah	Type II Municipal	Historic	Crook
Donkey Creek Field	Industrial Landfill	Historic	Crook
Pope & Talbot - Moeller Closure	Industrial Landfill	Closed	Crook
Hulett #1	Type II Municipal	Active	Crook
Moorcroft #1	Type II Municipal	Historic	Crook
Moorcroft #2	Type II Municipal	Closed	Crook
Moorcroft #3	Type II Municipal	Active	Crook
Sundance	Type II Municipal	Active	Crook
Conoco - North Tisdale Field - Proposed	Industrial Landfill	Closed	Johnson
Conoco – Sussex Unit Linch	Industrial Landfill	Closed	Johnson
Conoco - West Sussex Landfarm	Industrial Landfill	Closed	Johnson
Dugout Creek Shannon Sand	Industrial Landfill	Historic	Johnson
Jepson Draw	Industrial Landfill	Closed	Johnson
North Fork Cellers	Industrial Landfill	Historic	Johnson
Sierra Construction Landfarm - Proposed	Industrial Landfill	Closed	Johnson
Texaco – Buffalo	Industrial Landfill	Historic	Johnson
Uranerz USA, Inc. - Proposed	Industrial Landfill	Closed	Johnson
Allied Barrel & Container	SWTSD	Historic	Johnson
Buffalo #1	Type II Municipal	Active	Johnson
Kaycee	Type II Municipal	Active	Johnson
Barritt's Pallet	SWTSD	Closed	Weston
Rice Property	Industrial Landfill	Closed	Sheridan
Ash Disposal Pond	Industrial Landfill	Historic	Sheridan
Red Grade Construction	SWTSD	Active	Sheridan
Sheridan Expansion	Type I Municipal	Active	Sheridan
Sheridan Landfill	Type II Municipal	Closed	Sheridan
Clearmont #2	Type II Municipal	Closed	Sheridan
Skull Creek Newcastle Sand Unit	Industrial Landfill	Historic	Weston
Western Production Company - Newcastle	Industrial Landfill	Closed	Weston
Powder River Timber Company	SWTSD	Historic	Weston
Ralph Shuck Landfarm	SWTSD	Active	Weston
Shuck Brothers Mobile Treatment Unit	SWTSD	Active	Weston
Upton Soil Treatment	SWTSD	Active	Weston
Upton #2 - Proposed	Type I Municipal	Historic-Proposed	Weston
Upton #3	Type I Municipal	Closed	Weston
Newcastle #1	Type II Municipal	Historic	Weston
Newcastle #2	Type II Municipal	Active	Weston

Table 2-43. Waste Disposal Facilities within the Study Area (Cont.)

Facility Name	Facility Type	Permit Status	County
Osage	Type II Municipal	Historic	Weston
Upton #1	Type II Municipal	Historic	Weston
Upton #4	Type II Municipal	Active	Weston
Weston County SWDD, Central	Type II Municipal	Active	Weston

Figure 2-16 shows waste disposal facilities by type for each county. Weston County has the most waste disposal facilities in the Study Area with 21, while Sheridan County has the fewest with six facilities.

Industrial landfills are the prevalent type of waste disposal facilities in the Study Area. There are a total of 32 such facilities, including nine in Johnson County, the most in the six-county area. Weston County has the second-highest number of industrial landfills with eight, followed by Campbell County with six, Converse County with five, and Crook and Sheridan Counties with two industrial landfills each. An ash landfill has been permitted for the Two Elk Project.

Type II municipal waste disposal facilities are the second most common type of waste disposal facility in the Study Area, with 19 in the six counties. Weston and Cook Counties have the most with six apiece, followed by Converse, Jefferson, and Sheridan Counties with two each. Campbell County has only one Type II municipal waste disposal facility.

Type I municipal waste facilities are the least numerous in the Study Area, with only six in the six-county area. There are two such facilities each in Campbell and Weston Counties and one each in Converse and Sheridan Counties. Crook and Johnson Counties have no Type I municipal waste facilities.

There are 12 solid waste treatment, storage, and disposal facilities in the Study Area. With five SWTSD facilities, Weston County has the most within the Study Area, followed by Campbell County with four facilities. Converse, Johnson, and Sheridan Counties each have one such facility. Crook County has no SWTSD facility.

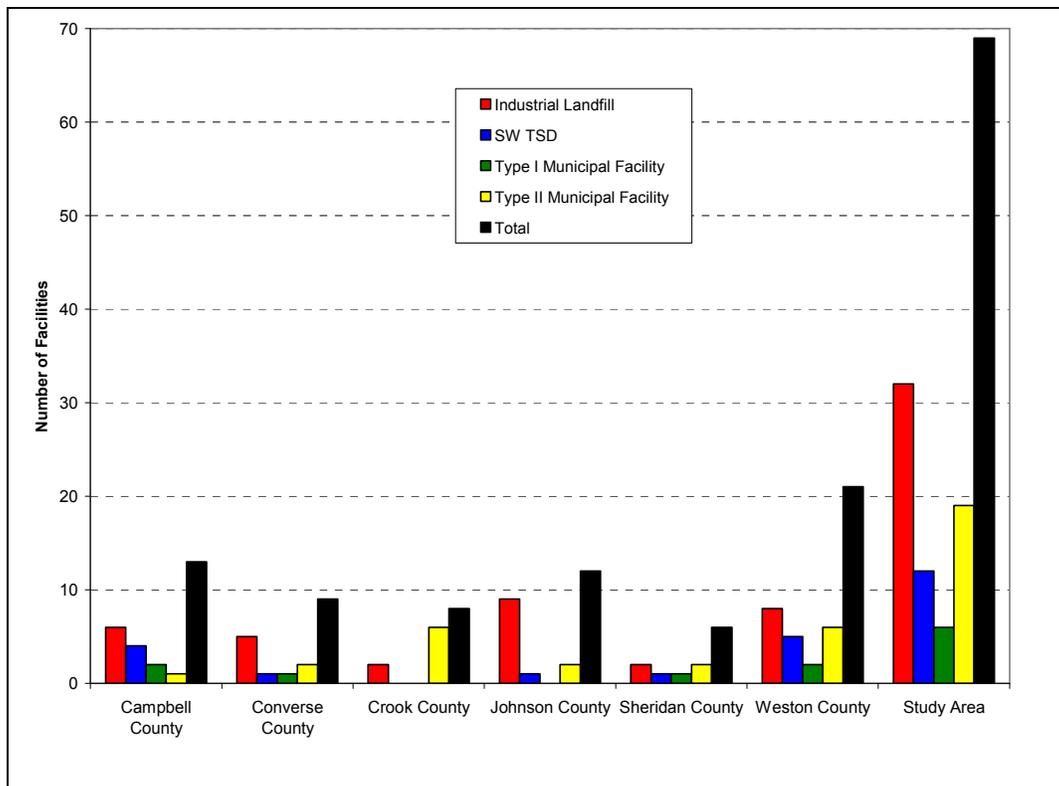


Figure 2-16. Waste Facilities by Type in the Study Area

2.7.2 Review of Municipal Capital Improvement Plans

Within the Study Area, only the City of Gillette had a Capital Improvement Plan (CIP) available for review. Even though the proposed Two Elk Project would be located near the Town of Wright, it is likely that many of the construction and operational workers would choose to live in the larger town of Gillette.

The CIP, adopted January 20, 2004, has identified improvements to both the City's sewer and water systems for the fiscal period 2009-2010. **Table 2-44** summarizes the planned improvements to both of these systems and the total monies required, by fiscal year.

Table 2-44. Gillette Capital Improvement Plan, 2004 – Summary of Planned Improvements

Description	Fiscal Year 04-05	Fiscal Year 05-06	Fiscal Year 06-07	Fiscal Year 07-08	Fiscal Year 08-09	Fiscal Year 09-10	Total
Sewer System Improvements							
Northland Village LID sewer	\$1,550,000						\$1,550,000
Sanitary sewer replacement	\$550,000	\$550,000	\$550,000	\$550,000	\$550,000	\$550,000	\$3,300,000
SDHW sewer trunk line Phase I and II	\$2,650,000						\$2,650,000
Wastewater treatment facility (WWTF) expansion/upgrade (includes sludge composting facility, additional compost pad, paint plant equipment and repair/replace roofs)	\$325,000	\$5,300,000	\$5,350,000				\$10,975,000
Water reuse study			\$50,000				\$50,000
Total	\$5,075,000	\$5,850,000	\$5,950,000	\$550,000	\$550,000	\$550,000	\$18,525,000
Water System Improvements							
Collins Heights vault and tank removal			\$100,000				\$100,000
Fort Union well field expansion	\$750,000	\$750,000	\$3,200,000	\$6,900,000	\$6,900,000		\$18,500,000
Garner Lake waterline extension			\$150,000	\$1,650,000			\$1,800,000
Hwy 50 waterline and pump station				\$150,000	\$1,750,000		\$1,900,000
Kliver watermain loop and pressure reducer	\$55,000	\$550,000					\$605,000
Madison & Pine Ridge redundant tanks	\$1,485,000						\$1,485,000
Madison cathodic protection	\$350,000	\$350,000	\$200,000				\$900,000
Madison manways and pipeline valves	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$900,000
Annual watermain replacement	\$425,000	\$780,000	\$450,000	\$450,000	\$450,000	\$450,000	\$3,005,000
Northland Village LID water	\$1,550,000						\$1,550,000
Water tank modification and painting	\$200,000						\$200,000
Water conservation program	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$35,000
Paint and repair Madison reservoir	\$85,000						\$85,000
Paint Pine Ridge reservoir	\$45,000						\$45,000
Total	\$5,105,000	\$2,585,000	\$4,255,000	\$9,305,000	\$9,255,000	\$605,000	\$31,110,000
Subtotal	\$10,180,000	\$8,435,000	\$10,205,000	\$9,855,000	\$9,805,000	\$1,155,000	\$49,635,000

Source: COG 2004

2.8 Transportation

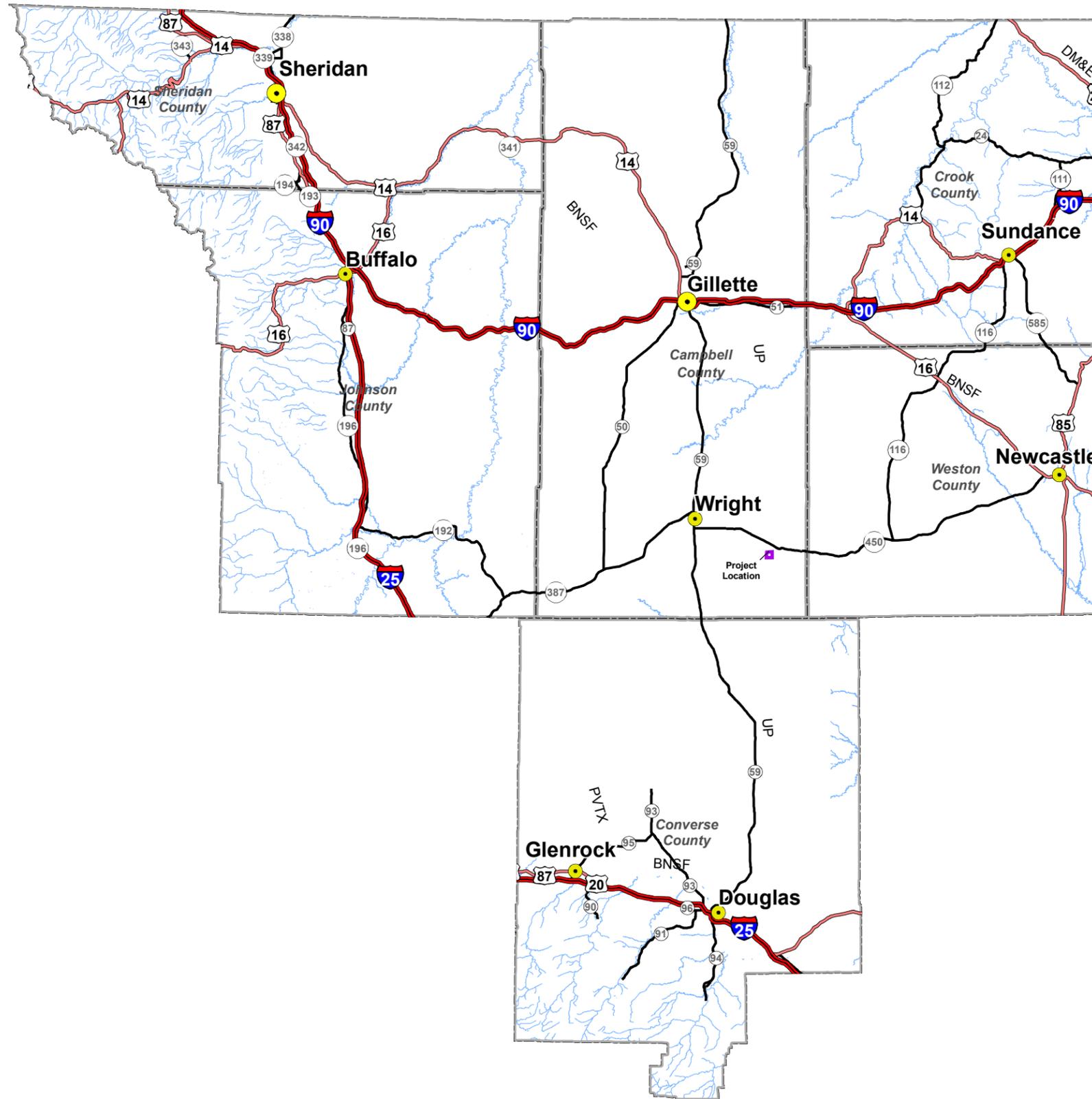
This section describes the transportation network, traffic characteristics, and planned improvements for the Study Area.

2.8.1 Highways and Roads

Figure 2-17 shows the major transportation corridors and rail lines within the Study Area, which is intersected by two interstate highways. Interstate 90 (I-90) is the major east-west corridor across the northern tier states between Boston and Seattle. It connects those cities with the Great Lakes region; Chicago, IL; Minneapolis-St. Paul, MN; Sioux Falls and Rapid City, SD; Billings, MT, and Spokane, WA. Interstate 25 (I-25) is the major north-south corridor along the Front Range of the Rocky Mountains, beginning in Buffalo, WY, just south of Sheridan, and connecting with Casper and Cheyenne, WY; Denver and other Front Range cities in CO; Albuquerque, NM; and its terminus in El Paso, TX, at the Mexican border.

Within the Study Area, I-90 passes through Crook, Campbell, Johnson, and Sheridan Counties, including the towns of Sundance, Moorcroft, Gillette, and Sheridan, while I-25 runs north-south through Johnson and Converse Counties and the towns of Buffalo and Douglas. State Highway (SH) 59 connects the Wright area to Gillette to the north, and Douglas to the south. SH 450 runs east of Wright toward Newcastle, and is the access route for the Two Elk Project. Wyoming DOT notes that Wyoming has the highest miles driven per capita of any state, with 18,485, compared to the national average of 10,007 (WYDOT 2006).

Table 2-45 details the major roads and highways in each county, their direction, and the Annual Average Daily Traffic (AADT) volumes for all vehicles and for trucks alone in 1998 and 1999. More recent AADT information for these road segments is not available.



Legend

-  Interstate
-  US Highway
-  State Highway
-  Project Location



MAJOR ROADS, HIGHWAYS, AND FREIGHT RAIL INFRASTRUCTURE IN THE STUDY AREA

Table 2-45. Road Systems within the Six-County Study Area

County	Road	Type	General Direction	AADT Total / Trucks	
				1998	1999
Campbell	I-90	Interstate	East-West	6,960 / 1,080	6,700 / 1,100
Campbell	Routes 14, 16, and 59	U.S. Route	North-South	13,700 / 540	13,900 / 690
Campbell	Routes 14 and 16	U.S. Route	North-South	2,200 / 200	2,200 / 200
Campbell	Route 50, paved	State Route	North-South	6,900 / 230	6,950 / 230
Campbell	Route 51	State Route	East-West	4,500 / 470	4,500 / 470
Campbell	Route 59, south of I-90*	State Route	North-South	23,950 / 1,020	22,950 / 1,020
Campbell	Route 387, paved	State Route	East-West	2,150 / 140	2,250 / 380
Campbell	Route 450, paved	State Route	East-West	1,010 / 140	1,050 / 140
Converse	I-25	Interstate	East-West	6,740 / 1,510	6,960 / 1,580
Converse	Routes 18 and 20	U.S. Route	East-West	2,100 / 430	2,100 / 560
Converse	Routes 20, 26 and 87	U.S. Route	East-West	9,250 / 430	9,650 / 430
Converse	Route 59	U.S. Route	North-South	3,150 / 440	3,250 / 420
Converse	Route 90, paved and gravel	State Route	North-South	360 / 40	370 / 40
Converse	Route 91, paved and gravel	State Route	North-South	520 / 30	530 / 30
Converse	Route 93, paved	State Route	East-West	650 / 100	650 / 100
Converse	Route 94, paved and gravel	State Route	North-South	4,550 / 400	4,700 / 420
Converse	Route 95, paved	State Route	East-West	2,750 / 60	2,750 / 60
Converse	Route 96, paved	State Route	East-West	240 / 20	250 / 20
Converse	Route 271, gravel	State Route	North-South	ND	ND
Converse	Route 319, paved	State Route	North-South	270 / 60	280 / 60
Crook	I-90	Interstate	East-West	5,100 / 1,080	5,320 / 1,110
Crook	Route 14 and I-90 Business	U.S. Route	East-West	3,200 / 260	3,250 / 260
Crook	Route 16	U.S. Route	East-West	3,350 / 340	3,350 / 340
Crook	Route 212	U.S. Route	East-West	1,550 / 530	1,600 / 530
Crook	Route 24, paved	State Route	East-West	2,250 / 180	2,250 / 180
Crook	Route 110, paved	State Route	East-West	1,350 / 80	1,350 / 80
Crook	Route 111, paved	State Route	North-South	520 / 70	550 / 90
Crook	Route 112, paved	State Route	North-South	1,300 / 190	1,300 / 190
Crook	Route 113, paved	State Route	East-West	370 / 20	370 / 20
Crook	Route 116, paved	State Route	North-South	440 / 50	500 / 50
Crook	Route 585, paved	State Route	North-South	1,500 / 70	1,480 / 70
Johnson	I-25 and Route 87	Interstate	North-South	2,850 / 760	3,000 / 790
Johnson	I-90	Interstate	East-West	6,160 / 1,210	6,270 / 1,240
Johnson	Route 16	U.S. Route	North-South	7,500 / 315	7,600 / 320
Johnson	Route 87 and I-25 Business	U.S. Route	North-South	9,300 / 480	9,400 / 480
Johnson	Route 190, paved	State Route	East-West	1,100 / 150	1,100 / 150
Johnson	Route 191, paved	State Route	East-West	460 / 50	460 / 50
Johnson	Route 192, paved	State Route	East-West	600 / 80	600 / 80
Johnson	Route 193, paved	State Route	North-South	730 / 50	730 / 50
Johnson	Route 196	State Route	North-South	1,470 / 110	1,470 / 110

Table 2-45. Road Systems within the Six-County Study Area (Cont.)

County	Road	Type	General Direction	AADT Total / Trucks	
				1998	1999
Johnson	Route 387, paved	State Route	East-West	1,150 / 270	1,150 / 270
Sheridan	I-90	Interstate	North-South	6,290 / 1,240	6,400 / 1,270
Sheridan	Route 14	U.S. Route	North-South	520 / 55	520 / 55
Sheridan	Route 14	U.S. Route	East-West	2,950 / 150	2,950 / 150
Sheridan	Route 14a	U.S. Route	East-West	300 / 30	300 / 30
Sheridan	Routes 14 and 16	U.S. Route	East-West	560 / 40	560 / 40
Sheridan	Routes 14 and 87; I-90 Business	U.S. Route	North-South	19,250 / 740	19,750 / 740
Sheridan	Route 87	U.S. Route	North-South	10,700 / 1 80	10,900 / 1 80
Sheridan	Route 194	State Route	East-West	1,380 / 80	1,380 / 80
Sheridan	Route 331, paved	State Route	East-West	5,900 / 100	5,950 / 100
Sheridan	Route 335, paved	State Route	North-South	3,400 / 1 00	3,450 / 1 00
Sheridan	Route 336, paved	State Route	East-West	7,200 / 260	7,300 / 260
Sheridan	Route 338, paved	State Route	North-South	2,000 / 250	2,000 / 250
Sheridan	Route 340, paved	State Route	East-West	670 / 20	670 / 20
Sheridan	Route 343, paved	State Route	North-South	520 / 50	520 / 50
Sheridan	Route 345, paved	State Route	East-West	870 / 70	860 / 70
Weston	Route 16	U.S. Route	East-West	4,600 / 310	4,600 / 310
Weston	Route 85	U.S. Route	North-South	1,750 / 160	1,800 / 160
Weston	Route 116, paved	State Route	East-West	1,250 / 100	1,300 / 100
Weston	Route 450, paved	State Route	North-South	770 / 100	850 / 100
Weston	Route 451, paved and gravel	State Route	East-West	200 / 30	200 / 30
Weston	Route 585, paved	State Route	North-South	540 / 70	520 / 70

Notes: * No automatic traffic recorder location north of the SH 14-16/59 intersection north of Gillette
Source: WYDOT 2000

Figure 2-18 shows the total AADT and truck traffic on the major roads described above within the Study Area in 1999. Sheridan County had the highest traffic volume with an AADT of 63,510, accounted for by the higher volumes on I-90, Routes 14, 87, I-90 Business, Route 87, and Route 336.

Campbell County has the second-highest traffic volume with an AADT of 60,500. Weston County had the lowest traffic volume with an AADT of only 9,270 miles, likely due to the fact that no major interstates cross the county and the number of U.S. and State Routes are less than in other counties within the Study Area.

Truck traffic was highest in Campbell County, probably due to its construction, coal mining, and other industrial activity. Again, Weston County had the lowest number of truck miles. No roadways in the Study Area were identified as over capacity (CH2MHill 2006).

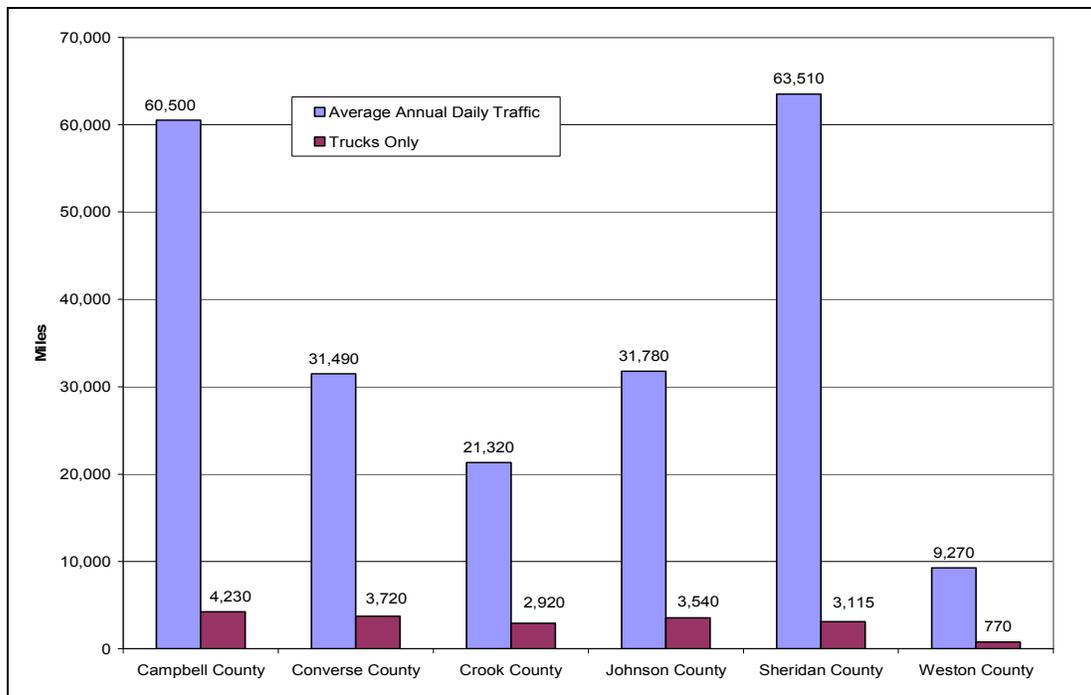


Figure 2-18. Transportation Network within the Study Area

2.8.2 Railroads

Figure 2-18 shows the Study Area's rail infrastructure. Major rail lines are located in all counties except Johnson County within the Study Area. Johnson County has only a limited amount of rail, which does not appear on **Figure 2-18**.

The characteristics of the Study Area's freight rail infrastructure are shown in **Table 2-46**. There are nearly 4,400 miles of freight rail track within the Study Area. Converse County has 1,654 miles of track, the most in the Study Area, followed by Campbell County with 1,093 miles. Sheridan County is third with 889 miles of track. Johnson County has only 64 miles of track, which are not operated by any major rail company.

Burlington Northern-Santa Fe Railroad is the largest rail operator, with 2,903 miles of track. Union Pacific is the second-largest rail operator in the Study Area, with 518 miles of track. Other rail infrastructure is operated by a variety of smaller rail companies.

Table 2-46. Freight Rail Infrastructure within the Study Area

County	Company	Miles of Track
Campbell	Burlington Northern-Santa Fe Railroad	847
	Union Pacific Railroad	120
	Other Isolated Railroad	126
	Total	1,093
Converse	Burlington Northern-Santa Fe Railroad	757
	Union Pacific Railroad	398
	Other Isolated Railroad	499

Table 2-46. Freight Rail Infrastructure within the Study Area (Cont.)

County	Company	Miles of Track
	Total	1,654
Crook	Burlington Northern-Santa Fe Railroad	103
	Dakota, Minnesota, and Eastern Railroad	26
	Other Isolated Railroad	54
	Total	183
Johnson	Other Isolated Railroad	64
	Total	64
Sheridan	Burlington Northern-Santa Fe Railroad	763
	Other Isolated Railroad	126
	Total	889
Weston	Burlington Northern-Santa Fe Railroad	433
	Other Isolated Railroad	42
	Total	475
	Total Miles of Track within Study Area	4,358

Source: CH2MHill 2006

2.8.3 Planned Improvements

Most transportation planning within the Study Area is done by the WYDOT. Campbell County lies within WYDOT Commission District 4, along with Sheridan and Johnson Counties. Crook and Weston Counties are in Commission District 6, while Converse County is in District 7. **Table 2-47** shows WYDOT's construction activities in the Study Area since 2005.

Table 2-47. Wyoming Department of Transportation Planned Improvements to Transportation Infrastructure In Study Area

County	Site	Impacted Roads	Description	Length of Construction
Campbell	Corral Creek	WY 59	Reconstruction, including grading, draining, paving, and bridge replacements	10 miles
Campbell	Douglas-Gillette	Tisdale Creek Section	5 lanes	5.3 miles
Campbell	Gillette-Montana Line	State Line South Section	Widening and resurfacing	11.11 miles
Campbell	Ucross-Gillette	Campbell County Line East	Widen and overlay/drainage	9.43 miles
Campbell	Spotted Horse-Gillette	Wildcat Creek Section	Widen and overlay	9.2 miles
Campbell	Gillette-Moorcroft	Wyodak East and West	Widen and resurface	1.8 miles
Converse	Douglas-Glenrock	I-15, US 20, US 26, US 87	Grading, draining, placing crushed base and bituminous pavement surfacing, bridge rehabilitation, guardrail, and fence work	10.1 miles
Converse	Douglas-Glenrock	Douglas West Section	Widen and overlay	8.52 miles
Converse	Douglas Streets/ Yellowstone	Fairgrounds to I-25	CSA and bridge replacement	1.24 miles
Crook	Sundance-Upton	County Line North Section	Widen and overlay	10.83 miles
Crook	Sundance-South Dakota State Line (I90)	I-90, US 14	Concrete slab repair	21.39 miles

Table 2-47. Wyoming Department of Transportation Planned Improvements to Transportation Infrastructure In Study Area (Cont.)

County	Site	Impacted Roads	Description	Length of Construction
Crook	Colony Overlay	US 212	Grading, bituminous pavement surfacing, and chip sealing	20.43 miles
Johnson	Casper-Kaycee	County Road Separation	Construct new interchange	NA
Johnson	Casper-Kaycee	Powder River Section	Widen and overlay	7.69 miles
Johnson	Kaycee-Buffalo	Middle Fork Interchange Section	Wide and resurface	9.76 miles
Johnson	Johnson County Line South	I-25, US 87	Grading, drainage, bridges, subbase, and asphalt surfacing	7.9 miles
Sheridan	Sheridan-Buffalo	County Line Section	Widen and resurface	5.40 miles
Sheridan	Lovell-Burgess Jct	County Line East	Widen and overlay	5.95 miles
Sheridan	Sheridan-Banner		Widen and resurface	9.62 miles
Weston	Sundance-Upton	County Line South Section	Widen and overlay	6.04 miles
Weston	Upton South	Junction 450 North Section	Widen and overlay	7.36 miles
Weston	Sundance-Upton	Upton North	Widen and overlay	5.71 miles
Weston	Upton South	Lone Tree Creek Section	Widen/extend culvert/mill/overlay	5.10 miles
Weston	Upton South-Lone Tree Section	WY 116	Shoulder widening including grading, draining, placing crushed base and bituminous surface pavement, fencing, and miscellaneous work	5.54 miles

Source: WYDOT 2005.

3.0 IMPACTS

This section defines the primary Recommended Area of Impact, discusses Project employment, describes certain economic benefits to the local area from the Two Elk Project, identifies burdens to the local area resulting from the Project, and discusses cumulative impacts to the area.

3.1 Recommended Area of Impact Defined

The location of the Project, the availability of the labor force, and commuting patterns over recent years, suggests that many of the construction and operational workers would reside in Campbell County. Therefore, Campbell County has been designated as the primary Recommended Area of Impact for this Project.

The 2000 Census found that 88 percent of Campbell County's labor force resides within the county (USCB 2000). However, later studies by the Wyoming Department of Employment (WDERP 2006) found that in 2004, one-fourth of the county's labor force were commuters into the county (see Section 2.2.1.4).

3.2 Project Employment

This section describes the projected overall employment needs, wages, and local and non-local employment estimates for the Two Elk Project.

3.2.1 Projected Overall Employment Needs

TEGP currently estimates a 54-month remaining schedule for Project and Project related construction, completion and commencement of operations, continuing possibly as late as April 2016. Past workforce reports have been filed with ISC. The overall workforce currently is estimated to peak in August 2014 with 579 construction workers and conclude in 2016 with 45 operations staff.

3.2.1.1 Construction

Figure 3-1 illustrates the currently estimated manpower curve for the remaining construction and initial operations period of the Two Elk Project. The construction labor force is expected to reach 100 workers in October 2013 and rise to 579 workers by August 2014. Employment levels will remain relatively consistent from May 2014 through November 2014, with the workforce anticipated to equal or exceed 500 workers for six months, and return to an estimated 198 workers in June 2015. As the curve shows, there is a fairly rapid decline after that point, concluding with less than 40 construction workers in the last six months of construction.

Total Manpower Curve

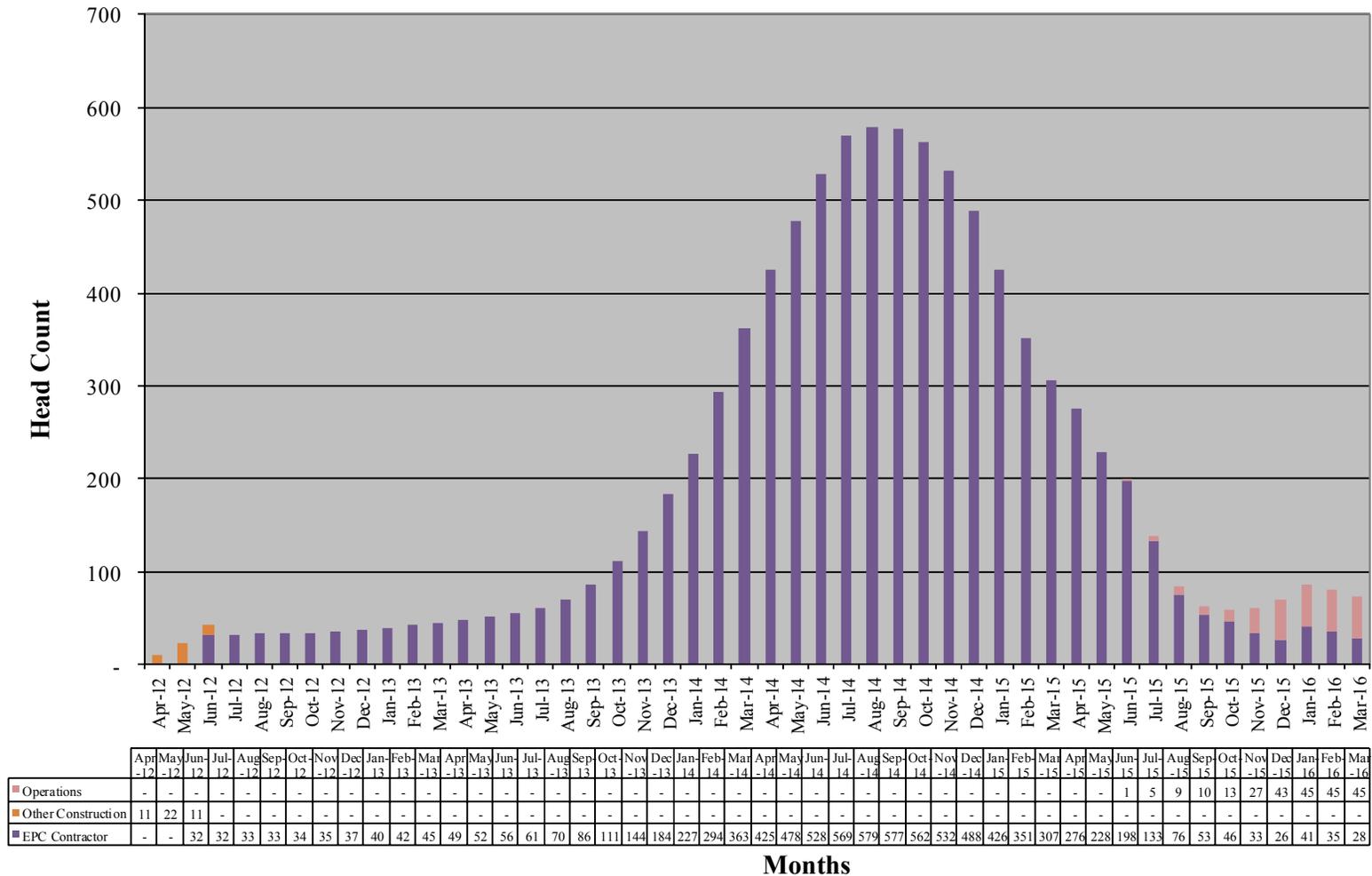


Figure 3-1. Estimated Manpower Curve for Two Elk Project

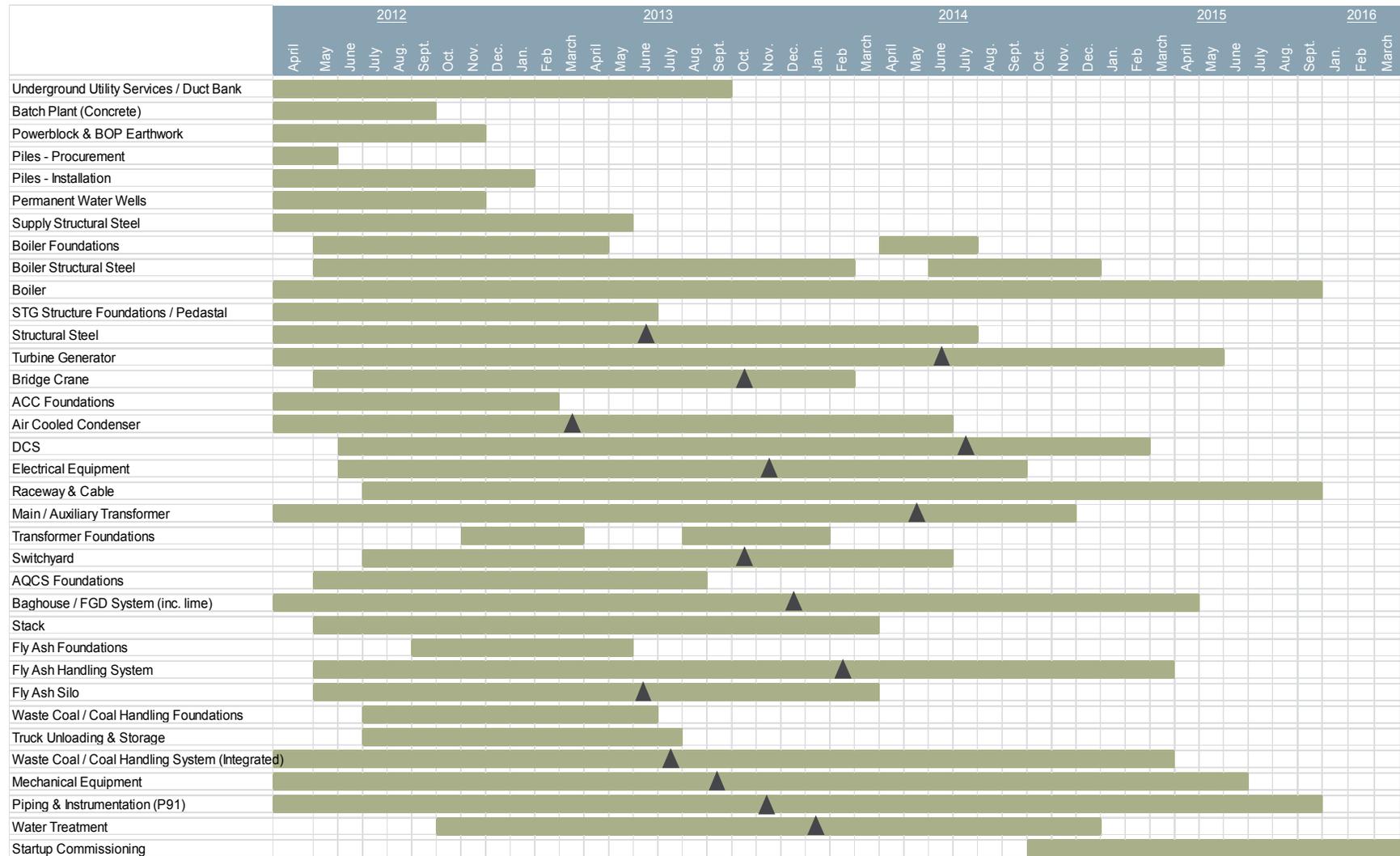


Figure 3-2. Estimated Detailed Construction Timetable

Table 3-1. Estimated Workforce Summary by Calendar Quarter

Job Classifications	2012				2013				2014				2015				2016
	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	2 nd Qtr
Boilermaker	0	0	0	0	0	2	8	22	30	45	37	40	30	12	5	4	0
Carpenter	0	8	8	8	8	8	15	51	69	95	81	62	22	15	8	2	0
Electrician	0	0	0	0	4	5	17	21	56	94	99	102	82	65	20	6	0
Iron Worker	0	12	12	12	20	22	25	35	93	115	118	99	25	15	0	0	0
Laborer	0	6	6	8	8	8	10	50	90	100	110	72	50	8	5	4	0
Mill Wright	0	0	0	0	0	5	12	17	30	45	44	25	17	15	5	3	0
Equipment Operator	0	0	0	0	0	0	0	0	0	0	0	0	1	10	43	45	45
Pipe fitter	0	0	0	0	0	2	13	15	37	52	60	101	95	68	21	7	0
Teamster	0	3	3	3	3	3	4	5	5	5	8	8	8	8	7	5	0
Non-Manual	0	3	5	6	6	6	7	11	15	18	22	22	22	22	5	2	0
Total Workers	0	32	34	37	49	61	111	227	425	569	579	531	352	238	119	78	45

The following trade categories of workers are expected to be needed for construction completion of the Two Elk Project:

- Boiler Maker
- Carpenter
- Electrician
- Iron Worker
- Laborer
- Mill Wright
- Equipment Operator
- Pipefitter
- Teamster
- Non-Manual (clerical, etc.)

Security workers will also be required during the remaining construction period, but are expected to represent a very small portion of the total workforce. It is assumed that security personnel will be hired locally, and thus will have little impact on housing and the demand for community services. For this reason, these workers are not considered in this analysis.

3.2.1.2 Operations

The Two Elk Project will add its first operations worker in July 2015, with the operations workforce gradually increasing through September 2015, and becoming fully staffed in October 2015 with 45 workers.

The types of workers that will be required for operations and estimated number of personnel are provided in **Table 3-2**.

Table 3-2. Estimated Operations Workforce Summary by Job Classification

Job Classification	Number of Personnel
Plant Manager	1
Administrative Assistant	1
Operations Supervisor	1
Lead Control Operator	1

Table 3-2. Estimated Operations Workforce Summary by Job Classification (Cont.)

Job Classification	Number of Personnel
Control Room Operator	4
CR Auxiliary Operators	4
Water Treatment Techs/Chemists	4
Fuel Yard Operators	4
Material Handlers	4
Maintenance Supervisor	1
Lead Mechanics	2
Mechanics	5
Mechanics Helper	2
Lead I&C/E	1
I&C/E Technicians	3
Maintenance Planner	1
Plant Engineer	1
Environmental Safety and Health Engineer	1
Administrative/Business Supervisor	1
Secretary/Receptionist	1
Accounting/Payroll Clerk	1
Purchasing/Warehouse Clerk	1
Total Permanent Workers	45

3.2.2 Wages

Table 3-3 shows estimated hourly wage levels for foremen and workers for the Two Elk Project based on those for a similar generating plant in Campbell County, and annual incomes based on those wage estimates. The table also provides a comparison to Wyoming statewide wage levels for the 75th percentile of all workers in each category, as of May 2005.

Table 3-3. Estimated Hourly Wages and Annual Incomes by Craft, Compared to Wyoming Average Wages

Trade	Project Est. Hourly Wage, Foreman ¹	Project Est. Hourly Wage, Workers ¹	Hourly Wages May 2005 WY 75 th Q ²	Difference, Estimated versus WY 75 th Q	Est. Annual Income, Foreman ³	Est. Annual Income, Workers ³
Boiler Maker	\$31.20	\$29.20	N/A	N/A	\$64,896	\$60,736
Carpenter	\$18.26	\$16.26	\$20.49	(-\$4.23)	\$37,981	\$33,821
Electrician	\$30.15	\$28.15	\$25.15	\$3.00	\$62,712	\$58,552
Iron Worker	\$27.33	\$25.33	N/A	N/A	\$56,846	\$52,686
Laborer	\$14.61	\$12.61	\$13.22	(-\$0.61)	\$30,389	\$26,229
Millwright	\$24.05	\$22.05	\$23.48	(-\$1.43)	\$50,024	\$45,864
Equipment Operator	\$21.43	\$19.43	\$24.21	(-\$4.78)	\$44,574	\$40,414
Pipefitter	\$35.56	\$33.56	\$21.50	\$12.06	\$73,965	\$69,805
Teamster	\$16.38	\$14.38	N/A	N/A	\$34,070	\$29,910
Non-Manual	\$30.00	N/A	N/A	N/A	\$62,400	N/A

¹CH2MHill 2006; this report assumes one foreman for every nine workers. Foreman wages are \$2.00 per hour higher than worker wages.

²WDERP 2006; Wyoming statewide wage levels for the 75th percentile of workers in each category. Not all of the above occupational categories were listed.

³Estimated annual incomes are based on 2,080 hours per year, which is a standard 40-hour work week at 52 weeks per year.

3.2.3 . Local and Imported Employment Estimates

3.2.3.1 Construction

The State of Wyoming, Department of Workforce Services (WDWS), Employment Services Division webpage (wyomingatwork.com) was used to estimate the available local workforce required to construct the Two Elk Project (WDWS 2007). The webpage provides the numbers of workers in similar categories that were seeking employment in the state of Wyoming as of October 2007. The department's resume bank was reviewed for those who matched the required occupations for these potential opportunities. **Table 3-4** displays those results. Note that columns may not sum correctly due to rounding, and the numbers provided may be lower than the actual available workers because not everyone seeking employment is registered with WDWS.

Table 3-4. Workers Needed for Construction Compared to Available Workers in Talent Bank

Trade Category	Workers Needed for Construction (at Peak of Each Trade)	Number of Available Workers	Difference (Numbers in Talent Bank - Numbers Needed)
Boiler Maker	37	17	-20
Construction Carpenter	81	390	+309
Electrician	99	224	+125
Structural Iron and Steel Workers	118	25	-93
Laborer	110	319	+209
Mill Wright	44	0	-44
Equipment Operator	0	402	+402
Pipefitter	60	27	-33

Source: WDWS 2007

The analysis found that the greatest shortage of local labor was in the structural iron and steel worker, mill wright, boilermaker, and pipefitter categories. During peak construction, based on the information obtained from a similar facility in the area, it was estimated that 22 percent of the labor force could be hired locally, 69 percent of the construction workforce would be imported and live in Campbell County, and 9 percent of the labor force would be imported and live outside of Campbell County (CH2MHill 2006).

Based on prior large construction projects, it is assumed that 53 percent of all non-local workers would relocate to the Recommended Area of Impact without other household members, thereby assuming a single status for the duration of their stay in the Recommended Area of Impact. It was expected that 47 percent of imported workers would bring their families, and their estimated household size would be similar to that in the Study Area, 2.5 persons per household.

These allocation assumptions were used to estimate impacts of the Two Elk Project. For the most conservative estimate, these calculations are based on the peak number of construction workers (579 workers). Based on the stated assumptions, 128 workers would be hired locally, 212 single workers would relocate to Campbell County, and 187 workers would bring their families. This would yield 399 new households in the county, and 679 new residents (including

the workers themselves). These new residents would represent 1.6 percent of the projected 2007 population for Campbell County. The remaining 52 workers and any family members who accompany them would be distributed in other counties and would represent a very small increase in any one county's population. Note that these estimates are likely overstated, since the construction labor force will exceed 500 workers for only six months of the possible 54-month remaining construction, start up, and commercial operations schedule.

3.2.3.2 Operations

As noted previously, an operational workforce of 45 is anticipated for the Two Elk Project. The operations workforce would be permanent and would likely relocate to the area with their families. It is estimated that 50 percent of this workforce would be local and 50 percent imported, resulting in an estimated import of 22 workers.

For a conservative estimate, it is assumed that all incoming operations workers would live in Campbell County and be accompanied by their families, with an average family size of 2.5 persons, resulting in 55 new residents (including the workers themselves) for the 22 households. These residents would represent a 0.14 percent increase in Campbell County's population, which would not create undue impacts for housing, schools, or other community services. Again, these estimates may be overstated, since some operations workers may not have families and some may live outside of Campbell County.

3.3 Project Benefits

This section reviews the direct beneficial impacts of the Project, the indirect beneficial impacts, and the tax implications.

3.3.1 Direct Impacts

The Two Elk Project would continue to produce construction jobs over a 54-month period, with 579 jobs at peak construction and 45 permanent jobs during operations. Some of the jobs would be filled by local residents, likely at higher wages than they were earning before, and overall personal income in the region would increase (CH2MHill 2006). In addition to the employment opportunities and payroll expenditures, expenditures for goods and services would benefit the area to the extent that those items were purchased within the region.

3.3.2 Indirect Impacts

An employment multiplier was used to estimate the potential for indirect job creation in Campbell County. Employment multipliers are generated by calculating the proportion of basic to non-basic employment in the area. Basic employment is that which produces goods or services typically sold outside the region; it brings additional income into the region. Non-basic employment is that in sectors that produce goods or services that are consumed locally.

It was estimated that there are 8,590 basic jobs and 13,357 non-basic jobs in Campbell County (CH2MHill 2006). This results in an employment multiplier of 1.55. Therefore, for each basic job created at the Two Elk Project, it is assumed that 1.55 jobs are created in the non-basic sector. These jobs support services provided to the workforce such as restaurant workers and retail clerks.

Because construction employment is temporary, the employment multiplier may be somewhat lower for these jobs. If we assume that construction jobs only create 80 percent of the

employment of permanent jobs, then the multiplier for the construction employment would be 1.24, while the multiplier for the permanent operations employment would remain 1.55.

Table 3-5 presents the direct and resulting indirect job creation estimates for the Two Elk Project. A total of 164 indirect jobs would result from the 624 direct construction and operations employment for the Two Elk Project, for a total of 788 jobs.

Table 3-5. Direct and Indirect Job Creation from Two Elk Project

Project Stage	Direct Employment	Indirect Employment Created	Total Employment
Construction	579	139	718
Operations	45	25	70
Total	624	164	788

Source: Tetra Tech Calculations 2007

TEGP has and will continue to maximize the use of local and Wyoming workers to the extent such workers are available and qualified. TEGP has and will continue to use the Gillette office of the Employment Resources Division to screen job applicants. TEGP will maximize the use of local and Wyoming contactors to the extent that qualified contractors are available and are cost competitive. Future agreements with contractors will include language that requires the use of local workers to the extent possible.

3.3.3 Tax Implications

Project benefits to the area tax income would occur based on the ad valorem taxes collected and the state and local sales and use taxes on purchases of goods required to complete the construction. Indirectly, the Project would likely increase the coal mined in the Recommended Area of Impact; therefore, mineral severance taxes would likely increase during operation of the Project. Campbell County currently receives about 24 percent of the state total for mineral taxes. In 2006, Campbell County's mineral taxable valuation was \$3.7 billion (WDR 2006).

3.3.3.1 Ad Valorem Taxes

The Project is located in Campbell County Tax District 0100, which includes most of the rural areas of the county. TEGP would pay an estimated total of \$17,840 in real property taxes and \$14 million in personal property taxes during the remaining construction, start up, and initial operation period for the Project. In addition, TEGP estimates it will pay \$430,000 to the Wyoming Secretary of State for its annual license tax. Taxes are based on the estimated percent of the Project completed as of January 1 of each year of construction as shown in **Table 3-6**.

Table 3-6. Two Elk Generation Partners Property and License Taxes, 2008-2012

Payee (type of tax)*	2008	2009	2010	2011	2012	Total
Campbell County Treasurer (Real)						
Quarter 1	\$892	\$892	\$892	\$892	\$892	\$4,460
Quarter 2	\$892	\$892	\$892	\$892	\$892	\$4,460
Quarter 3	\$892	\$892	\$892	\$892	\$892	\$4,460

Table 3-6. Two Elk Generation Partners Property and License Taxes, 2008-2012 (Cont.)

Payee (type of tax)*	2008	2009	2010	2011	2012	Total
Quarter 4	\$892	\$892	\$892	\$892	\$892	\$4,460
Total	\$3,568	\$3,568	\$3,568	\$3,568	\$3,568	\$17,840
Campbell County Treasurer (Personal)**						
Quarter 1	\$56,481	\$309,704	\$784,627	\$1,069,084	\$1,282,120	\$3,502,016
Quarter 2	\$56,481	\$309,704	\$784,627	\$1,069,084	\$1,282,120	\$3,502,016
Quarter 3	\$56,481	\$309,704	\$784,627	\$1,069,084	\$1,282,120	\$3,502,016
Quarter 4	\$56,481	\$309,704	\$784,627	\$1,069,084	\$1,282,120	\$3,502,016
Total	\$225,924	\$1,238,816	\$3,138,508	\$4,276,336	\$5,128,480	\$14,008,064
WY Secretary of State (Annual License Tax)						
Quarter 1	\$220	\$11,645	\$25,399	\$31,902	\$38,032	\$107,198
Quarter 2	\$220	\$11,645	\$25,399	\$31,902	\$38,032	\$107,198
Quarter 3	\$220	\$11,645	\$25,399	\$31,902	\$38,032	\$107,198
Quarter 4	\$220	\$11,645	\$25,399	\$31,902	\$38,032	\$107,198
Total	\$880	\$46,580	\$101,596	\$127,608	\$152,128	\$428,792
Total	\$230,372	\$1,288,964	\$3,243,672	\$4,407,512	\$5,284,176	\$14,454,696

Source: TEGP 2007a

* Quarterly and Annual Reports have been filed for all activities to date.

** These estimates were derived utilizing the methodology proposed on January 14, 2008 by the WY Department of Revenue.

The tax district includes levies for several county districts, including Campbell County Cemetery, Campbell County Conservation, Campbell County Hospital, Campbell County Joint Powers Fire, Campbell County School # 1, County Levy, and Weed and Pest Control Districts. Each of these special districts would benefit from ad valorem taxes paid on Project facilities.

3.3.3.2 Sales and Use Tax

TEGP estimates paying a total of \$21.6 million in sales taxes during the 2008-2012 construction phase, based on the projected taxable expenditures shown in **Table 3-7**.

Table 3-7. TEGP Projected Sales Taxes, 2008-2012

Sales Tax	2008	2009	2010	2011	2012	Total
Non-material Project Expenses	\$38,400,077	\$96,960,195	\$55,680,112	\$36,960,074	\$12,000,024	\$240,000,482
Materials-related Expenses	\$57,600,116	\$145,440,293	\$83,520,168	\$55,440,112	\$18,000,036	\$360,000,725
Total expenditures	\$96,000,193	\$242,400,488	\$139,200,280	\$92,400,186	\$30,000,060	\$600,001,207
Projected Sales Tax (6 percent)	\$3,456,007	\$8,726,418	\$5,011,210	\$3,326,407	\$1,080,002	\$21,600,044

Note: Not all expenditures are sales-taxable.

Source: TEGP 2007

3.4 Future Burdens on the Recommended Area of Impact

This section analyzes the future burdens on the Recommended Area of Impact, with and without the Project. It examines how housing, schools, health care, public safety, municipal services, and the transportation system would function with expected population growth if the

Project were not completely built. This analysis provides a baseline to compare the future burdens created by the Project, to what would be expected in the Recommended Area of Impact as a result of otherwise occurring growth.

3.4.1 Carrying Capacity of the Recommended Area of Impact Without Project

This section presents the carrying capacity of the available infrastructure without the Project, including housing, schools, municipal services, health care, and transportation.

3.4.1.1 Housing

The carrying capacity of housing in Campbell County was established by reviewing the current and projected availability and affordability of housing. The U.S. Census Bureau estimates that total housing units saw an increase of 21.0 percent in Campbell County between 2000 and 2009, from 13,288 to 16,085 (WCDA 2011). This compares to a 10.3 percent increase statewide.

According to the *Campbell County Housing Needs Assessment* (CSI 2005), Single-family and manufactured housing in unincorporated areas of the county is expected to continue to be the major source of housing growth in the county; this is expected to be buoyed by expanded subdivision development. Single family construction usually represents most residential construction in Campbell County. Building permit authorizations in Campbell County decreased from 277 in 2008 to 249 in 2009. Total residential units authorized remained stable at 349 between 2008 and 2009 (WCDA 2011).

Most of the existing rental units in the county were built in the 1970s and 1980s, with the newest rental projects being financed using Low-Income Housing Tax Credits and other federal subsidies (CSI 2005). Most of the rental units are concentrated in Gillette, with one rental unit complex in the Town of Wright. The 2010 Wyoming Rental Vacancy Survey indicated that of the 3,370 rental units surveyed in Campbell County, 271 were vacant (a vacancy rate of 8.04 percent), which is a decrease compared to the 10.53 percent vacancy rate one year ago but is greater than the 2010 statewide vacancy rate of 6.16 percent. Multi-family building permit authorizations in Campbell County decreased from 73 in 2005 to none in 2009; however, tri- and four-plex units increased by 100 (WCDA 2011).

Developing Gillette (City of Gillette Community Development Department - Planning Division 2010) reports a 54 percent increase in the housing stock (4,322 units) over the last decade. In the City of Gillette 281 housing units were added through annexation and 319 new housing units were permitted in 2010, increasing the total housing inventory by 600 units (City of Gillette Community Development Department - Planning Division 2011). There were 2,893 multi-family units in Gillette in 2009, a 6 percent (162 units) increase over the previous year. These units represented 23.5 percent of the city's housing stock in 2009, which is a 0.3 percent increase in the share of inventory from the previous year and a 3.3 percent increase in the share five years prior (City of Gillette Community Development Department - Planning Division 2010). In 2010 the city added another 120 multi-family units (City of Gillette Community Development Department - Planning Division 2011). The share of the total housing inventory in Gillette made up of manufactured/mobile homes increased from 16.2 percent of all housing units in 2000 to 17.8 percent of all housing units by the end of 2009 (City of Gillette Community Development Department - Planning Division 2010). Over the course of 2010, another 281 manufactured housing units were added to the City of Gillette housing inventory (City of Gillette Community Development Department - Planning Division 2011)..

According to the *Campbell County Housing Needs Assessment* (CSI 2005), 61 percent of Campbell County citizens are concerned about the condition of existing housing units, and 86 percent think that the availability and affordability of housing in Gillette and Campbell County are issues. The housing gap analysis provided in the study, summarized on **Table 3-8**, determines the housing gap based on median family income (MFI). The MFI was \$66,300 for a family of four in 2004.

The 2010 Semi-Annual Rental Survey indicated that 409 rental units in Campbell County had full or partial assistance, and more than 99 percent of these units were apartments. An additional 23 two- and three-bedroom apartments were desired. There were 478 people on a waiting list for vacancies (WCDA 2011). As shown in **Table 3-8** for rental households in 2004, when median household income (MFI) was taken into account, there was a lack of 290 units that had rents at the 0 to 30 percent MFI level and a lack of 767 units that had rents at the 51 to 80 percent of the MFI level. In contrast, there was an excess number of units that had rents at the 31 to 50 percent MFI level. Taking into account the total number of rental units and renter households, a shortage in rental properties was indicated, with a gap of approximately 750 rental units (CSI 2005).

Table 3-8. Rental Housing Gap in Campbell County 2004

Campbell County Rental Housing Gap	Maximum Income as a Percentage of MFI	Maximum Income in Range 2004	Affordable Rent as a Percentage of Maximum Income	Affordable Rent Payment	Number of Renter Households in 2004	Estimated Units in Market 2004	Current Inventory Gap
0-30% MFI	25.50%	\$16,905	2.03	\$343	662	372	-290
31-50% MFI	42.50%	\$28,175	2.21	\$624	554	2,297	1,743
51-80% MFI	67.99%	\$45,080	2.32	\$1,047	927	160	-767
81-95% MFI	80.74%	\$53,533	2.35	\$1,258	387	7	-380
Over 95% MFI	over 81%	over \$53,533	over 2.35	over \$1,258	1,060	0	-1060
Total					3,590	2,836	-754

Note: Renter household income was based upon a 2.5-person household, reflective of the average renter household size.
Source: CSI 2005

Table 3-9 indicates that the housing gap for potential homeowners in Campbell County is much worse than that for renters. In 2004, there was a gap of 2,956 units according to the study. As a result, it is likely that potential homeowners occupied rental units because owner units were simply not available. Approximately 3,000 additional units were required for the number of renters who have an income high enough to buy their own homes to become homeowners at the time of this study.

Table 3-9. Homeowner Housing Gap in Campbell County 2004

Campbell County Owner Housing Gap	Maximum Income as a Percentage of MFI	Maximum Income in Range 2004	Affordable Price as a Percentage of Maximum Income	Affordable Price	Number of Renter Households that are Likely Candidates for Home Ownership in 2004	Estimated Units For Sale in Market 2004	Current Inventory Gap
0-30% MFI	27.01%	\$17,910	400.09	\$71,656	662	21	-641
31-50% MFI	45.02%	\$29,850	400.09	\$119,427	554	134	-420
51-80% MFI	72.04%	\$47,760	400.09	\$191,083	927	316	-611
81-95% MFI	85.54%	\$56,715	386.09	\$218,972	387	31	-356
Over 95% MFI		over \$56,715	over 386.09	over \$219,000	1,060	132	-928
Total					3,590	634	-2,956

Source: CSI 2005

Rental demand from the year 2005 to 2030 is expected to increase by 506 households for renters with extremely low incomes (rents at 30 percent or less of MFI). Rental demand for those with 31 to 50 percent of MFI is expected to increase by 425 households over the period. The current rental vacancy rate in Campbell County is roughly 8 percent (WCDA 2011).

Within the City of Gillette, the vacancy rate climbed in 2009 and 2010 due to a slowed local mineral economy, unlike the vacancy rates in 2005 through 2008, which were low due to diminished energy development activities. The vacancy rates for the type of housing that would be in the greatest demand by the project workforce increased in both 2009 and 2010 (City of Gillette Community Development Department - Planning Division 2010 and 2011). The average vacancy rate for apartments and other buildings over the period of 2005 through 2010 was 2.11 percent annually. Manufactured home parks showed an average annual vacancy rate of 8.04 percent over the same six year period. In 2009, the rental vacancy rate in apartments and manufactured home parks rose on average over the year by 4.9 percent and 0.8 percent, respectively; and in 2010 they each increased again by 1.1 percent on average (City of Gillette Community Development Department - Planning Division 2011). The average apartment vacancy rate in 2010 was 6.13 percent, and the average manufactured home park vacancy rate was 6.88 percent. In the second quarter of 2011 the apartment rental vacancy rate was 6.3 percent. The vacancy rate for manufactured home parks in Gillette of 8.3 percent was the highest seen since the third quarter of 2006. The combined effect means there are more choices for a person or family who rents. In addition, by the end of 2009, there were 737 housing units that could apply for a zoning/building permit and 1,707 housing units within the subdivision review stage and could also apply for a building permit. The number of housing units at the subdivision review state that could apply for a building permit at the end of 2009 is a decrease of about 12 percent from 2008 and 25 percent from 2007. Of the 737 housing units

that could apply for a building permit, 208 were duplex units and 12 were triplex units. As of the end of December 2009, there were 68 duplex units at the final plat review phase and 62 duplex units at the sketch or preliminary plat review phase (City of Gillette Community Development Department - Planning Division 2010). As of the end of second quarter 2011 there were 314 single-family, enterprise military housing, manufactured home, duplex, multi-family and triplex housing units which were in the Preliminary or Final Plat Review stage. There were an estimated 403 housing units that could apply for a zoning/building permit. The total number of housing units within the development horizon was 717 at the end of the 2011 second quarter, as compared to 1,138 at the end of the second quarter of 2010, 1,940 at the end of the second quarter 2009, and 2,434 housing units at the end of the 2008 second quarter (City of Gillette Department of Engineering and Development Services, Planning Division 2011). As newly permitted units become available for occupancy, vacancy rates need to be monitored closely to determine if new construction is on track to meet the area's short-term and long-term housing needs.

According to the *Campbell County Housing Needs Assessment* (CSI 2005), the housing carrying capacity in Campbell County was being exceeded without the Project. Aggressive and proactive work by local authorities, and newly scheduled development may alter this condition. The economic slowdown that has occurred since the publishing of the *Campbell County Housing Needs Assessment*, along with the construction of roughly 800 multi-family units in Gillette between 2005 and 2007 has alleviated much of the housing shortage of the previous years.

3.4.1.2 Schools

Current and historical enrollment and pupil-teacher ratios were examined to determine the current carrying capacity of the school system in Campbell County. **Table 3-10** provides the enrollment figures, along with the pupil-teacher ratios for the county, the state, the Study Area and the U.S.

Since 1980, the number of students enrolled in Campbell County schools has increased by over 2,000 students. Enrollment slowly increased from 1980 through 1994. From the mid-1990s through 2004, enrollment decreased steadily, but it has begun to increase again over the last three years. Enrollment between 1992 and 1994 was over 8,000 students, or approximately 26 percent of the population. By October 1, 2004, the enrollment had decreased over 10 percent, with less than 20 percent of the county population, or 7,198 students, enrolled in school. Between 2004 and 2006, enrollment increased 6 percent.

School quality is often judged by comparing pupil-teacher ratios to state and national standards. These ratios in Campbell County were improving with the decrease in enrollment in the late 1990s, but are now increasing with the increase in enrollment seen in the last few years. The pupil-student ratio in Campbell County has been significantly lower than the national standard since 1996, and in 2004 the pupil-teacher ratio in the county was 12.8, compared to a ratio of 15.8 for the nation as a whole. In the last two years, the pupil-teacher ratio in Campbell County District #1 increased to 14.8, which is above the average for the State and nearing the recent national average.

Table 3-10. Campbell County Enrollment and Pupil-Teacher Ratios

Year	Enrollment	Percent of Population Enrolled	Pupil Teacher Ratios			
			Campbell County	Study Area Average	Wyoming	United States
2006	7,617	19.9	14.8	11.5	13.2	NA
2005	7,337	19.6	13.0	10.7	12.7	NA
2004	7,198	19.7	12.8	10.7	12.9	15.8
2003	7,234	20.0	13.5	11.1	13.2	15.9
2002	7,368	20.4	13.6	11.3	13.0	15.9
2001	7,441	21.5	13.7	11.3	12.5	15.9
2000	7,488	22.2	14.3	11.4	13.3	16.0
1999	7,580	23.1	14.1	11.7	13.3	16.1
1998	7,710	23.7	14.7	12.4	14.2	16.4
1997	7,684	24.0	15.0	13.0	14.5	16.8
1996	7,903	24.8	15.4	N/A	14.7	17.1
1995	7,975	25.4	15.5	N/A	N/A	N/A
1994	8,029	26.0	N/A	N/A	N/A	N/A
1993	8,044	26.3	N/A	N/A	N/A	N/A
1992	8,014	26.2	N/A	N/A	N/A	N/A
1991	7,983	26.8	N/A	N/A	N/A	N/A
1990	7,682	26.2	N/A	N/A	N/A	N/A
1984	7,327	22.8	N/A	N/A	N/A	N/A
1980	5,116	21.0	N/A	N/A	N/A	N/A

Source: CH2MHill 2006, WDOE 2007b

In order to determine the carrying capacity of the Campbell County schools, an assessment was completed on the number of students that could be added to a district before the teacher-pupil ratio exceeds a certain standard. Enrollment in the Campbell County school district could increase by 498 students before the national teacher-pupil ratio is exceeded (see **Table 2-30**). The district is currently exceeding the Wyoming state average by 837 students.

The only CIP currently planned for the Campbell County School District is the replacement of the main building at Recluse Elementary and Middle School (see **Table 2-31**). This improvement may increase the carrying capacity of the County if the new building expands current facilities. Through the evaluation of historic and current enrollment, student-teacher ratios, and CIPs, it has been determined that the carrying capacities of the schools in Campbell County are not currently being exceeded or expected to be exceeded in the future with projected population growth. TEGP made a mitigation payment of \$ 35,560 to the Campbell County School District to help off-set any impacts.

3.4.1.3 Health Care

Health services in Campbell County include a hospital, a nursing home, a general care clinic, and five dental offices. Campbell County Memorial Hospital is the largest health services provider in the county and, as such, will be used to determine the carrying capacity of health

services within the county. General statistics from 2001 for the Campbell County Memorial Hospital are provided in **Table 2-32**. This hospital currently has no plans for expansion. Campbell County Memorial Hospital has a 24-hour ambulance and emergency response service, and provides other services including home health care and occupational and physical therapy. There were a total of 44 physicians working at the hospital in 2004. They represent a number of specialties including cardiology, emergency medicine, general and vascular surgery, oncology, internal medicine, orthopedic surgery, and psychiatry (WORH 2004). The hospital's support staff includes 298 general medical staff.

In a 2004 survey of the Campbell County Memorial Hospital, over 62 percent of citizens ranked the facility as excellent or good. Additionally, 42 percent of the citizens stated that their physician's services were good and nearly 31 percent ranked the services as fair (CH2MHill 2006). Overall, Campbell County citizens are generally satisfied with their hospital.

Table 2-34 shows that the carrying capacity of physicians in Campbell County is currently being exceeded. The Bureau of Health Professionals and the Graduate Medical Education National Advisory Committee each adopted recommended physician-patient ratios. The Bureau recommends a physician-patient ratio of 2.30 physicians per 1,000 citizens; the National Advisory Committee recommends 1.95 physicians per 1,000 citizens. The physician-patient ratio at the hospital was 1.65 in 2006, which was less than the State's ratio of 1.86. Neither of these ratios meets the Bureau's or the Advisory Committee's recommended physician-patient ratios.

In addition to these metrics, carrying capacity can also be determined by comparing the number of beds in the county per 100,000 citizens to the ratio at state and national levels. The number of beds per 100,000 population in Campbell County was 308.2, which was less than the State's ratio of 364.7 but greater than the U.S. average of 291.8.

The 2004 Campbell County Memorial Hospital survey and the analysis above, suggests that the carrying capacity of health care in Campbell County is currently being exceeded. There will be increasing pressure on the health services in the future as the population continues to grow.

3.4.1.4 Public Safety

Campbell County has 97 law enforcement officials and 186 fire fighters, most of whom are located in the City of Gillette. The ratio of law enforcement officials to 1,000 citizens in Campbell County was 2.9 in 2001 (see **Table 2-39**), as compared to an average ratio of 2.5 for the State of Wyoming and the U.S. Assuming the number of law enforcement officials remains the same, the population increase of 5,350 (16 percent) in Campbell County since 2001 would bring the law enforcement ratio equal to that of the State and the U.S. Population projections from **Table 2-6** indicate that the Campbell County population will have reached this level by 2007. For Campbell County to maintain a law enforcement ratio equal to that of the State and the U.S., one law enforcement official would need to be added for every increase in population of 400. This analysis indicates that law enforcement in Campbell County is currently at its carrying capacity.

The ratio of firefighters to 1,000 citizens in Campbell County was 5.0 in 2005, well above the average ratio of 1.8 for the State of Wyoming and the U.S. Assuming the number of firefighters remains the same, a population increase of 66,130 (78 percent) in Campbell County since 2005 would bring the firefighter ratio equal to that of the State and the U.S. From the population projections in **Table 2-6**, it is very unlikely that the Campbell County population will reach this

level in the next 20 years. This analysis indicates that firefighting capabilities are currently sufficient for Campbell County.

3.4.1.5 Municipal Services

Municipal services in Campbell County and the City of Gillette include electric power, natural gas, telephone, and cable services. These services are expected to meet the needs of its citizens given the expected population growth of Campbell County and Gillette.

A more detailed evaluation of water and wastewater services is necessary. Carrying capacities for municipal water supply are determined by comparing current water storage, annual average water production, and system capacity to water demand. There are a total of 37 water and wastewater facilities in Campbell County serving over 37,224 people. **Table 3-11** provides the general statistics of Gillette's municipal water supply system.

Table 3-11. City of Gillette Water Supply Carrying Capacity, 2005 and 2010

Water Supply Statistics	
Gillette Population 2005	21,942
Gillette Projected Population 2010	23,496
Water Storage (gallons)	19,000,000
Annual Average Water Production (gallons per day)	4,400,000
Peak Water Production (gallons per day)	13,600,000
Peak Day Demand (gallons)	11,940,000
Peak Day Demand Per Capita (gallons per minute)	0.38
Peak Day Demand 2005 (gallons per minute)	8,290
Peak Day Demand 2010 (gallons per minute)	8,877
System Capacity (gallons per minute)	12,865
Average Water Use Per Person (gallons per capita per day)	177
Total Water Consumption by the Population 2005 (gallons per day)	3,883,734
Total Water Consumption by the Population 2010 (gallons per day)	4,158,792

Source: COG 2002

The City of Gillette's municipal water supply includes five pump stations, nine storage reservoirs, approximately 200 miles of pipe, and several thousand hydrants and main line valves. The City currently has 19 million gallons of water storage for peak demands and fire protection. The annual average water consumption per capita is estimated to be 177 gallons per day. The 2005 population water consumption is 3.88 MGD, and it is estimated that this number will increase by 7 percent to 4.16 MGD. Peak water production is currently 13.6 MGD, which is more than the peak day demand of 11.94 MGD. Gillette's water system currently has a capacity of 12,865 gallons per minute. It is estimated that this peak day population consumption will be 8,877 gallons per minute in 2010, which is less than the system capacity.

Similar to water supply, the carrying capacity of the wastewater treatment facilities in Campbell County is determined by comparing current demand and use, annual average wastewater generation, and system capacity. **Table 3-12** provides the general statistics for Gillette's wastewater treatment facility.

Table 3-12. City of Gillette Wastewater Carrying Capacity, 2005 and 2010

Wastewater Treatment Facility Statistics	
Gillette Population 2005	21,942
Gillette Projected Population 2010	23,496
Average Wastewater Generation Per Capita (gallons per day)	100
Average Wastewater Generation From All Uses (gallons per day)	113.03
Average Wastewater Flow (gallons per day)	2,480,000
Projected Average Wastewater Flow 2010 (gallons per day)	2,655,641
WWTF Design Flow Capacity (gallons per day)	5,200,000
Estimated Population Plant Can Serve	50,000

Source: COG 2007a

The City of Gillette wastewater treatment plant serves almost 25,000 customers and treats an average of 2.5 MGD. The average wastewater generation per capita is 100 gallons per day. The wastewater flow in 2010 is estimated to be 2.65 MGD. The design flow capacity of the facility is MGD, which is sufficient to serve a population of 50,000. Future population growth, including the Project, should have no impact on the wastewater treatment plant.

The City of Gillette started a new plant upgrade construction project in August 2005 that was completed in the spring of 2007. The new upgrades include UV disinfection, mechanical dewatering using a high solids centrifuge, a new collection system/plant maintenance facility, a new plant Supervisory Control and Data Acquisition (SCADA) system and other process improvements.

The Project itself is an air-cooled facility, utilizing approximately 240 gallons per minute (gpm) in total as makeup water. This 240 gpm will be supplied from the commingled supply of deep wells, permitted by the Wyoming State Engineer and designed to draw water from deeper aquifers not used for domestic water supply. Also, the Project is designed as a zero discharge facility. As such, it will not have need of wastewater treatment from any municipal source.

3.4.1.6 Transportation

Roads to the Project site include: I-90 which runs east-west through Gillette, SH 59 which runs south off of I-90 in Gillette, SH 450, which runs east off of SH 59 to the Two Elk Project site access road, and the numerous roads and streets within the City of Gillette that are likely to be used by Project employees.

Major improvements to Project site roads planned in Campbell County between 2010 and 2013 are described in **Table 3-13** below. Other planned improvements are discussed in Section 2.8.3 and shown in **Table 2-47**.

Table 3-13. Wyoming Department of Transportation Planned Improvements to Transportation Infrastructure in the Study Area

County	Proposed for Fiscal Year:	Impacted Roads Relative to Project Site / Description	Description of Work	Length of Construction
Campbell	FY 2010	State Highway 450, east of Two Elk site / Campbell County Line West Section	Reconstruction	5.4 miles
Campbell	FY 2011	SH 59, immediately south of Gillette / Tisdale Creek Section	5 lanes	5.8 miles
Campbell	FY 2012	Interstate 90, east of Gillette / Rozet Section	Mill and overlay	10.0 miles
Campbell	Future	SH 59, immediately south of Gillette / Antelope Creek Section	Resurface / mill / overlay	4.5 miles

Source: WYDOT 2007

The City of Gillette conducted a transportation planning study in 2004 to identify transportation issues (COG 2004b). The study addresses: identification of an effective regional transportation network to accommodate growth and the commensurate increase in traffic; standardization of transportation corridors and street classification criteria; and possible needs for new corridors/streets to accommodate future traffic. The results of the study propose to extend a number of existing streets in the city and provide several new collectors throughout the planning area.

City of Gillette traffic counts taken in 2006 indicate that traffic in the community has increased to levels previously projected by the 2004 Transportation Planning Study to occur in 2023, making the enhancement of the City's transportation network a top priority (COG 2007b). Numerous projects can be expected in and around the City of Gillette.

3.4.2 Carrying Capacity of the Recommended Area of Impact With Project

This section describes the potential impacts of the Two Elk Project on area resources.

3.4.2.1 Housing

Construction of the Two Elk Project is anticipated to require 579 workers during peak construction. Of those workers, 128 (22 percent) are expected to be local and 399 (69 percent) will likely relocate to Campbell County. An additional 9 percent of the workforce, approximately 52 workers, is assumed to relocate to other counties in the vicinity for a total of 451 imported workers. Of the 399 workers who are expected to be relocated to Campbell County, it is estimated that 187 will bring families with them and 212 will not. Of the 52 workers who relocate to other counties, it is assumed that 24 will bring families and 28 will not.

Without mitigation, it is assumed that most workers relocating to Campbell County would live in Gillette. Using the average annual percent increase in rental units between 2000 and 2004 (1.43 percent), and given that the 2010 Census indicates that there are 4,138 rental units, it is projected that there will be 4,380 rental units in Gillette in 2014 when the peak number of workers would be present (USCB 2010a and Tetra Tech Estimates 2012). The projected

numbers of employees that would live in various communities either because of relocation or because they are part of the local workforce is shown in **Table 3-14**.

Table 3-14. Projected Housing Demand by Community ¹

Community	2012				2013				2014				2015				2016	
	1 st Q	2 nd Q	3 rd Q	4 th Q	1 st Q	2 nd Q	3 rd Q	4 th Q	1 st Q	2 nd Q	3 rd Q	4 th Q	1 st Q	2 nd Q	3 rd Q	4 th Q	1 st Q	2 nd Q
Gillette	0	19	20	22	27	34	52	110	218	317	347	337	256	166	80	28	27	0
Unincorporated Gillette	0	3	3	4	5	6	9	18	36	53	58	56	43	28	13	5	5	0
Wright	0	7	7	8	9	12	18	39	76	111	122	118	89	58	28	10	9	0
Neighboring Counties	0	3	3	3	4	5	8	17	33	48	52	51	38	25	12	4	4	0
Total	0	32	33	37	45	56	86	184	363	528	579	562	426	276	133	46	45	0

¹ Assumes 60 percent of the workforce will live in Gillette, 10 percent in unincorporated Gillette, 21 percent in Wright, and 9 percent in neighboring counties.
Source: Tetra Tech Estimations 2012

To estimate the number of one-, two- and three-bedroom apartments that will be in the housing stock at this time, it was assumed that the percentage of the housing stock they comprise would be the same as in the Census Bureau American Community Survey (ACS) Five-Year Estimates from 2006 to 2010. The rental vacancy rate of 5.7 percent provided in the ACS was applied to these units to estimate the number of vacant rental units that will be available in 2014 at peak construction (USCB 2010c). Based on the Dry Fork Station socioeconomic study (CH2M Hill 2006), a 3 percent adjustment for each category was applied to account for undesirable properties and temporary vacancies during property turnover. Results are presented in **Table 3-15**. It is assumed that all units would be available for rent by Two Elk construction workers; single workers would be housed in available one-bedroom apartments, and accompanied workers will be in two- and three-bedroom apartments. Therefore, a total of 239 rental units would be required to house the 127 single construction workers and 112 families that would live in Gillette (60 percent of the 399 workers that would relocate to Campbell County). Note that this is a conservative estimate (i.e. probably overestimates the amount of housing required), since some single workers may choose to share apartments to save on expenses.

Table 3-15. Rental Units Available in Gillette for Two Elk Construction Workers and Their Families, 2014

	Number of Units, 2010 ACS	Number of Projected Units, 2014	Percent Vacant	Number of Vacant Units	Number of Units Allocated for Single Workers	Number of Units Allocated for Workers with Families
No Bedroom	39	53	NA	3	0	0
1 Bedroom	502	679	NA	38	38 units for 127 workers	0
2 or 3 Bedrooms	2,470	3,338	NA	185	0	185 units for 112 workers
4 or more Bedrooms	233	315	NA	17	0	17
Total	3,241	4,380	5.7	242	38	202

Note: Percent vacant and number of available units in Gillette taken from the 2010 ACS; whereas, the projected growth in rental units is taken from the 2000 to 2004 average.
Source: USCB 2010c

As shown in **Table 3-15**, there would be a shortage of 89 rental units for single workers that would relocate to Gillette during the peak of construction; whereas, there would be a surplus of 90 2-, 3-, and 4-bedroom units for workers with families.

In addition to the temporary construction workforce, Two Elk will also require 45 personnel to manage the daily operations of the facility. Because these jobs are not temporary in nature, it is assumed that these workers, whether local, imported, single, or relocating with their families, are already housed (local) or will seek to purchase a home in the area.

3.4.2.1.1 Number of Units Required

Based on the amount of available units in Campbell County, it is anticipated that additional housing will be required for imported workers. **Table 3-16** shows 43 vacant units (78 for single workers and 355 for families) projected for 2014. There would be approximately 399 imported workers who will reside in Campbell County, creating a shortage of 134 units (**Table 3-16**).

Table 3-16. Projected Housing Demand

Campbell County Housing	Available Units	Project Demands	Units Required
Single Workers	78	212	134
Families	355	187	0
Total	433	399	134

Source: USCB 2010c and USCB 2010d, Tetra Tech Calculations 2012

It is anticipated that not all of the imported workers would relocate permanently to Campbell County. Therefore, some of the housing shortage could be provided by motel/hotel rooms and RV sites. In 2004, there were 1,417 motel/hotel rooms in Gillette and 27 in Wright. Additionally, there were 133 campground sites with RV hook-ups in Gillette and 73 in Wright. Currently, in the Gillette metropolitan area there are more than 1300 motel rooms (City of Gillette Planning Division 2011).

A number of the units may be supplied by the newly planned developments in the area, independent of the Two Elk Project mitigation described later in Section 5.2, such as:

- 21 acres in the Town of Wright that will add more than 150 housing units. This development will have a broad range of housing options from rental based apartment style units, to single family homes.
- 40 two bedroom apartment units in the City of Gillette. The developer has the land platted and zoned appropriately for the units.
- Two developments in the City of Gillette have approved lots that are ready for construction.
- New 70 unit hotel being built in the Town of Wright.
- 94 twin home lots with two and three bedroom townhomes are being built in Gillette.
- 130 single family home lots are being built with three bedroom units in Gillette.

3.4.2.1.2 Effects on Vacancy Rates

It is anticipated that much of the construction work force would purchase or rent housing of some type during the remaining construction of the Project. Relocating workers and their families, including the estimated 399 non-local workers would account for nearly 3 percent of the population of Gillette and nearly 2 percent of the population of Campbell County, based on

2004 housing supply estimates. With the housing shortage identified in the 2005 study by Community Strategies Institute, the Project would affect vacancy rates in both the City of Gillette and Campbell County. However, recent discussions with the City of Gillette Planning Division staff have indicated that housing shortage for rental units from 2004 to 2007 resolved itself with the recent economic downturn and an addition of some 800 multi-family units that were constructed between 2005 and 2007 (City of Gillette Planning Division 2011).

3.4.2.1.3 Effects on Cost

The average sale price of existing, detached, single family homes in 2009 in Campbell County was \$249,507. This represented an increase of about three percent from the previous year. In contrast, the State of Wyoming's average was \$241,622, a decrease of 5.6 percent over the previous year. Housing costs do not seem to be fluctuating greatly in Campbell County, as compared to the State. Therefore, the Project alone is not expected to have any effect on housing prices; however, it will be one of several factors that will cause sale prices to continue to rise.

3.4.2.1.4 Effects on Rental Rates

Average apartment rent in Campbell County decreased by 5.6 percent, from \$762 per month in second quarter 2009 to \$719 in second quarter 2010. Detached single family home rents decreased by 10.9 percent. Rents for mobile homes on a lot decreased by 7.0 percent, and rents for mobile home lots increased by 4.6 percent.

Campbell County rental prices have experienced average annualized increases of 4.0 percent for apartments, 4.7 percent for houses, 4.7 percent for mobile homes plus a lot, and 3.2 percent for mobile home lots since fourth quarter 1986 (WCDA 2011). These figures compare to state averages. Therefore, the Project alone is not expected to have any affect on rental rates. However, if the demand for rental properties continues to increase with this and other proposed projects in the area rents will continue to rise.

3.4.2.2 Schools

To evaluate the potential impact of the Project on the Campbell County School District, an estimate of the number of school-aged children from the Two Elk Project workforce is required. During peak construction, 579 workers are expected to be working on the Project. Of those workers, 128 are projected to be local, and 399 will relocate into Campbell County. It is assumed that approximately nine percent of imported workers with families will relocate to one of the other counties in the Study Area rather than Campbell County. This translates to 399 workers relocating to Campbell County and 52 workers relocating to Converse, Crook, Johnson, or Weston Counties.

The potential impact to the Campbell County School District will come from those workers who relocate to Campbell County and are accompanied by their families. Based on prior large construction projects, it is assumed that 53 percent of all non-local workers would relocate to the Gillette area without other household members, thereby assuming a single status for the duration of their stay. Using these numbers, it is expected that 47 percent of imported workers will bring their families. This translates to 187 workers bringing families to Campbell County and 212 single imported workers residing in Campbell County, with 24 workers bringing families to other counties.

It is assumed that the household size of imported families will be similar to that in the Study Area, 2.5 persons per household. Using this number, it is estimated that approximately 94

school-aged children will be added to the Campbell County School District enrollment at the peak of construction. Because this is significantly lower than the 498 students who could enroll before the national student-teacher ratio is exceeded, the carrying capacity of the school district will not be impacted by the Project. **Table 3-17** provides a breakdown of these calculations.

Table 3-17. Potential Impact of School-Aged Children on Campbell County School District

Project Impacts to School District	
Total Number of Family Individuals in Households in Campbell County	446
Number of Adults in Family Households in Campbell County	356
Number of School-Aged Children at Peak of Construction Added to Campbell County	94
Number of School-Aged Children That Could be Added Before National Student-Teacher Ratio is Exceeded	498

Source: Tetra Tech Calculations 2007

An estimated 52 workers will relocate to Study Area counties other than Campbell, and approximately 24 of them will likely bring their families. Using the same calculations as shown above, this will yield approximately 12 children who would enroll in their local school district. Since these families and children will be distributed among neighboring counties, no one school district will experience any enrollment impacts.

3.4.2.3 Health

The carrying capacity of health service levels are currently being exceeded as was detailed in Section 3.4.13. **Table 3-18** shows the potential impact of the Project on health services within the county.

Table 3-18. Potential Impact of Project on Campbell County Health Services, 2009

	Campbell County Without Project	Campbell County With Project	Wyoming (2000)	U.S. (2000)	Bureau Recommended Physician-Patient Ratio	Advisory Committee Recommended Physician-Patient Ratio
Total Number of Physicians (2000)	44	44	764	558,054	230.9 physicians/100,000 population or 1 physician for every 433 persons	194.6 physicians/100,000 population or 1 physician for every 514 persons
Total Number of Beds (2000)	119	119	1,919	823,530		
Population (2009)	39,147	39,824	526,180	282,224,000		
Number of Physicians per Population	1 physician for every 890 persons	1 physician for every 905 persons	1 physician for every 689 persons	1 physician for every 506 persons		
Number of Beds per Population (2009)	1 bed for every 329 persons	1 bed for every 335 persons	1 bed for every 274 persons	1 bed for every 292 persons		

Source: US Department of Health and Human Services (USDHHS) 2007

The national standard ratio for physicians-to-population is one physician to every 433 persons (according to the Bureau recommendations) or one physician to every 514 persons (according to the Advisory Committee recommendations) (USDHHS 2007). For Campbell County, the number of physicians without the Project changes from one physician for every 890 persons to one for every 905 persons with the Project. Both numbers are well below the national standard for physician-to-patient ratios. However, the Wyoming and U.S. averages are also well below the national standard, with one physician to every 689 and 506 persons, respectively.

With the Project, the number of beds per person is slightly reduced, from one bed for every 329 persons without the Project to one bed for every 335 persons with the Projects. These ratios may be somewhat lower in reality because they are calculated using the projected 2009 population but only 2000 data for total physicians and beds. It is expected that the number of physicians and beds would also increase during this 9-year period. Carrying capacity for health care is currently exceeded with or without the Project.

3.4.2.4 Public Safety

To determine whether the carrying capacity of public safety within Campbell County would be impacted by the Project, the ratio of law enforcement officials and fire fighters to 1,000 citizens in the county was compared with state and national standards with and without the Project. **Table 3-19** displays this information for the peak construction period.

Table 3-19. Potential Impact of Project on Campbell County Public Safety

	Without Project	With Project
Campbell County Projected Population 2009	39,147	39,824
Number of Campbell County Law Enforcement	98	98
Police-to-Citizen Ratio Per 1,000 Citizens (2009)	2.3	2.3
Number of Fire Fighters	186	186
Fire Fighter-to-Citizen Ratio Per 1,000 Citizens (2009)	4.4	4.4

Source: Tetra Tech Calculations 2007

As shown by the table, neither the ratio of law enforcement officers nor fire fighters per 1,000 citizens changes with the projected population increase with or without the Project. However, with both projected population increases, the ratio of law enforcement officers to 1,000 citizens is less than that for the State and the U.S., which is 2.5. With or without the Project, additional law enforcement officials will be needed to serve the projected population increase.

The ratio of firefighters to 1,000 citizens is significantly higher than the state and national ratios of 1.8. Therefore, additional firefighters would not be needed to serve the projected population increase. For public safety in general, the projected population increase due to the Project will have negligible impact on the level of public safety in Campbell County.

3.4.2.5 Municipal Services

The impact of the Project to municipal services is calculated below in **Tables 3-20** and **3-21**. In terms of Gillette's municipal water supply, the projected addition of people during the peak construction period for the Two Elk Project will not impact the carrying-capacity of the City's water supply. As shown in **Table 3-20**, the peak day demand with this additional population is

projected to be 245.86 gpm. Adding this to the projected peak day demand of the population, the total peak day demand is expected to be 8,999 gallons per minute. Because the system capacity is 12,865 gallons per minute, the existing system has adequate excess capacity to accommodate the peak day demands from the Project. For water consumption, the total projected water consumption of the population with the additional Project population is about 4.2 MGD. This is 3.3 times less than the 13.9 MGD peak water production capacity for the system; therefore, the carrying capacity of the municipal water supply will not be exceeded by the Project.

North American Land and Livestock Company (NALL) has obtained groundwater permits from the Wyoming State Engineer's Office (SEO) authorizing the construction of three supply wells for the Two Elk Project in Campbell County (TZA 2007). The facilities are proposed to be located on or near Section 36, T43N, R70W, approximately 14 miles southeast of the Town of Wright, Wyoming. The permitted completion dates for all three wells is December 31, 2012 (TZA 2007). The well field will be designed to supply water from the Lance/Fox Hills formation to the Project and support possible additional industrial demand in the vicinity of the Project. Additional well permits will be applied for to ensure the field has sufficient supply. Previous NALL had 11 permits which expired at the end of 2009. Discussions with the State Engineers office subsequently resulted in the re-permitting of three wells and if necessary, upon the completion of these wells, additional permits will be applied for.

The groundwater permits allow for water from each well to be co-mingled with water from other permitted wells completed in the Lance/Fox Hills Formation. The current well permits stipulate that the maximum total amount of water to be produced from all of the wells cannot exceed 800 acre-feet per year. NALL and TEGP authorized TZA to prepare a Water Supply Report for the ISC and the SEO. TZA's Water Supply Report, included as **Appendix C** and separately provided to the SEO, details the availability of water to meet an overall projected demand of 1,876.5 acre-feet per year. The goals of the Water Supply Report were:

1. To determine if production from existing permitted wells properly constructed into the Lance/Fox Hills wells located in and around the Two Elk site is likely to meet the projected Project demands of 500 acre-feet per year and possible demands of 1163 gpm (1,876.5 acre-feet per year).
2. To provide preliminary information and recommendations necessary to assist NALL in developing a plan for a well field construction.

According to TZA, available geologic and hydrogeologic information indicates that production rates sufficient to meet the projected continuous and possible expansion demands of 1,163 gpm (1876.5 acre-feet per year) can be obtained by constructing between three and four wells in the vicinity of the Project site. The approximate total depth for drilling each well is 4,800 feet.

While exact production rates cannot be determined prior to construction, the results of TZA's investigation show that it is highly likely that installation of four properly constructed Lance/Fox Hills aquifer wells will be sufficient to meet the projected possible aggregate demand. Depending upon actual production rates attainable from completed wells, additional wells will be evaluated as a back up source of supply in case of pumping equipment failure or the unlikely event of well failure.

To minimize the chance for well-to-well interference, wells initially will be spaced a minimum distance of one mile from one another. During construction, pump testing and hydrogeologic

evaluations will be performed at each of the initial wells. The information obtained from these wells will be used in evaluating future well spacing and design. Information gathered from the initial wells might indicate that wells can be spaced closer together with little to no well-to-well interference.

The water quality from the Lance/Fox Hills aquifer underlying the Project site is likely to be very similar to that of the Rochelle Well No. 2 well that is located approximately eight miles southwest of the site. Water temperatures from Lance/Fox Hills wells constructed at the Project site are expected to be approximately 120 degrees Fahrenheit, similar to those recorded in December of 2002 at the Thunder Basin Well 17-1-LFH.

According to the TZA Water Supply Report, the Lance/Fox Hills aquifer life expectancy at the site exceeds 300 years. The static water level at the Project site is projected to be between 800 and 900 feet below surface. Specific capacities of properly designed wells are expected to be in the range of 0.4 to 0.5 gpm per foot. Therefore, at a theoretical pumping rate of 400 gpm, the projected pumping level will be approximately 1,600 to 1,900 feet below surface.

Table 3-20. Potential Project Workforce Impact on City of Gillette Municipal Water Supply

Water Supply-City of Gillette	
Without Project	
Gillette Population 2005	21,942
Gillette Projected Population 2009	23,168
Water Storage (gallons)	19,000,000
Annual Average Water Production (gallons per day)	4,400,000
Peak Water Production (gallons per day)	13,600,000
Peak Day Demand (gallons)	11,940,000
Peak Day Demand Per Capita (gallons per minute)	0.38
Peak Day Demand 2005 (gallons per minute)	8,290
Peak Day Demand 2009 (gallons per minute)	8,753
System Capacity (gallons per minute)	12,865
Average Water Use Per Person (gallons per capita per day)	177
Total Water Consumption by the Population 2005 (gallons per day)	3,883,734
Total Water Consumption by the Population 2009 (gallons per day)	4,100,736
With Project	
Number of Imported Workers and Associated Household Members	679
Gillette Projected Population 2009 with Imported Workers and Families	23,847
Peak Day Demand by Imported Workers and Households (gallons per minute)	245.86
Total Peak Day Demand by the Population With the Project 2005 (gallons per minute)	8,536
Total Peak Day Demand by the Population With the Project 2009 (gallons per minute)	8,999
Imported Worker and Household Water Consumption (gallons per day)	114,519
Total Water Consumption by the Population With Project 2005 (gallons per day)	3,998,253
Total Water Consumption by the Population with Project 2009 (gallons per day)	4,215,255

Source: COG 2007a, Tetra Tech Calculations 2007

The Project workforce is not expected to exceed the carrying capacity of Gillette's wastewater treatment facility. The projected wastewater flow with the Project workforce will be approximately 2.7 MGD (**Table 3-21**); this is significantly lower than the City of Gillette facility's

design flow capacity of 5.2 MGD. The Gillette plant is designed to serve 50,000; the total projected population in 2009 with the Project workforce is projected to be 23,847.

Waste generated during the construction and operation of the Project would be removed from the site by a contracted hauler. Waste would be taken by the hired contractor to a transfer station or directly to the Campbell County Landfill. The Campbell County Landfill is permitted for 36 years; however, the current life of the landfill is projected to be 17 years for household materials and 7 to 8 years for construction and demolition material (CCPWD 2007). Project waste is not expected to exceed the carrying capacity of the Campbell County Landfill.

Table 3-21. Potential Project Workforce Impact on City of Gillette Wastewater Treatment Facility

Wastewater Treatment Facility Statistics	
Without Project	
Gillette Population 2005	21,942
Gillette Projected Population 2009	23,168
Average Wastewater Generation Per Capita (gallons per day)	100
Average Wastewater Generation From All Uses (gallons per day)	113.03
Average Wastewater Flow (gallons per day)	2,480,000
Projected Average Wastewater Flow 2009 (gallons per day)	2,618,569
WWTF Design Flow Capacity (gallons per day)	5,200,000
Population Plant Can Serve	50,000
With Project	
Number of Imported Workers and Associated Household Members	679
Imported Worker and Household Wastewater Production (gallons per day)	64,700
Total Wastewater Production by the Population With Project 2009 (gallons per day)	2,683,269

Source: COG 2007a, Tetra Tech Calculations 2007

3.4.2.6 Roads and Highways

The Two Elk Project is located east of the Town of Wright, off of SH 450. The Project site will be accessed from I-90 or I-25 via SH 59, then east on SH 450, then south on the access road to the Project site. During construction and operation, roads and highways in the area will experience increased traffic from vehicles hauling materials to and from the Project site and workers commuting to the site from neighboring communities. It is anticipated that all waste fuel material will be delivered directly to the Project from surrounding mines without the need for any intermediate over the road trucking.

Contractors will be expected to comply with existing federal, state, and county requirements to protect the road network; load limits will be observed at all times to prevent damage to existing paved road surfaces and bridges. If necessary, arrangements to transport oversized loads will be coordinated with and approved by WYDOT.

A traffic study was completed for the Two Elk Project in June, 2005 (Felsburg Holt & Ullevig 2005). Twenty-four hour peak hour volumes were counted for SH 450 at mile marker 52 where the site access road will intersect SH 450. Daily and peak hour traffic volumes in the vicinity of the site were very low. There was no existing level of service for this intersection.

At peak construction, it is expected that there will be approximately 579 workers accessing the site, traveling primarily south on SH 59 from Gillette and then east on SH 450. This will result in approximately 650 daily trips during construction, and 150 daily trips during operations (**Table 3-22**). It was assumed that due to the large numbers of construction workers and the distance to the nearest town, a shuttle service would be provided, thereby reducing the number of trips by 50 percent. TEGP has committed to such service (TEGP 2001).

It is anticipated that the majority of the employees working on the construction and subsequent operation of the Two Elk facility will live in Campbell County and will elect to transport themselves to and from the worksite. TEGP, as required by Industrial Siting regulations, will track each employee's housing location, and implement a bussing plan similar to those used by the mining operations in the Powder River Basin. If transportation needs, as indicated through monitoring or from employees, suggest that bus service is necessary in the construction of the facility; a carrier will be hired to transport employees from common locations near their housing and transport them on coach style busses to the facility for their shift.

Table 3-22. Trip Generation for the Two Elk Project

	Number	Daily Trips	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
Construction								
Workers	579	600	250	30	280	30	250	280
Material Deliveries	25	50	10	10	20	0	0	0
Total	604	650	260	40	300	30	250	280
Operations								
Workers	45	150	15	5	20	5	15	20

The traffic study determined that left and right turns from the site access road onto SH 450 would operate at level of service (LOS) B during both the construction and operations phases. Left and right turns into the site from SH 450 would operate at LOS A during construction and operations. Based on the results of the study, it was determined that no auxiliary turn lanes would be necessary; however, TEGP has just completed construction of a new turn lane on SH 450 to provide safe ingress and egress to the access road from SH 450, without affecting normal SH 450 traffic flow. TEGP also widened the highway and re-striped it.

TEGP discussed the Project with the Wyoming DOT Planning Section in December, 2007. The Planning Section confirmed it does not have any specific concerns about impacts to traffic on SH 450 and SH 59 as a result of the Project (TEGP 2007b). TEGP will coordinate with the Town of Wright and Campbell County to monitor the impacts of traffic on an ongoing basis to ensure safety and congestion concerns are addressed. The Project operations being of a shift work nature can be altered to utilize transportation windows that are not competing with other area businesses shifts. During normal operations of the Project the day shift will have the highest number of workers, with approximately 21 employees.

Additionally, there is currently a bus service that runs from Gillette to the mines in the southern basin. A similar service is expected to be established to transport workers during construction, and potentially shared during the operation of the Project

Safe driving practices for winter driving conditions should be taught to all workers, especially those who come from warmer climates and may be unused to driving in snow, ice, or blizzards.

3.5 Cumulative Impacts

The Recommended Study Area in which the Two Elk Project is being constructed has much industrial activity. Other generating plants are being constructed in other parts of Campbell County, and coal and oil & gas activities are present throughout the Powder River Basin. Due to relatively sparse populations throughout much of the Study Area, and the very low unemployment rates, the increased level of industrial activity may result in competitive demand for labor, although this may be limited to certain skill types. The increased demand may lead to higher wages in general, and especially for high-demand occupations, both in the construction trades and in services such as skilled health care.

It is likely that this Project and other projects will draw workers and their families into the area, relocating either temporarily or permanently. This sustained demand backed by steady jobs and good wages will encourage on-going development of new housing.

An influx of unaccompanied construction workers (i.e., without their families) may stress certain local services such as law enforcement.

There are three other facilities being proposed or built in the Recommended Area of Impact; Pioneer Wind Park I and Pioneer Wind Park II, which would be developed by Wasatch Wind south of Glenrock, Wyoming, and the Reno Junction Wind Project, which would be developed by Third Planet Wind Power in Campbell County, Wyoming. Construction of the Pioneer Wind Park (PWP) facilities is expected to be delayed by 300 days from a previously anticipated start date of September of 2011. This would shift the expected start of construction at the PWP I facility to July of 2012, and construction at PWP II would begin one year later in July of 2013, according to the timeline presented by Wasatch Wind Intermountain, LLC, in its Wyoming Industrial Development Information and Siting Act Section 109 Permit Application (Wasatch Wind Intermountain, LLC, 2011). Given the delay, construction at PWP I would peak in August of 2012 and in August of 2013 at PWP II. Construction of the Reno Junction Wind Project was scheduled to begin in June 2010 but has been delayed to anticipated start date in April 2013, and construction would peak in July of 2013.

Based on this information, and assuming no changes in the start date of the Two Elk Project from the second quarter of 2012, there would be four quarters of overlap between the Two Elk and PWP Projects, four quarters of overlap between Two Elk and the Reno Junction Wind Project, and two quarters (the 3rd and 4th quarters of 2013) when Two Elk, PWP II, and Reno Junction overlap. The periods of overlap are shown in **Table 3-23**, below.

Table 3-23. Cumulative Effect of Projects

Time Period	Two Elk	Pioneer Park I	Pioneer Park II	Reno Junction	Total
Second Quarter 2012	32	-	-	-	32
Third Quarter 2012	33	168	-	-	201
Fourth Quarter 2012	37	83	-	-	120
First Quarter 2013	45	-	-	-	45
Second Quarter 2013	56	-	-	220	276
Third Quarter 2013	86	-	145	309	540
Fourth Quarter 2013	184	-	83	186	453
First Quarter 2014	363	-	-	40	403
Second Quarter 2014	528	-	-	-	528
Third Quarter 2014	579	-	-	-	579
Fourth Quarter 2014	562	-	-	-	562
First Quarter 2015	426	-	-	-	426
Second Quarter 2015	276	-	-	-	276
Third Quarter 2015	133	-	-	-	133
Fourth Quarter 2015	46	-	-	-	46
First Quarter 2016	45	-	-	-	45

Sources: TEGP 2012, Tetra Tech 2012, Wasatch Wind Intermountain, LLC, 2011, and ISC 2012.

The greatest impact from overlapping projects is estimated to be in the third quarter of 2013 when approximately 540 electric power construction workers will be constructing the PWP II, Reno Junction, and Two Elk facilities. However, this combined effect would still be lower than the construction labor demand for Two Elk during the third and fourth quarters of 2014.

It is assumed that there will be little overlap between specific trades on the projects. Overall, this represents a major benefit to skilled trade workers, as it provides the opportunity for much more steady employment in the region.

The assessment of cumulative socioeconomic impacts is based on the following factors:

- Estimated cumulative demand for labor;
- Housing needs monitoring done in 2005 and 2006;
- Updated housing information compiled in 2011, indicating a greater availability of housing in the Study Area; and
- A potential cumulative demand for housing dominated mainly by the Two Elk Project over the life of the Proposed Project.

Since construction of PWP I and PWP II would occur in Converse County, **Table 3-24** below is presented to indicate the level of housing vacancy in Converse County and, particularly, the City of Douglas. The Reno Junction Wind Project would occur in Campbell County, and workers would be more likely to relocate close to the project rather than in Douglas or Campbell County.

Table 3-24. Housing Availability, Converse County Areas

Location	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Vacant Units for Rent	Vacant Units for Sale	Vacant Units for Seasonal Use	Vacant Units for Migratory Workers	Other Vacant Units
Wyoming	261,868	226,879	34,989 (13.4%)	7,304	3,376	14,892	322	7,856
Converse County	6,403	5,673	730 (11.4%)	127	91	280	5	204
City of Douglas	2,788	2,546	242 (8.7%)	75	47	43	1	62
Esterbrook	114	29	85 (74.6%)	1	2	75	0	7
Town of Glenrock	1,201	1,102	99 (8.2%)	35	22	11	0	28
Town of Lost Springs	3	3	0 (0.0%)	0	0	0	0	0
Orin	27	20	7 (25.9%)	0	0	5	0	2
Town of Rolling Hills	150	147	3 (2.0%)	0	1	1	0	1

Source: USCB 2010a.

As shown in **Table 3-24**, the combined need for housing during the construction of the Two Elk and PWP facilities would exceed the current housing availability for the City of Douglas, which has the highest availability in Converse County. However, it is anticipated that most of the demand for housing and services for construction of the Two Elk Project would occur in Campbell County, which would not contribute to housing and services stresses on Converse County and the City of Douglas. In addition, the steady cumulative employment anticipated to occur in the region allows for some time to adjust housing mitigation measures. TEGP will continually monitor housing availability during construction.

4.0 TRADE-OFF ANALYSIS: BENEFITS TO IMPACTS

4.1 Project Benefits

The construction and operation of the Two Elk Project will have the following socioeconomic benefits to the local community:

- The creation of up to 579 construction jobs over the next 54 months, about 22 percent of which would provide employment for current residents of Campbell County.
- The creation of approximately 45 permanent jobs, about half of which would go to the local workforce.
- The creation of up to 139 indirect jobs over the remaining 54-month construction, start up, and commercial operation period. Some of these would be temporary and would cease as construction winds down or ends.
- The creation of up to 25 indirect permanent jobs associated with the operations workforce.
- Ad valorem (property) taxes and an increase in the assessed value of “utility” industrial property in Campbell County by a factor of 10. Ad valorem taxes over the construction period (2008 to 2011) are estimated to total approximately \$14 million.
- Annual license taxes to the State of Wyoming, estimated at a total of \$428,792 between 2008 and 2011.
- Sales and use taxes totaling approximately \$21.6 million total over the construction period.
- Potential increased severance and other tax revenues for the State of Wyoming.
- Recycling and reuse of non-commercial fuel for beneficial use.
- Increased sustainability and increased efficiency in the mining process through use of waste coal for energy generation.

4.2 Project Impacts

The construction and operations of the Two Elk Project would have the following impacts to Campbell County:

- Increase the population of Campbell County by 676 residents temporarily during peak construction, with 52 workers (some with families) moving to surrounding counties. This peak is anticipated to last approximately six months.
- Increase the permanent population of Campbell County by 55 new residents occupying 22 households during operations. This is based on the estimated total operational workforce, minus those currently residing in Campbell County, plus family members.
- Reduce the availability of housing for the community and create the need for additional housing units to house 212 single workers and 187 workers with families during construction of the Project.

- Create new auto and truck traffic accessing the site on State Highways 59 and 450, and possibly within the Town of Wright. During normal operations of the Project, the day shift will have the highest number of workers, with approximately 21 employees.
- With or without the Two Elk Project, a shortage of physicians in the community would exist.
- With or without the Two Elk Project, the demand for law enforcement and other community services would exceed the carrying capacity of the area, for which the increased tax base generated by the project can pay.

5.0 RECOMMENDATIONS: MITIGATION MEASURES

The carrying capacity of physicians in Campbell County currently is being exceeded. The carrying capacity is determined by physician to patient ratios set by the Bureau of Health Professionals and the Graduate Medical Education National Advisory Committee. These standards are set very high; no counties in the Study Area met the standards, nor did the State of Wyoming. It was determined that health care in the county is currently sufficient, but may see increasing pressure with additional development projects, therefore no mitigation measures are being recommended.

Law enforcement is currently at its carrying capacity in Campbell County. For Campbell County to maintain a law enforcement ratio equal to that of the State and the U.S., one law enforcement official would need to be added for every increase in population of 400. The Gillette Police Department is currently hiring a police officer, which would account for the increase in population related to the Two Elk Project (COGPD 2007). Therefore, no mitigation measures are needed.

Impacts to housing from the Two Elk Project may exceed the benefits and have been identified as requiring mitigation.

5.1 Housing

Housing is the socioeconomic issue of concern in the Recommended Area of Impact, and measures may be required to assist incoming workers with housing and to prevent adverse impacts to existing residents.

Housing availability is a concern to the local community even without the Two Elk Project. Projections indicate that there will be housing shortages for both single workers and families. Significant single-family development is occurring. However, demand for rental units has continued to exceed supply, driving housing costs up for workers and local residents.

It is estimated that the rental market in Campbell County will be very tight during Project construction and that the construction workforce may exceed available housing, as follows:

- 212 single workers and 187 workers with families during the 6-month peak construction period. This equates to the need for 399 additional units, in the unlikely case that all incoming workers require housing. Many single construction workers use RVs or mobile homes, which they take to the area of their current work site.
- Given the availability of housing in the area, it is anticipated that 290 additional units will be required; 181 for single workers and 109 for families.

In 2005, the Campbell County Economic Development Corporation sponsored the preparation of a Campbell County Housing Needs Assessment study (CSI 2005). **Table 5-1** displays selected housing goals that were defined by that study.

Table 5-1. Selected Housing Goals, Campbell County Housing Needs Assessment, 2005

	Actions	Priority	Time Frame	Players¹	Cost²
a.	Develop a Class A, 48-unit market rental complex.	Medium	2-3 years	Private sector, local government, CCEDC	\$\$\$\$\$
b.	Only support publicly financed rental projects with rents affordable to households at 30-40% of AMI.	High	2-3 years	Local government, private sector, WCDA	\$\$\$\$\$
c.	Organize a contingent of Campbell County business and political leaders to place a formal request to Sec. 8 state administrative entity for a priority allocation of vouchers to Campbell County. Allocation should come with at least 60% of the administrative fees HUD provides for program operation.	High	Less than one year	Local government, business leaders, Council on Community Services	\$
d.	Place in operation a county-wide first time homebuyer down payment assistance/homebuyer education program.	Medium	1-2 years	Council on community Services, local government, employers	\$\$
e.	Initiate actions to encourage builders to increase the supply of attached and detached homes in the \$119,000 to \$191,000 price range.	Medium	1-3 years	Private sector, local government, CCEDC	\$
f.	Examine ways to broaden Habitat for Humanity program in Campbell county and link Habitat effort with USDA self-help home building program in rural areas of the county.	Low	2-3 years	Habitat for Humanity, CCS, CCEDC, USDA county office	\$\$
g.	Establish a county-wide low-income owner-occupied housing rehabilitation loan fund.	High	1 year	CCS, local government, private sector, WCDA	\$\$\$
h.	Establish a county-wide rental property rehabilitation loan fund.	High	1-2 years	CCS, local government, private sector, WCDA	\$\$\$
i.	Institute a neighborhood revitalization program to include incentives and regulatory actions improving the quality of the buildings and public places in the older, core are of the city. A revitalization effort would include plans to (1) establish a village center in the downtown commercial area to foster inclusion of more residential in the commercial buildings. (2) target public facility improvements in central, older neighborhoods.	High	1-3 years	City of Gillette, CCS, CCEDC, WCDA, private sector	\$\$\$\$\$
j.	Establish criteria to allow the inclusion of accessory dwellings in new and existing dwellings where the impacts can be reasonably accommodated both for safety and design.	Medium	1-3 years	City of Gillette, private sector	\$
k.	Perform the due diligence necessary to create a rural water and sanitation district to serve the developable land adjoining the Gillette boundaries.	High	1-3 years	Campbell County, City of Gillette, CCEDC, private sector	\$\$
l.	Improve administration of the Gillette/County joint planning area to ensure that new developments meet Gillette standards to assure future annexations.	High	1-3 years	Campbell County, City of Gillette, CCEDC, private sector	\$
m.	Require proposed new developments seeking annexation into Gillette to include a percentage of for sale subdivision units to be priced below \$191,000 in 2004 dollars.	Medium	1 year	City of Gillette, private sector, CCEDC	\$
n.	Adopt policies governing development fee waivers/deferrals for housing priced at an affordable level to targeted income groups.	Low	1 Year	Local governments, CCS, CCEDC, private sector	\$\$

¹ CCEDC = Campbell County Economic Development Corporation; WCDA = Wyoming Community Development Authority; CCS = Council on Community Services

² \$ = Little or no dollar outlay;

\$\$ = 1,000 to \$100,000;

\$\$\$ = \$100,000 to \$200,000;

\$\$\$\$ = \$200,000 to \$1,000,000;

\$\$\$\$\$ = More than \$1 million

Source: CSI 2005

TEGP will continue to work with local agencies, developers, and/or businesses to assist in the development of long-term solutions that would benefit the entire community, including:

- Apartment or townhouse complex(es)
- Micro suite hotel
- RV park
- Assist with local efforts to expedite development of single-family homes, thereby opening up more rental units

Additionally, one or more short-term solutions may be implemented, as needed, for the Two Elk workforce, including construction of a Worker “Basecamp”.

The Project team will continue to meet with local stakeholders and work to meet the housing needs of the temporary construction workforce in a manner that will help meet the long- and short-term housing needs of the city and county and contribute to the region’s development.

5.2 Plans for Alleviating Impacts

It has been projected that the Project will import a total of 399 workers into the Recommended Area of Impact, Campbell County, including 212 single workers and 187 families. In addition, it is estimated that 52 workers will relocate to counties outside of Campbell County and 24 will bring their families.

TEGP has developed and implemented a housing mitigation plan that enacts a multi-tiered development plan. The plan is based on four driving principles: 1) utilize existing infrastructure in the Recommended Area of Impact; 2) take advantage of existing zoned and platted lots; 3) provide housing near the Project to maximize the workers quality of life and minimize travel and transportation impacts; and 4) address both the temporary and long term housing needs of the Project.

The typical labor force associated with the construction of an industrial facility of this nature is projected to be single, male workers. The majority of the workforce will come to the area, and subsequently move on to other projects as a single entity. Therefore, TEGP developed a housing plan with the goal of utilizing existing hotel stock, multi-family dwellings, and existing infrastructure for multi-family or manufactured housing to maximize the number of beds available within the timeframe of continuing construction and confines of existing infrastructure in the Recommended Area of Impact.

A phased development plan will allow the workforce to select a variety of housing options. The housing plan allows for units to be added as additional needs are identified, providing an adaptive housing plan that is expandable to meet the needs of the entire Project.

TEGP will monitor the housing requirements through ongoing reviews of the documented construction workforce at the time of activation on the site, and through the hiring process to ensure needs are met in advance of the workforce arrival on site. ISC staff will be apprised of the current and upcoming housing needs to cooperatively assess the housing needs.

The four-phase implementation plan for the housing needs associated with Two Elk Project is detailed below.

- Phase One: TEGP has entered into a Memorandum of Understanding securing the balance of lots in a mobile home park in Wright. The agreement includes 84 spaces that will have U.S. Housing and Urban Development (HUD) code homes installed to account for between 220 and 330 beds. The owner of the trailer park will work with TEGP to provide the additional HUD code homes on a six week lead time to accommodate incoming workers.
- Phase Two: TEGP has entered into negotiations for a Joint Development Agreement to develop between 40 and 74 units of multi-family housing in Gillette, providing between 80 and 148 beds. This development will take place on previously platted and zoned lots for this type of development in Gillette. The resulting development is targeted to bring additional affordable housing to the Recommended Area of Impact capable of housing the labor workforce as well as additional people migrating to the area. TEGP has also entered into negotiations for a joint development agreement with a homebuilder in Gillette to build and purchase twin home units which will accommodate an additional three beds per unit. These housing options will have a 16 week lead time and will be targeted at meeting the needs of families wishing to relocate to the area, or provide an option for single workers relocating to the impact area. The proposed agreement calls for a minimum number of five units, and a maximum number of 20 units to be delivered
- Phase Three: TEGP has entered into negotiations with developers in Wright, Wyoming relating to their development of additional multi-family, single family, and condominium developments. Additionally, TEGP has entered into negotiations for a joint development agreement with a land development company to secure and develop a 40 acre plot in or adjacent to Wright. The development company is charged with developing a multi-use development to coincide with the needs of the permanent workforce.
- Phase Four: In the event that the multi-tiered phase approach above is unable to meet the housing needs of the workforce associated with the construction of the Project, TEGP's contractors will be expected to implement a work camp plan capable of meeting the housing needs not met by Phases 1, 2 or 3.

6.0 BIBLIOGRAPHY

- Campbell County. 2007. Assessor Property Record Search. Webpage located at <http://www.ccgov.net/assessor/online/property/index.rsp>. Accessed on November 14, 2007.
- Campbell County Public Works Department (CCPWD). 2007. Personal Communication. [December telephone conversation with Selina Koler, Tetra Tech MM, Boulder, Colorado. RE: Proposed waste disposal for the Two Elk Project and Campbell County Landfill space]. Mark Swan, Campbell County Public Works Department.
- CH2MHill. 2006. *Basin Electric Dry Fork Station Socioeconomic Impact Analysis*. April.
- City of Gillette (COG). 2002. Northeast Wyoming River Basins Water Plan Technical Memoranda, Appendix E: Municipal Water Use. February 2002.
- City of Gillette (COG). 2004. Capital Improvement Plan Adopted January 20, 2004. Accessed on-line at <http://www.ci.gillette.wy.us/>, October 2007.
- City of Gillette (COG). 2004b. Transportation Planning Study. May 2004. Accessed on-line at www.ci.gillette.wy.us/en/TransPlanStudyVol1.pdf, September 2007.
- City of Gillette (COG). 2007a. Wastewater Treatment Plant information. Accessed on-line at <http://www.ci.gillette.wy.us/util/WW.html>, September 2007.
- City of Gillette (COG). 2007b. Development Summary for the Third Quarter of 2007, July 1 – September 30, 2007. Accessed on-line at http://www.ci.gillette.wy.us/com_dev/PL/planning.html, October 2007.
- City of Gillette Community Development Department - Planning Division. 2010. Developing Gillette: The 2009 Annual Development Summary. February 2010. Gillette, Wyoming. Accessed on-line at <http://www.ci.gillette.wy.us/Modules/ShowDocument.aspx?documentid=1277>. August 2011.
- City of Gillette Planning Division. 2011. Personal Communication between Michael Surface and Genevieve Kaiser with Tetra Tech on August 24, 2011.
- City of Gillette Police Department (COGPD). 2007. Hiring Information. Accessed on-line at <http://www.ci.gillette.wy.us/employ/index.html>, October 2007.
- Community Builders Inc. (CBI). 2012. Focus on Campbell County, February 2012.
- Community Strategies Institute (CSI). 2005. Campbell County Housing Needs Assessment. Prepared for Campbell County Economic Development Corporation.
- Federal Bureau of Investigation (FBI). 2007. *FBI Crime Report, 2006*. Accessed on-line at http://www.fbi.gov/ucr/cius2006/data/table_10_wy.html, October, 2007.

- Felsburg Holt & Ullevig. 2005. Two Elk Generation Station Traffic Impact Study. Prepared for: North American Power Group, LTD, Greenwood Village, Colorado. Submitted to WYDOT June 24, 2005.
- Industrial Siting Council (ISC). 2007. Personal Communication. [October email conversation with Tisha Schuller, Tetra Tech MM, Boulder, Colorado. RE: Request for cumulative data]. Tom Schroeder, Wyoming Department of Environmental Quality, Industrial Siting Division.
- Industrial Siting Council (ISC). 2012. Personal Communication. [March email conversation with Selina Koler, Tetra Tech MM, Boulder, Colorado. RE: Reno Junction Labor]. Tia Raamot, P.E., Wyoming Department of Environmental Quality, Industrial Siting Division.
- Northeast Wyoming Economic Development Coalition (NEWEDC). 2007. Web page. Located at: www.newecd.net. Accessed September, 2007.
- Two Elk Generation Partners (TEGP). 2001. Letter dated May 10, 2001 from Daniel Yueh, NAPG, to Gary Beach Executive Director of ISC. RE: Two Elk Generation Station. Permit No. ISC 97-2. Two Elk Generation Partners, Cheyenne, Wyoming.
- Two Elk Generation Partners (TEGP). 2007a. Personal Communication. [September email conversation Kristin Sutherland, Tetra Tech MM, Omaha, Nebraska. RE: tax payment options]. Two Elk Generation Partners, Cheyenne, Wyoming.
- Two Elk Generation Partners (TEGP). 2007b. Letter dated December 20, 2007 from Dan Pastor, Tetra Tech MM to Mark Wingate Section Manager WDOT Planning Department. RE: Consultation on Potential Traffic Impacts of the Two Elk Generation Station. Two Elk Generation Partners, Cheyenne, Wyoming.
- Two Elk Generation Partners (TEGP). 2012. Total Manpower Estimate. February 2012.
- Tetra Tech. 2012. Modification of TEGP Total Manpower Estimate, based on current date. February 2012.
- TZA Water Engineers (TZA). 2007. Northeast Wyoming Lance/Fox Hills Formation Water Supply Report for Two Elk Generation Partners, Limited Partnership and North American Land & Livestock, LLC. December 2007.
- University of Wyoming (UW). 2007. Population Change in Wyoming 2000-2005 in Wyoming Open Spaces. August 2007. Accessed on-line at www.uwyo.edu/openspaces, October, 2007.
- United States Bureau of Economic Analysis. 2011. CA25N Total full-time and part-time employment by NAICS industry 1/. Internet website: <http://www.bea.gov/regional/index.htm>. Accessed August 12, 2011.
- United States Bureau of Economic Analysis. 2011b. Table (CA1-3) Personal Income and Population. Internet website: <http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=5>. Accessed August 12, 2011.

- U.S. Census Bureau (USCB). 2000. Census of Population and Housing. Washington, D.C.
- U.S. Census Bureau (USCB). 2007. U.S. and Wyoming Poverty Data. Accessed online at <http://quickfacts.census.gov/qfd/states/00000.html> and <http://quickfacts.census.gov/qfd/states/56000.html>, October, 2007.
- US Census Bureau, 2010. 2000 Census Data. Internet website: <http://2010.census.gov/2010census/data/>. Accessed August 12, 2011.
- U.S. Census Bureau (USCB). 2010a. Summary File 1, Table QT-H1, General Housing Characteristics. Accessed online at http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?_afpt=table, August 2010.
- U.S. Census Bureau (USCB). 2010b. 2005-2009 American Community Survey 5-Year Estimates, Table S2504: Physical Housing Characteristics for Occupied Housing Units S2504: Physical Housing Characteristics for Occupied Housing Units, General Housing Characteristics. Accessed online at http://factfinder.census.gov/servlet/STGeoSearchByListServlet?ds_name=ACS_2009_5YR_G00_&state=st&qr_name=ACS_2009_5YR_G00_S2504&_lang=en&_ts=332190303520, August 2010.
- U.S. Department of Education (USDE). 2006. National Center for Education Statistics, Common Core of Data (CCD). *State Nonfiscal Survey of Public Elementary/Secondary Education, 1999-2000 through 2004-05*. Accessed on-line, September, 2007.
- U.S. Department of Health and Human Services (USDHHS). 2007. Health Resources and Services Administration, Bureau of Health Professionals, *HRSA State Health Workforce Profiles: Wyoming*.
- U.S. Environmental Protection Agency (EPA). 2006. Enviromapper. Web page located at <http://www.epa.gov/enviro/>, September 2007.
- Wasatch Wind Intermountain, LLC. 2011. Wyoming Industrial Development Information and Siting Act Section 109 Permit Application. Park City, Utah. January 2011.
- Wyoming Community Development Authority (WCDA). 2007. *A Profile of Wyoming – Demographics, Economics, and Housing, Semiannual Report, June 30, 2007*. Sponsored by the Wyoming Housing Database Partnership. Volume I, Report; and Volume 2, Technical Appendices. Accessed on-line at http://www.wyomingcda.com/Homebuyer/Home_Demographics.html, September, 2007.
- Wyoming Community Development Authority (WCDA). 2011. *The 2010 Wyoming Profile of Demographics, Economics, and Housing, Semiannual Report, Ending December 31, 2010*. Sponsored by the Wyoming Housing Database Partnership. February 28, 2011. Volume I, Report; and Volume 2, Technical Appendices. Accessed on-line at http://www.wyomingcda.com/index.php?option=com_content&task=view&id=145&Itemid=11, August 2011.

- Wyoming Department of Administration & Information, Economic Analysis Division (WDAI). Undated. Population, Employment, Earnings and Personal Income Trends. Compiled by the Sonoran Institute.
- Wyoming Department of Administration and Information, Economic Analysis Division (WDAI). 2007a. *Equality State Almanac, 2007*.
- Wyoming Department of Administration and Information, Economic Analysis Division (WDAI). 2007b. Population for Wyoming Counties, Cities, and Towns: 1990 to 2000 and projections. Accessed on-line at http://eadiv.state.wy.us/demog_data/, September 2007.
- Wyoming Department of Education (WDOE). 2007a. National Center for Education Statistics. Digest of Education Statistics. Accessed on-line at http://nces.ed.gov/programs/digest/d06/tables/dt06_063.asp, October, 2007.
- Wyoming Department of Education (WDOE). 2007b. Statistical Series #2. Teacher, pupil, and school counts. Accessed on-line at <http://www.k12.wy.us/stastical/stat2.aspx>.
- Wyoming Department of Employment, Research, and Planning (WDERP). 2003. *Outlook 2010: Detailed Occupational Projections and Labor Supply*.
- Wyoming Department of Employment, Research and Planning (WDERP). 2005a. Wages and Benefits in Wyoming: Combining the Wyoming Wage Survey and the Employer Benefits Survey for an Exploration of Total Compensation.
- Wyoming Department of Employment, Research and Planning (WDERP). 2005b. Wyoming Labor Force Trends. Vol. 42, No. 1. Accessed on-line at <http://doe.state.wy.us/lmi/0105/laus2.htm>, April 26, 2005.
- Wyoming Department of Employment, Research and Planning (WDERP). 2005c. *Occasional Paper No. 3: Workforce Development Training Fund Evaluation at the Macro and Micro Levels*. Table 10: Turnover Rates for Wyoming Workers by Industry and Employers' Workforce Development Training Fund (WDTF) Participation Status, Third Quarter 2003. Available online at <http://wydoe.state.wy.us/LMI/Occasional/No3/a1t10.htm>. Accessed October 22, 2007.
- Wyoming Department of Employment, Research & Planning (WDERP). 2006. *Outlook 2010 Revisited: Wyoming's Labor Market at Mid-Decade*. May.
- Wyoming Department of Employment, Research & Planning (WDERP). 2007. Commuting Pattern Data Model Methodology and County-Level Output Tables. February.
- Wyoming Department of Health, Emergency Medical Services (WDHEMS). 2007. Ambulance Survey. Accessed on-line at <http://wdh.state.wy.us/ems>, October 10, 2007. Personal Communication with Mr. Jay Ostey; October 10, 2007.
- Wyoming Department of Revenue. (WDR). 2006. *Annual Report 2006*.
- Wyoming Department of Revenue. (WDR). 2010 Annual Report. Internet website: <http://revenue.state.wy.us/PortalVBVS/uploads/2010%20DOR%20Annual%20Report.pdf>. Accessed August 12, 2011.

- Wyoming Department of Transportation (WYDOT). 2000. Vehicle Miles 1999.
- Wyoming Department of Transportation (WYDOT). 2005. Construction Report. <http://wydotweb.state.wy.us> Accessed May 4, 2005, State Transportation Improvement Program, 2005.
- Wyoming Department of Transportation (WYDOT). 2006. Web page located at <http://dot.state.wy.us>.
- Wyoming Department of Transportation (WYDOT). 2007. *State Transportation Improvement Program*, 2008. <http://wydotweb.state.wy.us>. Accessed October, 2007.
- Wyoming Department of Workforce Services (WDWS). 2007. Wyoming At Work Recruitment Services. Webpage located at <http://www.wyomingatwork.com/employers.asp>. Accessed October, 2007.
- Wyoming Department of Workforce Services (WDWS). 2010. 2010 Wyoming Benchmark Labor Force Estimates. Internet website: <http://doe.state.wy.us/lmi/LAUS/10bmk.htm>. Accessed August 12, 2011.
- Wyoming Department of Workforce Services, 2011. Wyoming Labor Market Information. Commuting Patterns - Commuting in Wyoming 2005Q1 to 2009Q4. Internet website: <http://doe.state.wy.us/lmi/commute.htm>. Accessed August 12, 2011.
- Wyoming Department of Workforce Services 2011b - Wyoming Quarterly Census of Employment and Wages (QCEW). Fourth Quarter 2010. Internet website: http://doe.state.wy.us/lmi/toc_202.htm. Accessed August 12, 2011.
- Wyoming Department of Workforce Services 2011c. Wyoming Labor Market. Current Employment Statistics. Wyoming Covered Employment and Wages - Fourth Quarter 2010 – Internet website: http://doe.state.wy.us/lmi/10Q4_QCEW/toc.htm. Accessed August 12, 2011.
- Wyoming Department of Workforce Services, 2011d. Wyoming Labor Market. Table 65: Wyoming Employing Units, Employment, & Wages by NAICS Subsectors for Campbell County - Northeast Region - Fourth Quarter 2010 http://doe.state.wy.us/lmi/10Q4_QCEW/10q4t65.htm. Accessed August 12, 2011.
- Wyoming Healthcare Commission (WHC). 2006. Statistical Handbook. Accessed on-line at <http://www.wyominghealthcarecommission.org/handbook.html>, September, 2007.
- Wyoming Office of Rural Health (WORH). 2004. *Wyoming Medical Professional Survey*. Prepared by Wyoming Health Resources Network, Inc. and Wyoming Center for Business & Economic Analysis, LLC. October.
- Wyoming Public Service Commission (WPSC). 2007. Web page located at <http://psc.state.wy.us/htdocs/certterr.htm>, October 2007.
- Wyoming School Facilities Commission. (WSFC). 2005. Major & Minor Capital Improvement Projects, January.

Wyoming State Solid and Hazard Waste Division (WSHWD). 2007. Internet resources.
[http://deq/state.wy.us/shwd/htm](http://deq.state.wy.us/shwd/htm), September 2007.

APPENDIX A
LEGAL DESCRIPTION FOR THE TWO ELK SITE

**LEGAL DESCRIPTION
FOR TWO ELK UNIT #1
SECTION 36, TOWNSHIP 43 NORTH, RANGE 70 WEST**

A tract of land located in the South $\frac{1}{2}$ of the Northwest $\frac{1}{4}$ and the North $\frac{1}{2}$ of the Southwest $\frac{1}{4}$ of Section 36, Township 43 North, Range 70 West, of the Sixth Principal Meridian, Campbell County, Wyoming, and being more particularly described as follows;

Commencing at the South $\frac{1}{16}$ Corner of Section 36, and Section 35, Township 43 North, Range 70 West, said point being monumented with a brass cap set in 1975 by the Bureau of Land Management, thence North $66^{\circ}50'13''$ East, 1,286.38 feet, to the True Point of Beginning, said point being monumented with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence North $45^{\circ}00'00''$ East, 1,170.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence South $45^{\circ}00'00''$ East, 100.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence North $45^{\circ}00'00''$ East, 465.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence North $45^{\circ}00'00''$ West, 940.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence South $45^{\circ}00'00''$ West, 340.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence North $45^{\circ}00'00''$ West, 465.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence South $45^{\circ}00'00''$ West, 460.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence South $45^{\circ}00'00''$ East, 465.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar;

Thence South $45^{\circ}00'00''$ West, 835.00 feet, to a point with a $1\frac{1}{2}$ inch aluminum cap set on a #5 rebar, said point also being South $68^{\circ}09'05''$ East, 557.72 feet from the West $\frac{1}{4}$ corner of said Section 36, said point being monumented with a brass cap set in 1991 by WY LS No. 538;

Thence South $45^{\circ}00'00''$ East, 840.00 feet, to a point with a $1\frac{1}{2}$ -inch aluminum cap set on a #5 rebar, and the True Point of Beginning.

Said tract of land containing 37.51 acres, more or less.

The basis of bearing for the above-described tract of land is North $03^{\circ}06'38''$ East for the West line of the North West $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of Section 36, Township 43 North, Range 70 West, of the Sixth Principal Meridian, Campbell County, Wyoming.

APPENDIX B
QUARTERLY AND ANNUAL REPORTS
SUBMITTED TO ISC

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

November 15, 2005

Via U.S. Mail
& Email: tschro@state.wy.us

Dr. Tom Schroeder, Program Principal
Industrial Siting Council
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Reports**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Council (“ISC”) with these quarterly reports for 2Q2005 and 3Q2005, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISC assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership



Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

Second Quarter 2005

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract: (partial quarter)	11
	Peak Number of Field Workers direct & subcontract: (partial quarter)	11
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	2
	Frederick MD	1
	Minnesota (various cities)	6
	Colorado (various cities)	2
	2) Current residency:	
	Gillette WY	2
	Frederick MD	1
	Minnesota (various cities)	6
	Colorado (various cities)	2
	3) Number of new students enrolled	0
	4) Resident	2
	Non-Resident	9
	5) Local	2
	Non-Local	9
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	1
	House (Rent)	1
	Hotel/Motel	9
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the second quarter 2005.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT

Third Quarter 2005

TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming

A.	Average Number of Field Workers direct & subcontract: (partial quarter)	10
	Peak Number of Field Workers direct & subcontract: (partial quarter)	10
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	2
	Mills WY	2
	Casper WY	6
	2) Current residency:	
	Gillette WY	2
	Mills WY	2
	Casper WY	6
	3) Number of new students enrolled	0
	4) Resident	10
	Non-Resident	0
	5) Local	2
	Non-Local	8
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	4
	House (Own)	2
	House (Rent)	4
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the third quarter 2005.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

Fourth Quarter 2005

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the fourth quarter 2005.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

April 3, 2006

Via U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Council
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Report**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Council (“ISC”) with this quarterly report for 1Q2006, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISC assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership

Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

First Quarter 2006

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the fourth quarter 2005.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

July 5, 2006

Via U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Council
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Report**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Council (“ISC”) with this quarterly report for 2Q2006, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISC assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership

Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

Second Quarter 2006

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the second quarter 2006.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

October 2, 2006

Via U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Reports**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Division (“WYISD”) with the quarterly report for 3Q2006, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISD assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership

Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

Third Quarter 2006

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the second quarter 2006.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

January 2, 2007

Via U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Reports**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Division (“WYISD”) with the quarterly report for 4Q2006, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISD assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership

Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

Fourth Quarter 2006

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the fourth quarter 2006.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

July 20, 2006

Via E-Mail
tschro@state.wy.us
& U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Annual Report**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Division (“WYISD”) with this annual report for July 1, 2005 through June 30, 2006, in accordance with Permit No. ISC 97-2 (the “Permit”), Permit Condition No. 7.

Permit Condition No. 7a.: Efforts to assure compliance with voluntary commitments, mitigation agreements with local governments, and conditions contained in this permit;

TEGP has complied with all Permit commitments, mitigation agreements and conditions contained in the Permit, to date.

Permit Condition No. 7b.: The extent to which construction has been completed in accordance with the application schedule;

Construction commenced in the second quarter 2005 and was deemed commenced construction by the Wyoming Environmental Quality Council, in accordance with the Wyoming Environmental Quality Council Order of June 27, 2005, confirming that (WYDEQ Air Division) Permit No. CT-1352B is in full force and effect, and is valid and binding upon TEGP.

Construction suspended in the fourth quarter 2005 when the U.S. Forest Service declined to extend to TEGP use of the only access road (U.S. Forest Service Road No. 1109) to TEGP's site for construction purposes, until TEGP's main access road was completed.

TEGP has filed quarterly reports to WYISD since second quarter 2005 to date.

TEGP anticipates resuming construction in the fourth quarter 2006.

Permit Condition No. 7c.: Any revised time schedules or time tables for construction, operations, and reclamation, and a brief summary of the construction, reclamation, and other activities that will occur in the next one-year period.

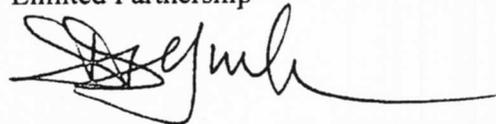
TEGP anticipates commencing construction of the main access road in the fourth quarter 2006.

TEGP anticipates with the completion of the main access road, that main site construction consisting of excavation, cut and fill, earthwork, foundation placement, major undergrounds and infrastructure development, will release in 2007.

TEGP appreciates WYISD assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership



Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

April 2, 2007

Via U.S. Mail

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Report**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Council (“ISC”) with this quarterly report for 1Q2007, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISC assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership

*** original signed by ddy ***

Daniel D. Yueh, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

**WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT**

First Quarter 2007

**TWO ELK GENERATING STATION – UNIT 1
Wright, Wyoming**

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the first quarter 2007.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

**TWO ELK GENERATION PARTNERS,
Limited Partnership**

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

July 3, 2007

Via U.S. Mail and Hand Delivery

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Quarterly Reports**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership ("TEGP") provides Wyoming Department of Environmental Quality – Industrial Siting Division ("WYISD") with the quarterly report for 4Q2006, in accordance with Permit No. ISC 97-2 - permit conditions.

TEGP appreciates WYISD assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership



M. Bradley Enzi, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

WYOMING INDUSTRIAL SITING ADMINISTRATION COMPLIANCE REPORT

Second Quarter 2007

TWO ELK GENERATING STATION – UNIT 1 Wright, Wyoming

A.	Average Number of Field Workers direct & subcontract:	0
	Peak Number of Field Workers direct & subcontract:	0
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	0
	Non-Resident	0
	5) Local	0
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	0
	House (Rent)	0
	Hotel/Motel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the first quarter 2007.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	

TWO ELK GENERATION PARTNERS,
Limited Partnership

8480 East Orchard Road, Suite 4000 Greenwood Village, Colorado 80111
Telephone: (303) 796-8600 Facsimile: (303) 773-0461

October 26, 2007

Via U.S. Mail and Hand Delivery

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

Two Elk Generating Station - Unit 1
Permit No. ISC 97-2
Quarterly Reports

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership ("TEGP") provides Wyoming Department of Environmental Quality - Industrial Siting Division ("WYISD") with the quarterly report for 3Q2007, in accordance with Permit No. ISC 97-2 - permit conditions.

The numbers in the report are calculated for August. During the month of August we had an average of 5 workers on site doing grading. We experienced a peak of 10 employees on site during the mobilization of the equipment. Construction of the site road has commenced and is expected to be completed in late December.

TEGP appreciates WYISD assistance and coordination and should you have any questions, please do not hesitate to contact us.

Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership



M. Bradley Enzi, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

WYOMING INDUSTRIAL SITING ADMINISTRATION
COMPLIANCE REPORT

Third Quarter 2007

TWO ELK GENERATING STATION - UNIT 1
Wright, Wyoming

A.	Average Number of Field Workers direct & subcontract:	5
	Peak Number of Field Workers direct & subcontract:	10
B.	Residency Information	
	1) Residence at engagement:	
	Gillette WY	0
	Mills WY	0
	Casper WY	0
	2) Current residency:	
	Gillette WY	5
	Mills WY	0
	Casper WY	0
	3) Number of new students enrolled	0
	4) Resident	5
	Non-Resident	0
	5) Local	5
	Non-Local	0
C.	Housing Accommodations:	
	Recreational Vehicle	0
	Apartment	0
	House (Own)	3
	House (Rent)	2
	HoteUMotel	0
D.	Sales and Use Tax Payments for Quarter	
	<i>There were no sales & use taxes for the first quarter 2007.</i>	
E.	Temporary Housing Stocks	
	<i>There was no temporary housing employed.</i>	



July 26, 2007

Via E-Mail
tschro@state.wy.us
& Hand Delivery

Dr. Tom Schroeder, Program Principal
Industrial Siting Division
Wyoming Department of Environmental Quality
The Herschler Building
122 West 25th Street,
Cheyenne, WY 82002

**Two Elk Generating Station – Unit 1
Permit No. ISC 97-2
Annual Report**

Dear Dr. Schroeder:

Two Elk Generation Partners, Limited Partnership (“TEGP”) provides Wyoming Department of Environmental Quality – Industrial Siting Division (“WYISD”) with this annual report for July 1, 2006 through June 30, 2007, in accordance with Permit No. ISC 97-2 (the “Permit”), Permit Condition No. 7.

Permit Condition No. 7a.: Efforts to assure compliance with voluntary commitments, mitigation agreements with local governments, and conditions contained in this permit;

TEGP has complied with all Permit commitments, mitigation agreements and conditions contained in the Permit, to date.

TEGP has contracted with CH2M Hill to update the socio-economic portion of the permit. TEGP and CH2M Hill will be scheduling a meeting with the Industrial Siting Council staff at the earliest convenience for both parties to ensure the update is crafted to ISC standards and addresses the specific interests of the council with regard to the project.

Permit Condition No. 7b.: The extent to which construction has been completed in accordance with the application schedule;

Construction commenced in the second quarter 2005. After public notice and hearing, the Wyoming Environmental Quality Council issued its order and findings dated July 18, 2005 confirming that TEGP had fully complied with (WYDEQ Air Division) Permit No. CT-1352B. Permit CT 1352-B is in full force and effect, and is valid and binding upon TEGP.

Monthly construction reports have been filed with WYDEQ (Air Division) detailing construction progress.

TEGP has filed quarterly reports to WYISD since second quarter 2005 to date.

Permit Condition No. 7c.: Any revised time schedules or time tables for construction, operations, and reclamation, and a brief summary of the construction, reclamation, and other activities that will occur in the next one-year period.

In March, 2004, TEGP submitted an Interconnection request to PacifiCorp. On April 21, 2006, PacifiCorp issued a Final Impact Study report. On July 6, 2006, PacifiCorp and TEGP executed a Generation Interconnection Facilities Study Agreement. On November 15, 2006, PacifiCorp provided TEGP with a draft Facilities Study report. TEGP provided comments to this report on December 15, 2006. On January 9, 2007, PacifiCorp issued the Final Study. On February 23, 2007, PacifiCorp by letter determined that because of significant load [electrical demand] growth in Wyoming determined after the original system impact study of the Network Resource Interconnection, a Re-Study was necessary.

On March 30, 2007, PacifiCorp issued its Facilities Re-Study Report Draft for the proposed interconnection. On April 19, 2007, TEGP provided comments to the re-Study Report to PacifiCorp. On May 9, 2007, PacifiCorp issued its Facilities Re-Study report Final for the proposed interconnection. On May 22, 2007, PacifiCorp tendered a Draft Large Generator Interconnection Agreement. On June 20, 2007, TEGP provided PacifiCorp with comments to the Draft. On July 18, 2007, PacifiCorp provided a revised Draft Large Generator Interconnection Agreement and revised Facilities interconnection.

PacifiCorp has indicated in the latest information and Draft Large Generator Interconnection Agreement that the transmission upgrades to interconnect this facility are "network" upgrades, benefiting all customer classes on the PacifiCorp system and that they can be completed by 2011.

Operations are planned to commence in 2011 to coincide with the completion of the transmission upgrades by PacifiCorp.

As a result of the new PacifiCorp time schedule for transmission, a revised time schedule for the power project is attached. In the next one year period, TEGP expects the following major construction activities:

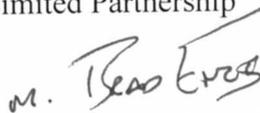
- *Highway 450-Site access road*
- *Continuing site prep & earthwork*
- *Additional piles and major site excavation*
- *Truck unloading facility foundations*
- *Boiler structure foundations*
- *Water wells construction*
- *Steam turbine foundations / pedestal*
- *Erection of batch plant*
- *Underground natural gas pipe*
- *Air cooled condenser foundations*
- *Coal handling equipment foundations*
- *Administration building / warehouse foundations*
- *Electrical equipment and transformer foundations*

In accordance with the training and reporting standards of the WYISD, please find the attached copy of the 2006 report on the project as submitted.

TEGP appreciates WYISD's assistance and coordination and should you have any questions, please do not hesitate to contact us.

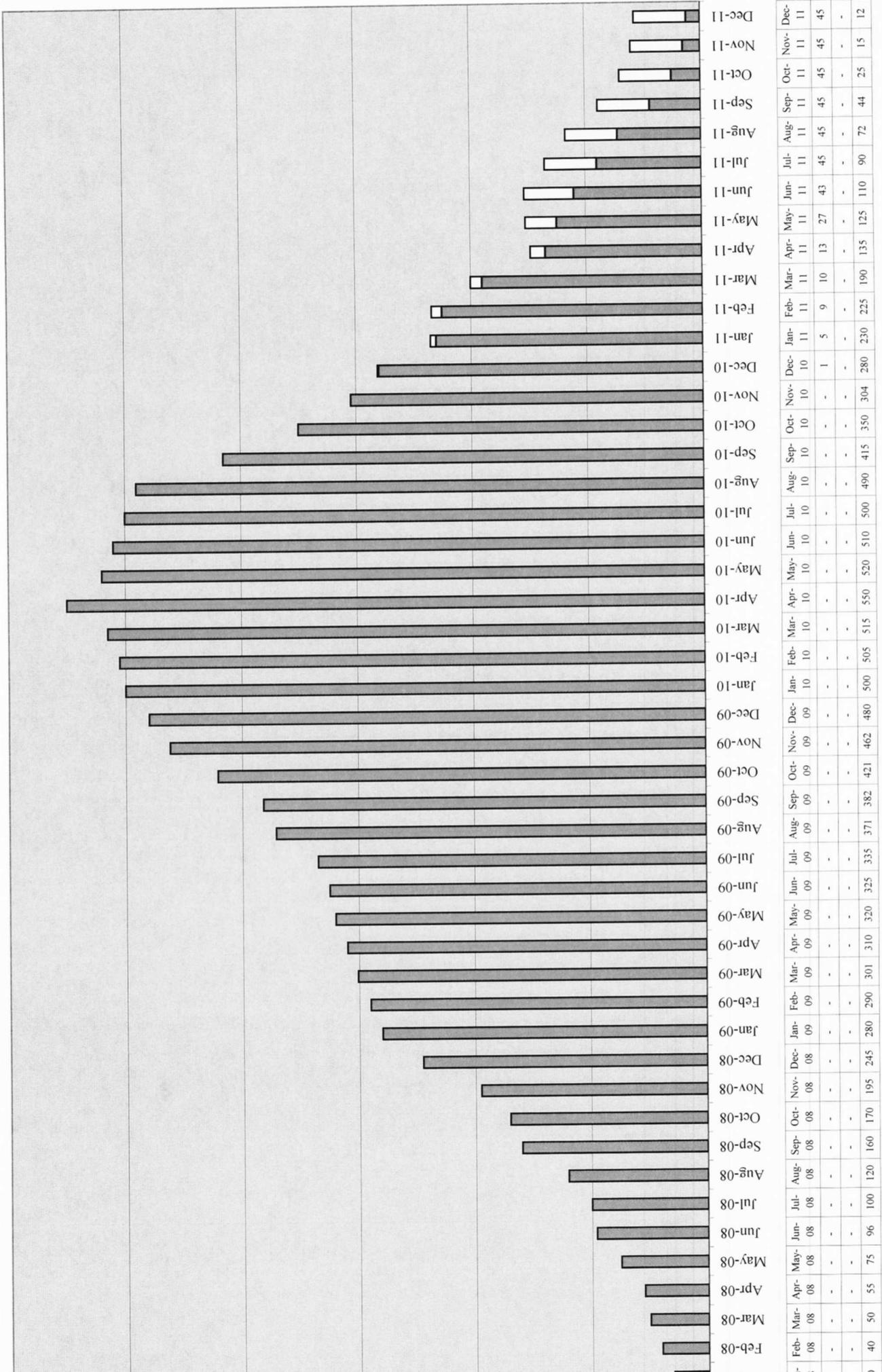
Sincerely,

TWO ELK GENERATION PARTNERS,
Limited Partnership



M. Bradley Enzi, Vice President
North American Power Group, Ltd. for
Two Elk Power Company, its
General Partner

Total Manpower Curve



Months

**APPENDIX C
WATER SUPPLY REPORT
FOR THE TWO ELK PROJECT**

**NORTHEAST WYOMING LANCE/FOX HILLS FORMATION
WATER SUPPLY REPORT FOR TWO ELK GENERATION
PARTNERS, LIMITED PARTNERSHIP**

&

NORTH AMERICAN LAND & LIVESTOCK, LLC.

December 2007

Prepared For

**TWO ELK GENERATION PARTNERS, LIMITED
PARTNERSHIP**

&

NORTH AMERICAN LAND & LIVESTOCK, LLC.



TZA Water Engineers, Inc.

**NORTHEAST WYOMING LANCE/FOX HILLS FORMATION
WATER SUPPLY REPORT FOR TWO ELK GENERATION
PARTNERS, LIMITED PARTNERSHIP**

&

NORTH AMERICAN LAND & LIVESTOCK, LLC

December 2007

Prepared For

TWO ELK GENERATION PARTNERS, LIMITED PARTNERSHIP

&

NORTH AMERICAN LAND & LIVESTOCK, LLC

Prepared By

TZA WATER ENGINEERS, INC.

12596 W. Bayaud Avenue

Suite 330

Lakewood, Colorado 80228

303-971-0030

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APPENDICES

Appendix A – Well Completion Reports

- Rochelle Well No. 2 (Well Permit No. 76141)
- Thunder Basin Coal Company Well 17-1-LFH (Well Permit No. 146195)
- Inexo Oil Company Central WSW # 5 2 (Permit No. 11012)
- Inexo Oil Company Central WSW # 1 1 (Permit No. 11002)

Appendix B – Campbell County Well Inventory

Introduction

North American Land & Livestock, LLC ("NALL") will be constructing a well field in part to supply water for the Two Elk Generation Partners, Limited Partnership ("TEGP") solid waste recycling and power generation facility. NALL has obtained groundwater permits from the Wyoming State Engineer's Office (SEO) to construct eleven water supply wells in Campbell County, Wyoming. The permitted locations for the wells are shown in Figure No. 1. The well field initially will be designed to supply industrial water to the Two Elk recycling and solid waste disposal Facility (Plant). The existing permits allow for water from each well to be co-mingled with water from other permitted wells completed in the Lance/Fox Hills Formation. The current well permits stipulate that the maximum total amount of water to be developed from all of the wells cannot exceed 800 acre-feet per year. This is the rate that was previously applied for and not the well field maximum production rate. The original rate of 800 acre-feet was requested because the original plan was to have only one recycling facility with a projected annual water demand of 386 acre-feet per year. NALL is evaluating the use of the permitted well field to support additional industrial demand in the vicinity of the Plant, including additional recycling and electrical generation. Revised plans propose additional recycling, electrical generation and related facilities with an initial total projected annual water demand of 1876.5 acre-feet per year. The facilities are proposed to be located on or near Section 36, T43N, R70W, approximately twenty miles southeast of the Town of Wright, Wyoming.

On November 5, 2004, NALL obtained five-year time extensions for construction of all eleven of the groundwater wells, as well as changes in location for seven of the eleven well permits. The permitted completion dates for all eleven wells is December 31, 2009.

NALL and TEGP authorized TZA Water Engineers, Inc. (TZA) to conduct a study a follow up study to our March 2005 study. This study details the availability of water to meet the projected demand of 1876.5 acre-feet per year. The goals of the study are:

1. To determine if production from existing permitted wells properly constructed into the Lance/Fox Hills wells located in and around the Plant site is likely to meet the projected demands of 1163 gallons per minute (1876.5 acre-feet per year).
2. To provide preliminary information and recommendations necessary to assist NALL in developing a plan for well field construction.

Regional Geologic Setting

The study area for this report is located in the southeastern part of the Powder River Basin. The Powder River Basin is a large asymmetrical, synclinal (bowl shaped) basin that is bounded by the Laramie Mountains and Hartville uplift on the south, the Casper arch on the southwest, the Big Horn Mountains on the west, the Miles City arch on the north, and the Black Hills on the east. The oblong bowl shape of the basin covers approximately 25,000 square miles in the northeast part of Wyoming. The attached Map 1 provides an outline of the surface geology for the shallow aquifers of the Powder River Basin.

The axis of the syncline trends north-northwest through northeastern Wyoming and southeastern Montana. The dip of the sedimentary rocks on the west edge of the basin ranges from thirty degrees

east to near vertical. The dip on the eastern edge of the basin is from three to five degrees westward. The study area is located near the center of the synclines axis in the southern portion of the basin.

Powder River Basin Shallow Aquifer System Geology

The shallow aquifer system of the Powder River Basin is composed of five mappable hydrogeologic units stratigraphically above the regionally persistent and relatively impermeable Bearpaw Shale. Maps of the shallow aquifer hydrogeologic system, configuration of the Lance/Fox Hills hydrogeologic units, thickness, and percent sand are attached (Maps 2 through 7). The hydrogeologic units are in descending order as follows:

A. Tongue River-Wasatch Aquifer

The Tongue River-Wasatch aquifer is composed of interbeds of gravel, sand, silt, and clay, terrace deposits and alluvium; claystone, siltstone, and lower lenticular sandstone of the Oligocene White River Formation where it is present; lenticular sandstone interbedded with shale and coal plus clinker outcrops near coal deposits of the Eocene Wasatch Formation; thick bedded to massive sandstone and siltstone that are locally crossbedded and lenticular, thick and laterally persistent coal beds, and clinker outcrops near coal deposits of the Tongue River Member of the Paleocene Fort Union Formation; and locally may contain channel sandstone and siltstone in the upper part of the Lebo Shale Member of the Fort Union Formation. All geologic units represented in this aquifer system are generally continental in origin. This unit has an average sand content of 54%, which indicates it will function hydrogeologically as an aquifer over most of the area. It will function as an aquifer everywhere that clinker deposits exist in the saturated zone. The basal configuration of the aquifer shows the shape of the Powder River Basin at a relatively shallow depth as well as channels that have been scoured into the underlying Lebo confining layer.

B. Lebo Confining Layer

The Lebo confining Layer is a confining layer that generally correlates with the Lebo Shale Member of the Fort Union Formation; consists predominantly of dark shale with interbedded carbonaceous shale, siltstone, and locally thin coal beds. The sand content of the Lebo confining layer has a mean value of 31%, indicating that it generally acts as a confining layer. The basal configuration of the unit also shows the basal shape of the Powder River Basin but in a more pronounced manner than that of the overlying Tongue River-Wasatch aquifer.

C. Tullock Aquifer

The Tullock aquifer is a water bearing unit that is composed of the basal channel sandstone of the Lebo Shale Member, where present, and the terrestrial Tullock Member of the Fort Union Formation; consists of silty or sandy shale and sandstone which grade downward to interbedded shale, siltstone, sandstone, and thin coal beds. The average sand content of this unit is 53%. Therefore, it is considered as an aquifer in most of the basin. The basal configuration of this aquifer is similar to that of the overlying Lebo confining layer. Both basal configuration maps show that the Powder River Basin is an asymmetrical structure, being deepest on the extreme west side just south of the Wyoming/Montana State line, and they both show the location of the northwest trending Miles City arch in the northeast edge of the Basin in Montana.

D. Lance - Upper Hell Creek Confining Layer

The upper Hell Creek confining layer is a major confining layer throughout the Powder River Basin. This confining layer correlates to the upper part of the Upper Cretaceous Hell Creek (or Lance Formation). This confining layer consists of fluvial or lacustrine deposits of interbedded shale and siltstone, locally lenticular sandstone, and bentonitic shale. The mean sand content of the unit is 35%, which suggests that it will function as a confining layer that retards water movement between the Fort Union Formation and the Fox Hills Sandstone.

E. Fox Hills – Lower Hell Creek Aquifer

The Fox Hills – lower Hell Creek aquifer is an aquifer composed of the lower part of the Hell Creek (or Lance) Formation and the Upper Cretaceous Fox Hills Sandstone; consists of interbedded terrestrial shale, sandy shale, siltstone, and claystone with local silty to clayey crossbedded sandstone and local thin beds of sandy shale. The mean sand content of the unit is 50%, which indicates that it will yield water to wells in most areas. The base is similar to that of the upper Hell Creek confining layer, which may be due in part to relatively constant and nearly equal amounts of deformation during the deposition of both units.

General Aquifer Water Yielding Characteristics

A general description of the water yielding characteristics of the Fort Union and Lance/Fox Hills aquifers throughout Campbell County, Wyoming is presented below:

A. Fort Union Formation

The Fort Union Formation consists of the Tullock, Lebo Shale, and Tongue River Members in ascending order. Yields from the fine-grained sandstones of the formation between 5 and 400 gallons per minute have been recorded.

The Town of Wright relies on Fort Union wells to meet all municipal, industrial, commercial and irrigation demands. Staff members at the Town were interviewed and they reported that Wright currently operate four Fort Union wells that are capable of producing a total of approximately 1,150 gallons per minute (gpm), or an average of approximately 288 gpm per well. Production rates reportedly vary from 250 to 350 gpm per well.

The City of Gillette has a total of 14 Fort Union water supply wells and their reported production is between 75 gpm and 140 gpm. The average reported production is approximately 110 gpm.

Geophysical logs from wells located in and around the Plant site indicate that well yields of between 200 and 300 gallons per minute could be expected from the Fort Union Formation underlying the project site. These estimated yields are similar to production rates from Fort Union Formation wells operated by the Town of Wright.

Staff members interviewed at the Wyoming SEO indicated that since the early 1970's permits for the Fort Union Formation have typically been reserved for municipal and domestic use. SEO staff members reported that industrial projects in Campbell County, such as the one proposed by TEGP, are usually permitted to obtain water from the Lance/Fox Hills Formation.

B. Lance/Fox Hills Formation

The Lance/Fox Hills Formation consists of the Upper Cretaceous Fox Hills Sandstone and the Lance Formation, also commonly referred to as the Hell Creek Formation. The Fox Hills Sandstone is the only marine deposit in the shallow aquifer system of the Powder River Basin. The Fox Hills Sandstone is composed of fine to medium grained sandstone, and contains thin beds of sandy shale. The Lance Formation is a fine to medium grained silty sandstone containing thin coal beds.

Yields as high as 600 gpm to properly constructed wells have been reported in the Powder River Basin. A review of available information, including geophysical logs from nearby oil and gas wells was performed along with a review of electric logs and available completion information from four nearby water supply wells that have been completed into the Lance/Fox Hills aquifer.

Lance/Fox Hills Details

TZA has reviewed existing reports and interviewed several individuals in order to obtain detailed information about the Lance/Fox Hills aquifer underlying the Plant site. We have reviewed oil and gas geophysical logs, geologic and hydrogeologic reports, well construction details, reported water production rates, and available water quality data. Detailed information for the Lance /Fox Hills Formation is presented below

1. Lance/Fox Hills Geophysical Information

The geophysical logs in and around the Plant site have been reviewed and there is a high degree of correlation throughout the Lance/Fox Hills aquifer in the area surrounding the property. The top and bottom of each formation is identifiable in each geophysical log and the major sandstone and shale units can be correlated in all of the electric logs that were evaluated. The locations of electric logs evaluated near the Plant site are shown in Figure No. 2.

The top of the Lance Formation is located approximately 2,700 feet below ground surface (2,100 feet MSL) underlying the Plant site, and the base of the Fox Hills is at approximately 4,800 feet below ground surface (0 feet MSL) underlying the Plant site.

Net sands in the Lance Formation are approximately 40% and net sands in the Fox Hills Formation are approximately 45% in the area underlying the Plant site.

The geologic mapping and available geophysical logs indicate that the Lance/Fox Hills aquifer in the area near the Plant site is favorable for the construction of high capacity wells.

2. Existing Lance/Fox Hills Well Information

TZA has compiled information from four Lance/Fox Hills water supply wells that are located in the area surrounding the Plant site. Production reported from the Statement of Completion and Description of Well (Completion Report) reports on file at the Wyoming SEO show that the average production from the four wells is 383 gpm. General information for each of the four wells, starting on the south end of the project and proceeding northward, is provided below:

a. Rochelle Well No. 2 (Well Permit No. 76141)

The Rochelle Well No. 2 (Completion Report) states that the well was completed to a depth of 5,265 feet in December of 1989. The well is perforated or screened at various intervals from 2,510 feet to 5,225 feet. Initial testing was performed for 48 hours at a constant rate of 400 gpm. The static water level prior to testing was 521 feet and the reported drawdown was 979 feet after 48 hours of continuous pumping. The specific capacity of the well after 48 hours was calculated to be 0.41 gpm/foot. Permanent equipment was installed before November 13, 1990. Permanent pumping equipment was designed to produce 400 gpm, with a pump setting of 1376 feet below ground. The total dissolved solids measured in 1989 were 1,210.

Well completion information, reported production, and water quality information for the Rochelle Well No. 2 well is included in Appendix A.

b. Thunder Basin Coal Company Well No. 17-1-LFH (Well Permit No. 146195)

This well is located approximately 5 miles northeast of the Plant site, and is the nearest Lance/Fox Hills production well in relationship to the proposed Plant site. The well was constructed by Thunder Basin Coal Company, and was completed in December of 2002. The Thunder Basin Well No. 17-1-LFH Completion Report indicates that the well was completed to a depth of 4,850 feet. The well is screened at various intervals from 3,248 feet to 4,690 feet. Initial testing was performed for two weeks at a constant rate of 363 gpm. The Static water level prior to testing was 780 feet and the reported drawdown was 1,614 feet after two weeks of continuous pumping. The specific capacity of the well after two weeks was calculated to be 0.44 gpm/foot. Permanent equipment was installed before January 31, 2003 and is reportedly designed to produce 375 gpm, with a pump setting of 1742 feet below ground.

Well completion information, reported production, and water quality information for the Thunder Basin Well No. 17-1-LFH well is included in Appendix A.

c. Inexo Oil Company Central WSW # 5 2 (Permit No. 11012)

The Inexo Oil WSW Well # 5 2 Completion Report indicates the well was completed to a depth of 4,940 feet in 1990. The well is perforated or screened at various intervals from 2,004 feet to 4,830 feet. Initial testing was performed for 24 hours at a constant rate of 408 gpm. The Static water level prior to testing was not known and the

reported drawdown was 1,612 feet after 24 hours of continuous pumping. The specific capacity of the well after 24 hours could not be calculated because the static water level is unknown. Permanent equipment was installed before November 13, 1990. Permanent pumping equipment was designed to produce 408 gpm, with a pump setting of 3,540 feet below ground.

Well completion information and reported production for the Inexo Oil WSW Well #5 2 is included in Appendix A. No water quality data was available at the SEO for this well.

d. Inexo Oil Company Central WSW # 11 (Permit No. 11002)

The Inexo Oil WSW Well # 1 1 Completion Report indicates the well was completed to a depth of 4,445 feet in April of 1972. The well is perforated or screened at various intervals from 2,030 feet to 4,324 feet. Initial testing was performed for 24 hours at a constant rate of 350 gpm. The Static water level prior to testing was not known and the reported drawdown was 1,050 feet after 24 hours of continuous pumping. The specific capacity of the well after 24 hours could not be calculated because the static water level is unknown. Permanent equipment was installed before April 27, 1972. Permanent pumping equipment was designed to produce 350 gpm, with a pump setting of 2,570 feet below ground.

Well completion information and reported production for the Inexo WSW # 11 well is included in Appendix A. No water quality data was available at the SEO for this well.

3. Campbell County Lance/Fox Hills Water Supply Well Review

The Wyoming SEO does not have all water wells in a database that defines what the producing aquifer is. TZA reviewed information available at the SEO and found that there are Permits for 185 wells in excess of 3,000 feet deep (no new permits exceeding 3,000 feet appear to have been issued since our report of March 2005 was prepared). Some of these wells are reportedly completed into the Fort Union Formation and some are completed at depths that indicate they are completed into the Bearpaw Shale, or below.

Conversations with staff members at the Wyoming SEO and geologic log interpretations performed by TZA as part of this study have shown that beginning in the early 1970's, the Wyoming SEO has taken the stance that they do not want intermixing of formations. Having said that, SEO staff members have indicated that their agency has not clearly defined the confining layers between aquifers. Therefore, enforcement has been weak at best. The SEO indicated that it is currently working with engineers and drillers on these and other well completion issues.

Since the SEO has not yet developed a database that clearly defines tops and bottoms of the Fort Union and Lance/Fox Hills aquifers in Campbell County, it is impossible to determine how many wells are completed into the Lance/Fox Hills aquifer.

We refined our search of the well permits for Campbell County and have attached a three page list of the 66 wells permitted in Campbell County that reportedly produce 100 gpm or more, and are completed at depths ranging from 3,000 feet to 7,300 feet below ground surface. This list is attached in Appendix B.

4. Lance/Fox Hills Long Term Aquifer Sustainability

Groundwater must meet the needs of much of the Powder River Basin because the limited amount of surface water in this semiarid area has been appropriated. The Lance/ Fox Hills aquifer has been and will continue to remain a reliable supply for the mining and industrial demands in the area.

The Wyoming SEO works closely with the United States Geologic Survey (USGS) to monitor water levels in various aquifers throughout the state. While water levels in various parts of the Lance/Fox Hills are slowly declining, the maximum rate of decline in the Lance/Fox Hills aquifer has been recorded at approximately 3 feet per year. Even at a projected decline rate of 5 feet per year, the Lance/Fox Hills aquifer will remain in artesian conditions for well over 300 years.

During the course of our study, we located a water level hydrograph for one well completed into the Fox Hills Formation. The Hampshire Energy well (Hampshire-1) is located in Section 31, Township 49N, Range 70W. The hydrograph is attached as Figure 3. This hydrograph graphically depicts the water level declines from 1983 through March of 2003. The well was put into service in 2004 and staff members of the Wyoming SEO mentioned that no additional water level data has been received since the well was converted from a monitoring well to a production well. Based on available data, the average annual water level decline at this location is approximately 3 feet per year. While permanent pump equipment design for any well should take possible water level declines into account, the anticipated lifetime of the aquifer in this area is greater than 300 years.

5. Lance/Fox Hills Water Quality

Groundwater quality information was reviewed and the nearest available groundwater quality information for the Lance/Fox Hills aquifer in the area surrounding the Plant was obtained from the Completion Reports for the Rochelle Well No. 2 and the Thunder Basin Well No. 17-1-LFH.

Thunder Basin staff members were contacted in March of 2004 and they informed TZA staff that no detailed water quality tests have ever been performed. The only water quality information available for the Thunder Basin well is the electrical conductivity and water temperature information listed on the Completion Report. The electrical conductivity of the water was recorded at 2,475. This correlates to a total dissolved solids measurement of approximately 1,200 to 1,500. The water temperature was recorded at 120.5 degrees Fahrenheit. Thunder Basin staff reported that the well is being used for dust suppression and that the well has been used regularly since 2002.

Water quality information for the Rochelle Well No. 2 was obtained from the Completion report. The well was sampled in October of 1989, when the well was constructed. The water quality for the Lance/Fox Hills aquifer in the area surrounding the Plant site is expected to be very similar to the water quality measured in the Rochelle Well No. 2. The Rochelle Well No. 2 is located approximately 8 miles southwest of the proposed plant site.

Water quality for the Rochelle Well No. 2 is attached with the Completion Report and is summarized in the table below:

Rochelle Well No. 2 Water Quality Data
Sample Date October 23, 1989

Parameter (mg/L)	Detected	Parameter (mg/L)	Detected
Alkalinity as CaCO ₃	823	Arsenic as As	<0.1
Bicarbonate as HCO ₃	944	Barium as Ba	<0.1
Carbonate as CO ₃	24.4	Cadmium as Cd	<0.1
Chloride as Cl	49.9	Copper as Cu	0.063
Calcium as Ca	3.4	Iron as Fe (Total)	1.06
Fluoride as F	4.00	Iron as Fe (Dissolved)	0.22
Hardness as CaCO ₃	29.9	Lead as Pb	0.020
Magnesium as Mg	0.5	Manganese as Mn	0.028
Nitrate as NO ₃ -N	0.153	Mercury as Hg	<0.0002
Potassium as K	6.6	Selenium as Se	<0.002
Silica as SiO ₂	61.3	Silver as Ag	<0.01
Sodium as Na	443	Zinc as Zn	<0.01
Sulfate as SO ₄	75	Cation (meq/L)	19.66
Sulfide as H ₂ S	<0.1	Anion (meq/L)	19.46
TDS	1,210		

Comparing the measured total dissolved solids (TDS) for the Rochelle well (1,210) with the predicted TDS for the Thunder Basin well (1,200 – 1,500) shows that there is not much variance in water quality between the two sites. Since the Plant site is in the same general area as these wells, we predict that the water quality of the Lance/Fox hills aquifer at the Plant site will be very similar to that measured at Rochelle Well No. 2.

Conclusions

Available geologic and hydrogeologic information indicates that production rates sufficient to meet the projected continuous Plant demands of 1163 gpm (1876.5 acre-feet per year) can be obtained by constructing between three and four wells in the vicinity of the Plant site. The approximate total depth for drilling each well is 4,800 feet.

While exact production rates cannot be determined prior to construction, the results of our investigation show that it is highly likely that installation of four, properly constructed, Lance/Fox Hills aquifer well will be sufficient to meet the projected Plant demands. Depending on actual production rates attainable from completed wells, we recommend that additional wells be evaluated as a back up source of supply in case of pumping equipment failure or the unlikely event of well failure.

To minimize the chance for well-to-well interference we recommend that wells be spaced a minimum distance of one mile from one another. During construction, pump testing and hydrogeologic evaluations performed at each of the first four wells, valuable information can be obtained and evaluated for future well spacing design. Information gathered from the first few wells might indicate that wells can be spaced closer together with little to no well-to-well interference.

The water quality from the Lance/Fox Hills underlying the Plant is likely to be very similar to that of the Rochelle Well No. 2 well that is located approximately 8 miles southwest of the Plant site. Water temperatures from Lance/Fox Hills wells constructed at the Plant site are expected to be approximately 120 degrees Fahrenheit, similar to those recorded in December of 2002 at the Thunder Basin Well 17-1-LFH.

The Lance/Fox Hills aquifer life expectancy at the Plant site exceeds 300 years. The static water level at the site is projected to be between 800 and 900 feet below surface. Specific capacities of properly designed wells are expected to be in the range of 0.4 to 0.5 gpm/ft. Therefore, at a pumping rate of 400 gpm, the projected pumping level will be approximately 1,600 to 1,900 feet below surface.

References

- Cook, L., Wyoming State Geological Survey Publications Catalog, August 2003;
www.wsgs.uwyo.edu/pubs/publist2003.pdf
- Hodson, W.G., 1971, Chemical analysis of ground water in the Powder River Basin and Adjacent Areas, Northeastern Wyoming: Wyoming Department of Economic Planning and Development Report.
- Hodson, W.G, Pearl, R.H., Druse, S.A., 1973, Water Resources of the Powder River Basin and Adjacent Areas, Northeastern Wyoming: U.S. Geological Survey Atlas HA-465.
- Hutton, K, Wyoming Oil & Gas Conservation Commission,
www.wogcc.state.wy.us.
- Larson, L.R., Daddow, R.L., 1983, Ground-Water-Quality Data From the Powder River Structural Basin and Adjacent Areas, Northeastern Wyoming: U.S. Geological Survey Open-File Report 83-939.
- Lewis, B.D., Hotchkiss, W.R., 1981, Thickness, Percent Sand, and Configuration of the Shallow Hydrogeologic Units in the Powder River basin, Montana and Wyoming: U.S. Geological Survey Map I-1317.
- Manley, J., Wyoming State Engineer's Office,
www.seo.state.wy.us.
- Owens, W.A, 1981, Water Supply and Yield Analysis for the Proposed Hampshire Energy Facility, Campbell County, Wyoming.
- Swanson, R.B, 2003, Wyoming Water Resources Data, Water Year 2003, Water-Data Report WY-03-02 Volume 2, Ground Water.

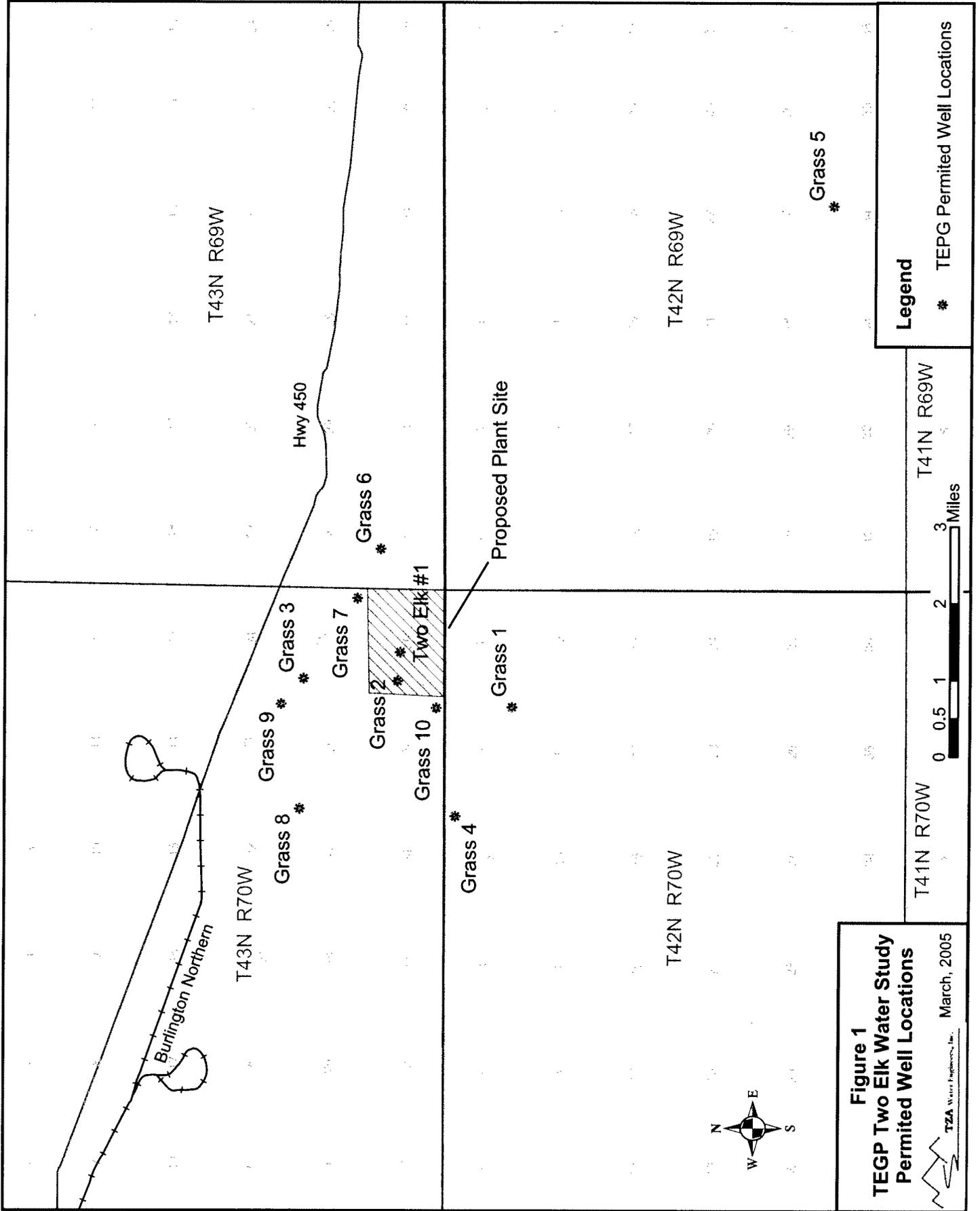


Figure 1
TEGP Two Elk Water Study
Permitted Well Locations

TZA Water Engineers, Inc.
 March, 2005

Legend

- * TEPG Permitted Well Locations

T41N R69W

0 0.5 1 2 3 Miles

T41N R70W

T43N R69W

Hwy 450

Grass 6 *

Grass 2 *

Grass 10 *

Grass 4 *

Grass 1 *

Proposed Plant Site

T42N R70W

T42N R69W

Grass 5 *



Burlington Northern

T43N R70W

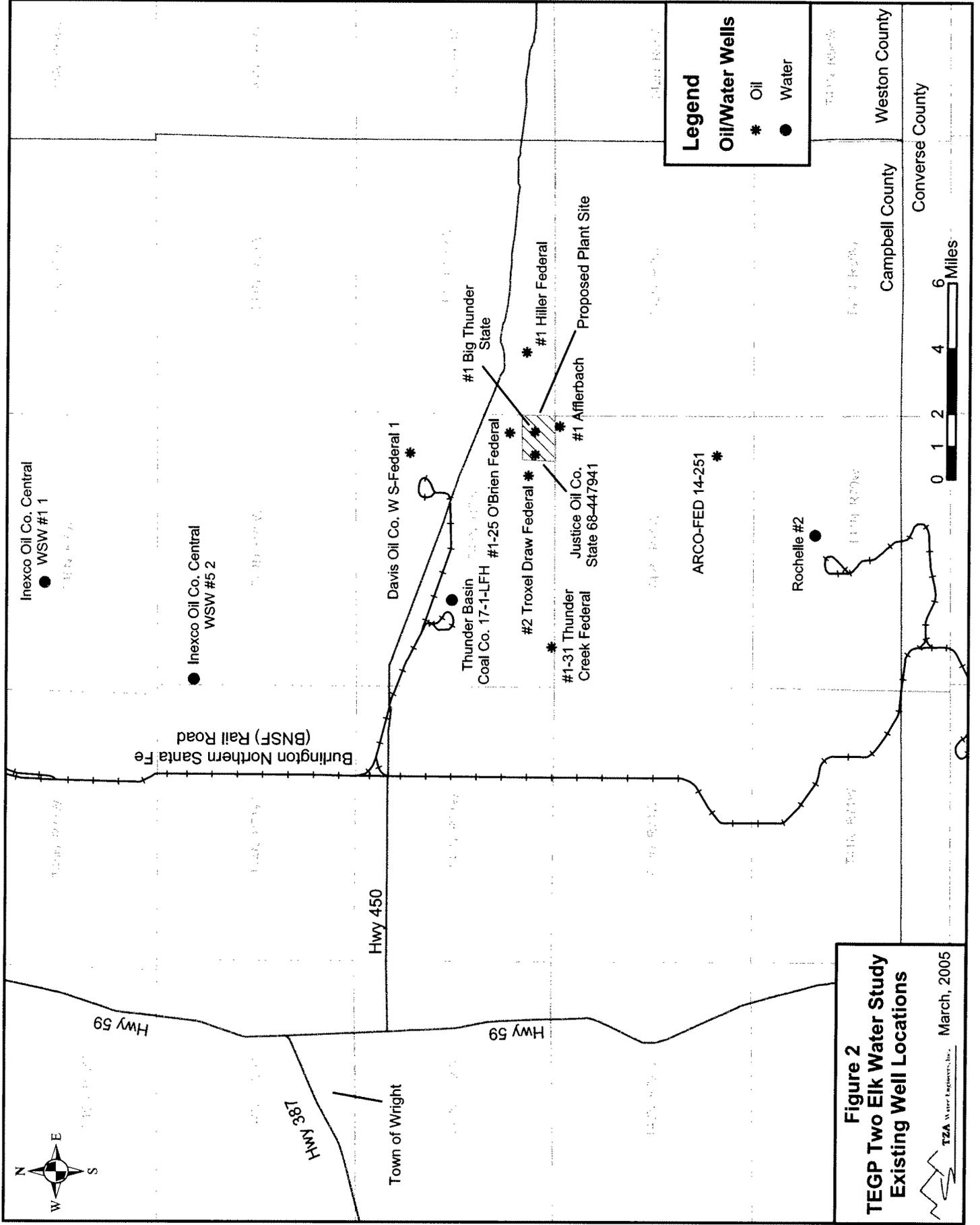
Grass 8 *

Grass 9 *

Grass 3 *

Grass 7 *

Two Elk #1



GROUND-WATER LEVELS

CAMPBELL COUNTY

IDENTIFICATION.-- Station number, 44117105192901. Local number, 49-070-31bbb01. Local name, Hampshire-1.

LOCATION.--Lat 44° 11'17", long 105° 19'29", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.31, T.49 N., R.70 W., Hydrologic Unit 10120201.

AQUIFER.--Fox Hills Formation.

WELL CHARACTERISTICS.--Depth of well, 3,750 ft below land surface.

DATUM.--Elevation of land surface is 4,620 ft above NGVD of 1929, from topographic map. Measuring point: top of casing, 1.60 ft above land surface.

REMARKS.--Because of the extreme depths to water and well construction, the accuracy of water-level measurements is 4.0 ft.

COOPERATION.--Data collected and records provided by the Wyoming State Engineer's Office and reviewed by U.S. Geological Survey.

PERIOD OF RECORD.--1983 to March 26, 2004 (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 491.98 ft below land surface, Sept. 17, 1983; lowest, 550.43 ft below land surface, Aug. 17, 2002.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	549.79	549.49	549.48	549.30	549.04	548.54	---	---	---	---	---	---
10	549.66	549.29	549.23	549.34	548.90	548.79	---	---	---	---	---	---
15	549.82	549.52	549.07	549.21	548.98	548.64	---	---	---	---	---	---
20	549.69	549.63	549.21	549.14	548.90	548.67	---	---	---	---	---	---
25	549.65	549.38	549.29	549.19	548.90	548.55	---	---	---	---	---	---
EOM	549.78	549.48	549.08	549.11	548.74	---	---	---	---	---	---	---
MIN	549.96	549.74	549.51	549.50	549.10	---	---	---	---	---	---	---
MAX	549.55	549.11	548.86	549.03	548.74	---	---	---	---	---	---	---

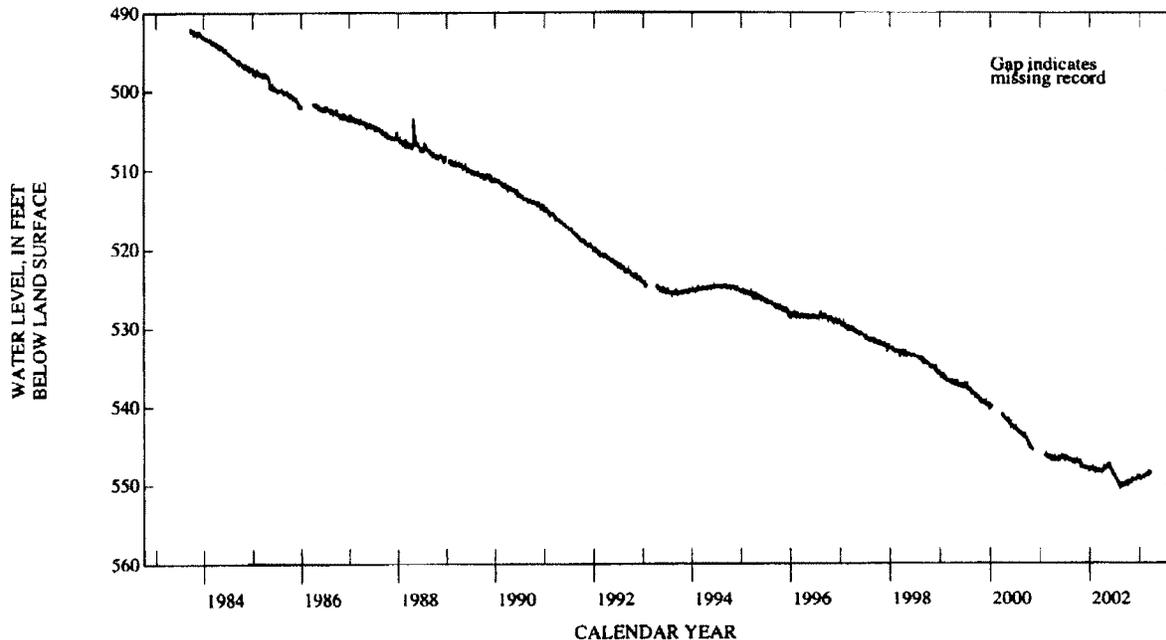
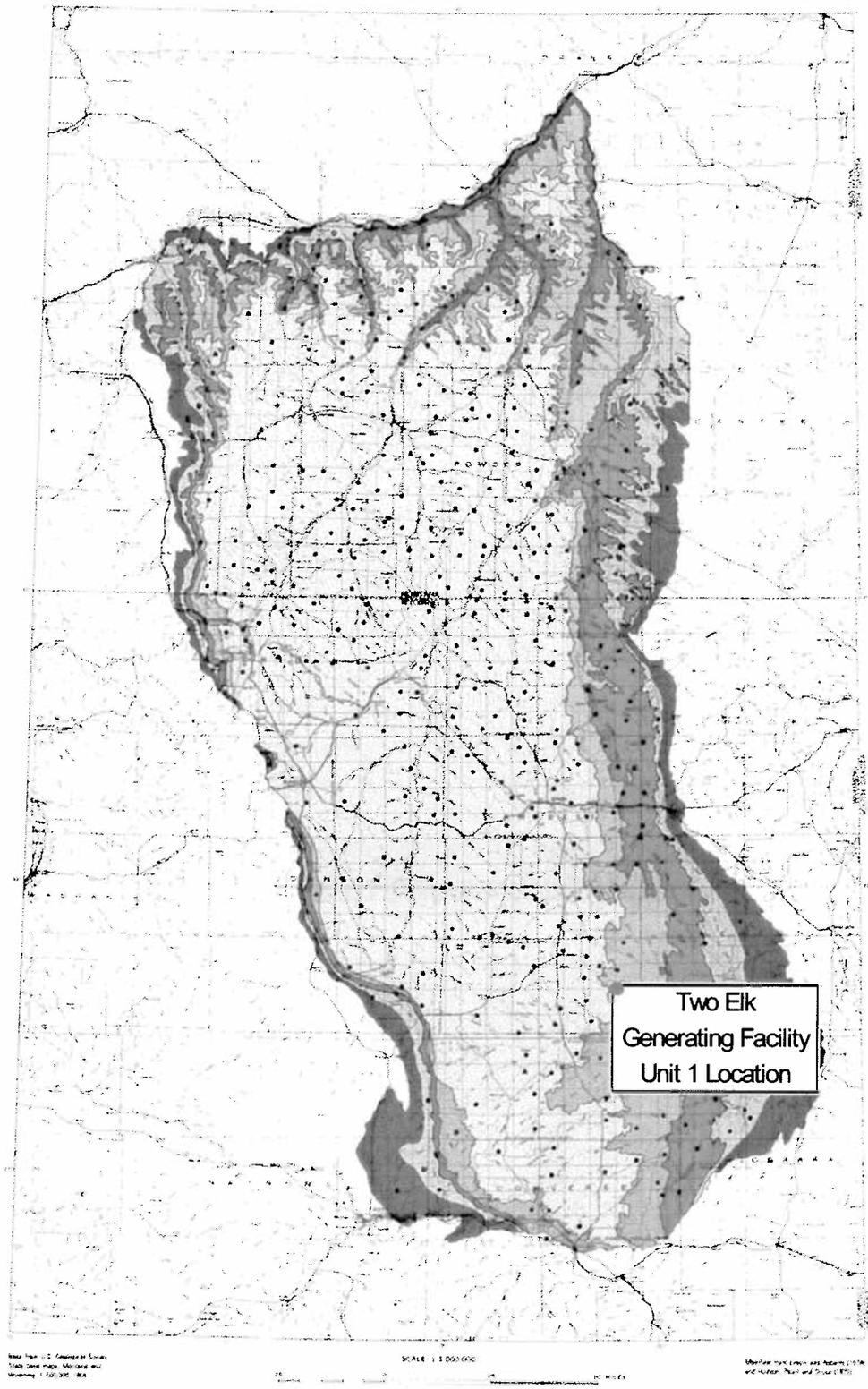


Figure 3

MAPS

- Map 1 – Powder River Basin Hydrogeologic Map
- Map 2 – Lance – Upper Hell Creek Thickness Map
- Map 3 – Lance – Upper Hell Creek Percent Sand Map
- Map 4 – Lance – Upper Hell Creek Base Configuration Map
- Map 5 – Fox Hills – Lower Hell Creek Thickness Map
- Map 6 – Fox Hills – Lower Hell Creek Percent Sand Map
- Map 7 – Fox Hills – Lower Hell Creek Base Configuration Map

Map 1



Base Map: U.S. Geological Survey
 State Plane Map, Montana and
 Wyoming, 1:500,000, NAD

SCALE 1:1,000,000

Monitor Well Locations and Aquifers (1978
 and 1980s) (Data and State 1978)

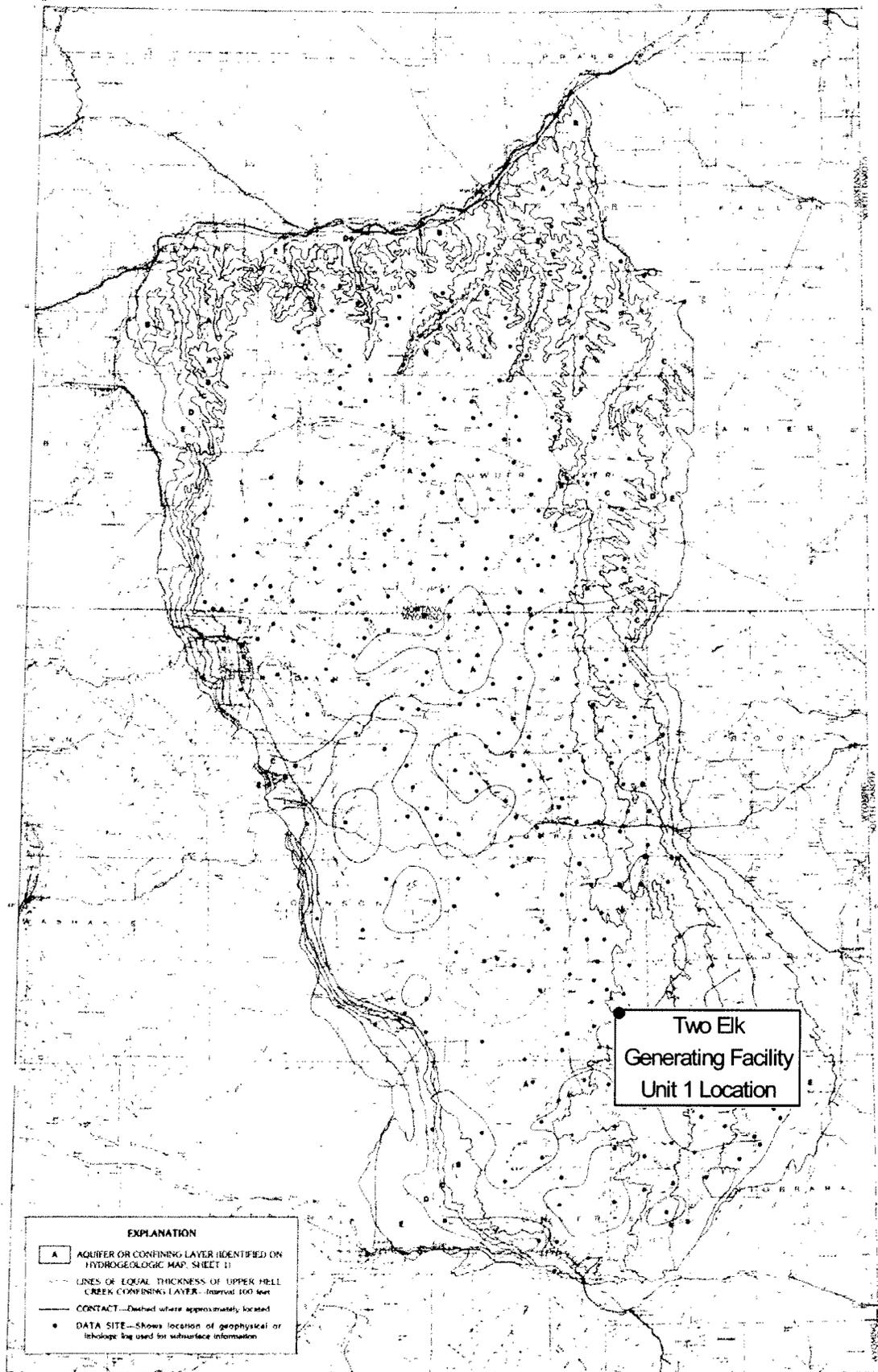
HYDROGEOLOGIC MAP

- A** Tongue River-Wasatch Aquifer
- B** Lebo Confining Layer
- C** Tullock Aquifer
- D** Upper Hell Creek Confining Layer
- E** Fox Hills-Lower Hell Creek Aquifer



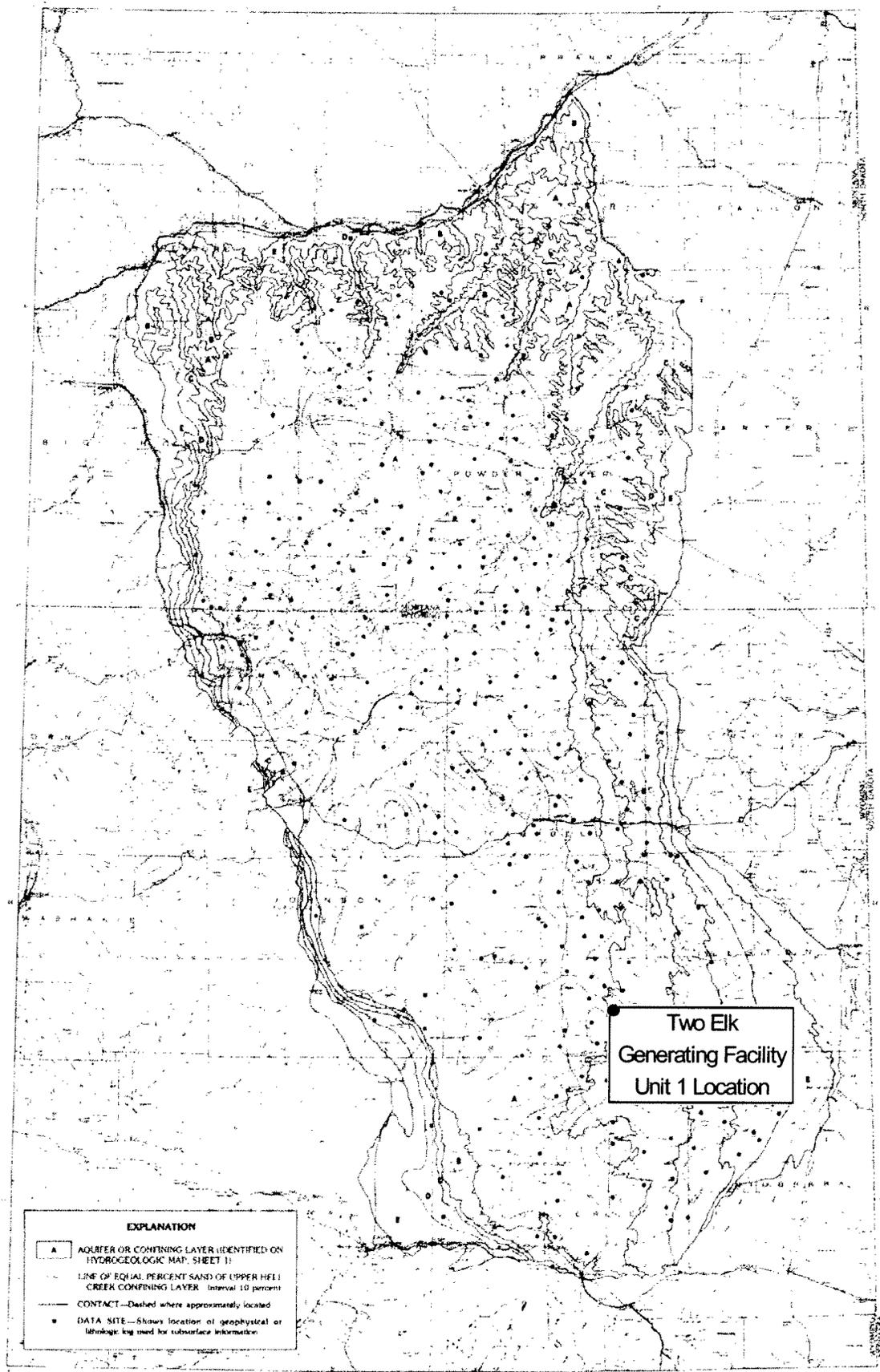
LOCATION OF STUDY AREA

Map 2



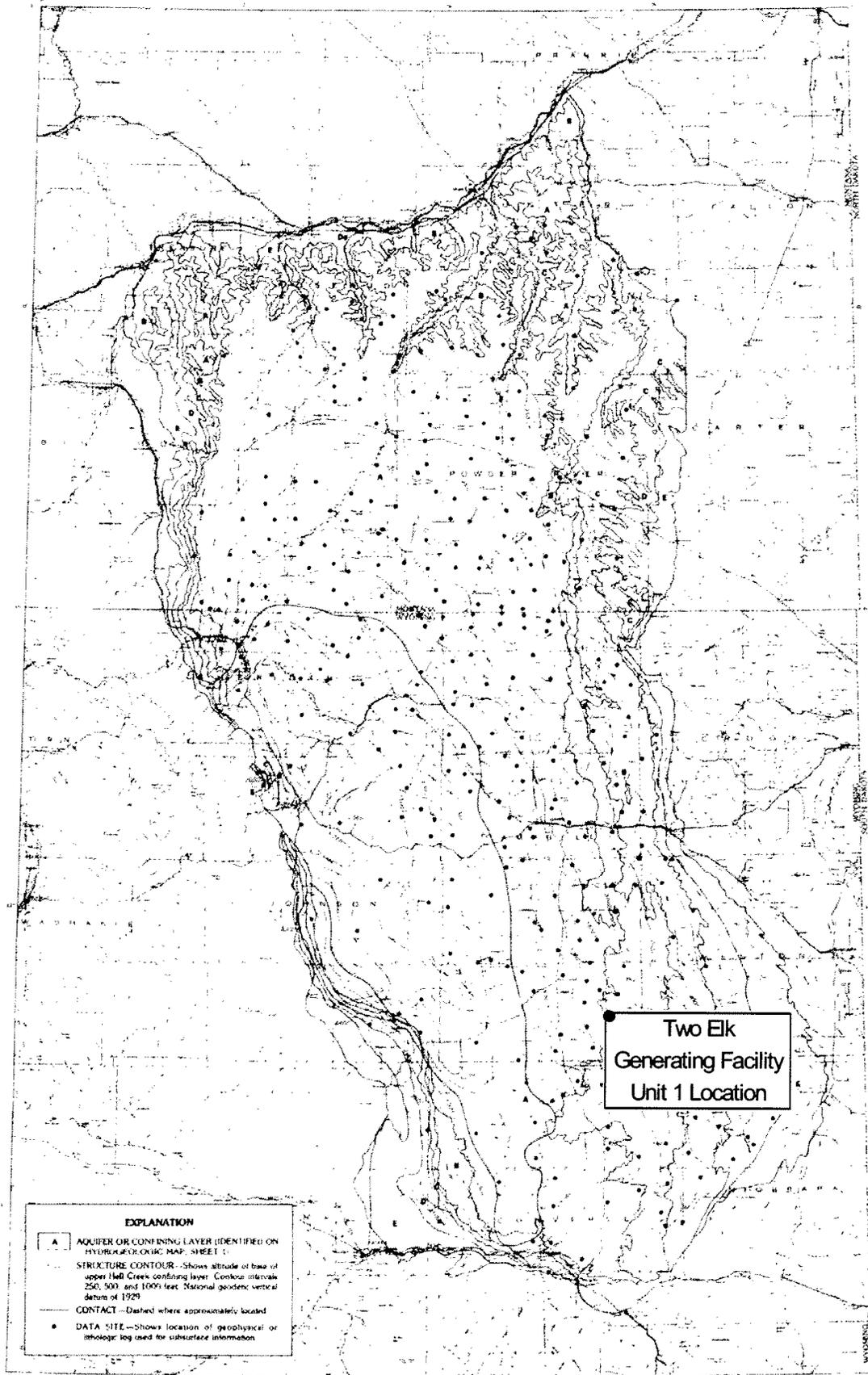
THICKNESS

Map 3



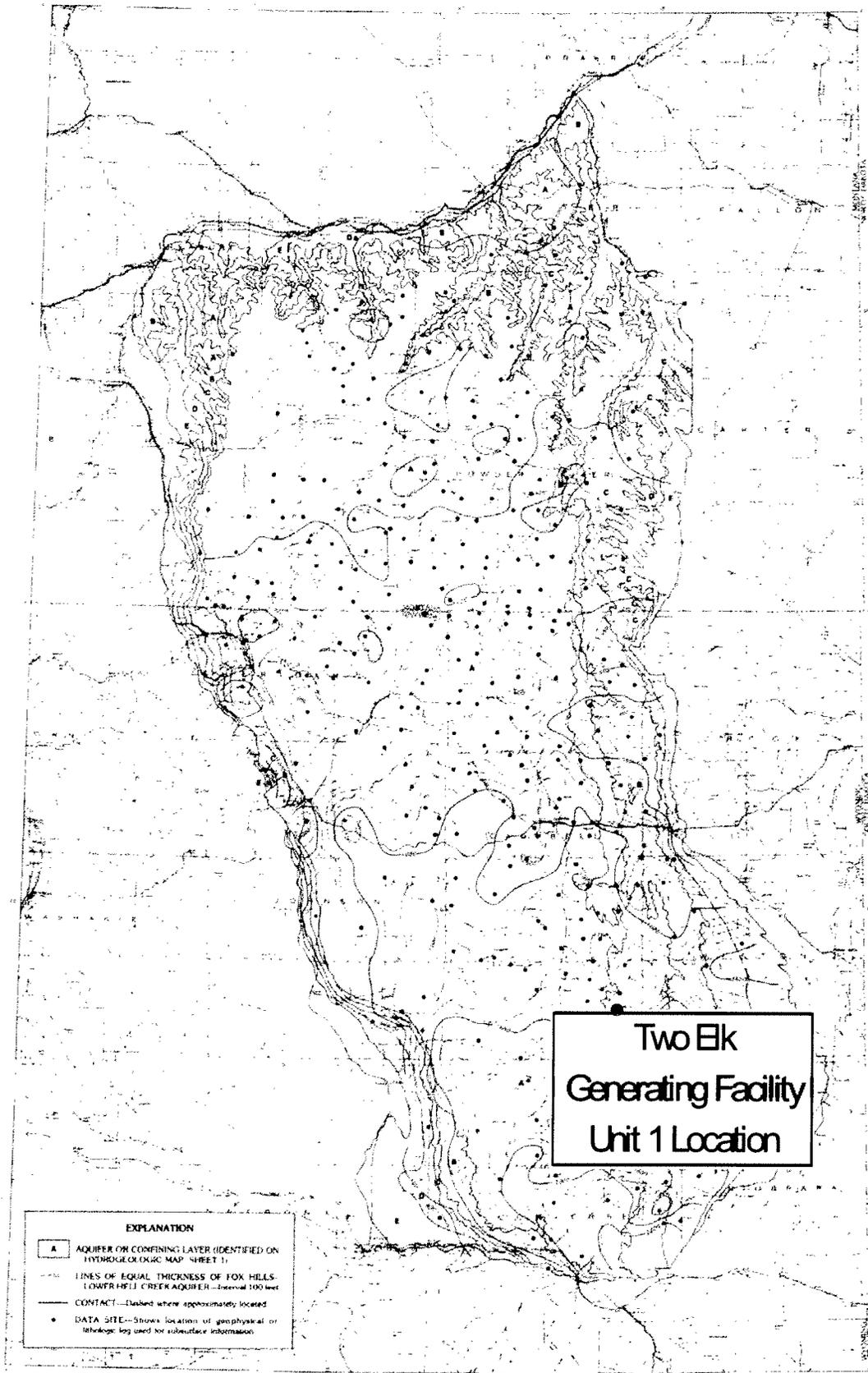
PERCENT SAND

Map 4

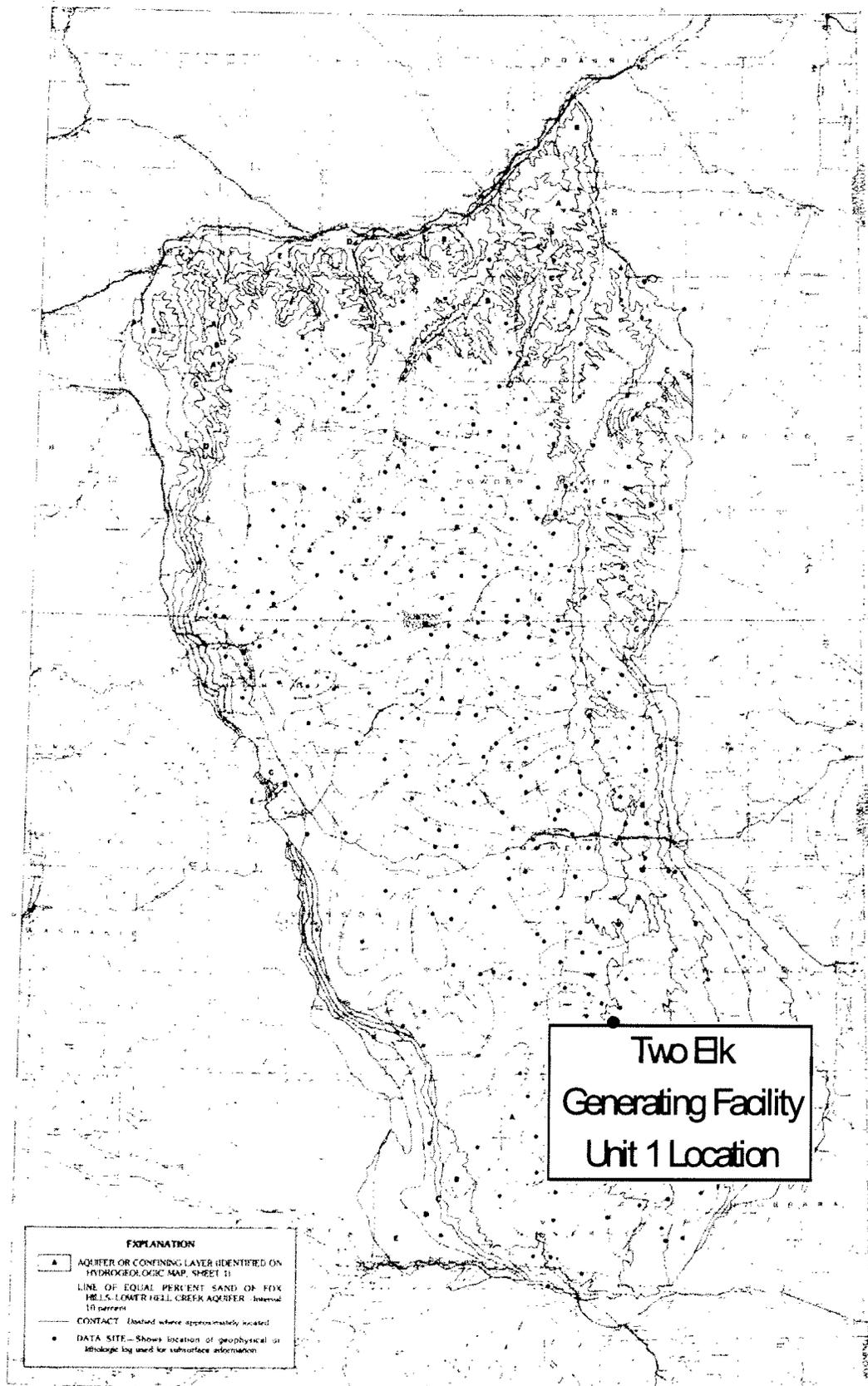


CONFIGURATION OF THE BASE

Map 5

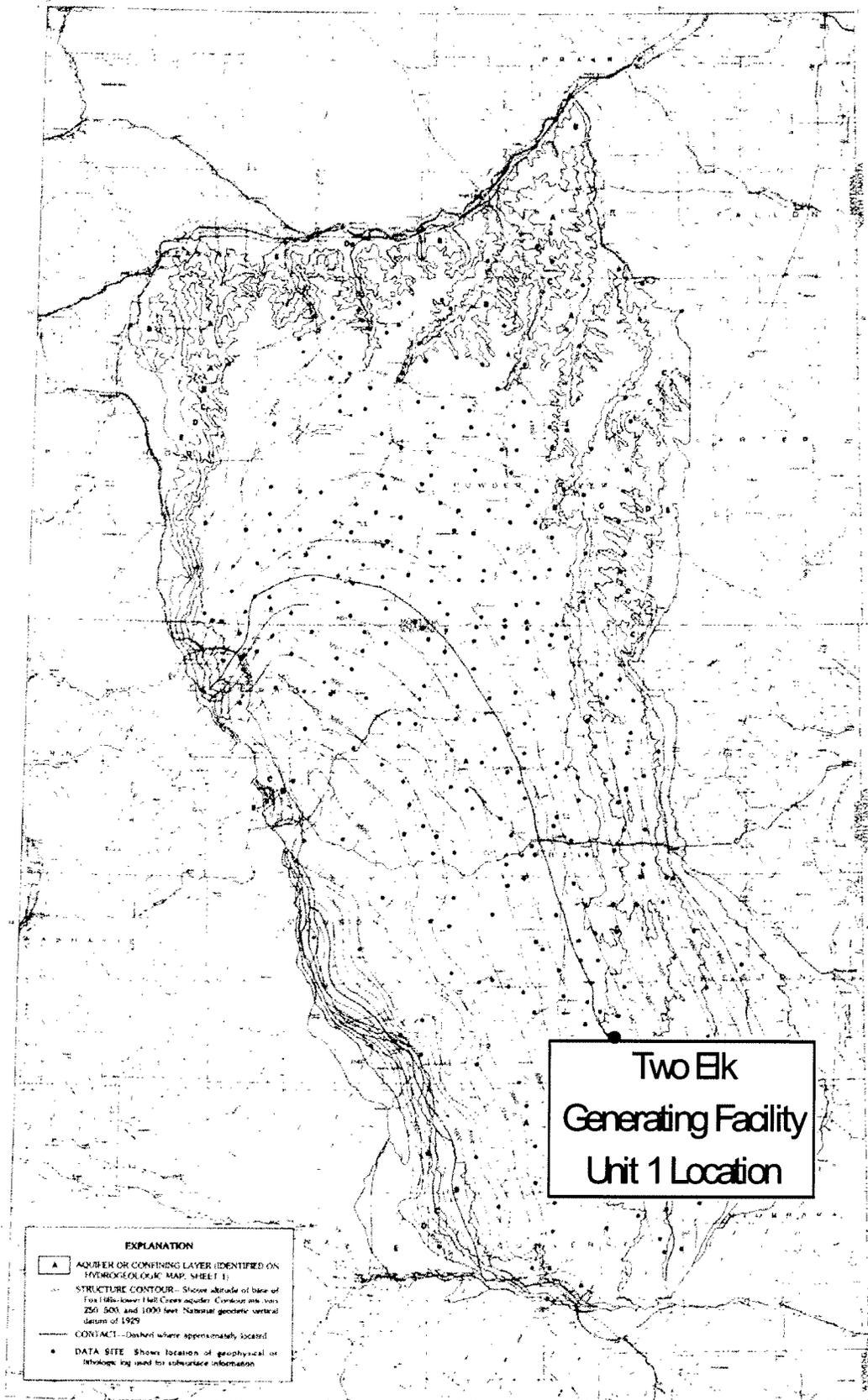


Map 6



PERCENT SAND

Map 7



APPENDIX A

WELL COMPLETION REPORTS

- Rochelle Well No. 2 (Well Permit No. 76141)
- Thunder Basin Coal Company Well 17-1-LFH (Well Permit No. 146195)
- Inexo Oil Company Central WSW # 5 2 (Permit No. 11012)
- Inexo Oil Company Central WSW # 1 1 (Permit No. 11002)

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
BARRETT BUILDING
CHEYENNE, WYOMING 82002

MICRO FILMED MAR 3 '88

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER
FOR OFFICE USE ONLY

Temporary Filing No. U.W. 19-11-383

PERMIT NO. U.W. 76141
 WATER DIVISION NO. 2 DISTRICT 1
 U.W. DISTRICT Campbell Co.

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.
ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE.

NAME AND NUMBER OF WELL Rochelle Number 2

- Name of applicant(s) Rochelle Coal Company Phone: 464-0054
- Address of applicant(s) Caller Box 3035, Gillette, Wyoming Zip: 82716
- Name & address of agent to receive correspondence and notices John Nadolski, Powder River Coal Company, Caller Box 3034, Gillette, Wyoming 82716

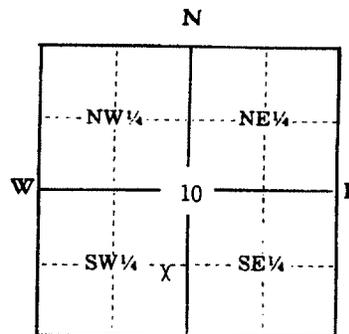
4. Use to which the water will be applied: Domestic [] Stock Watering [] Irrigation [] Municipal [] Industrial Miscellaneous (Describe completely and accurately) Dust suppression for haulage, crushing, and screening of coal, also sanitary and firefighting.

5. Location of the well: (NOTE: Quarter-quarter (40-acre subdivision) **MUST** be shown. EXAMPLE: SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Sec. 12, Township 14 North, Range 68 West.)
Campbell County, SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 10
 T. 41 N., R. 70 W. of the 6th P.M. (or W.R.M.), Wyoming. If located in a platted subdivision, also provide Lot 14, Block _____ of the _____ Subdivision (or Add'n) of _____

6. Mark the well location on the section grid to the right. LOCATION SHOWN IN ITEM 5 MUST AGREE WITH GRID. If the proposed well is for irrigation use, sketch and label all irrigation ditches and canals, stream, reservoirs and other wells. Indicate the point of use or lands to be irrigated from other sources.

7. Estimated depth of the well is 5200 feet.

8. MAXIMUM quantity of water to be developed and beneficially used: 525 gallons per minute. NOTE: If for domestic or stock use, this application will be processed for a maximum of 25 gallons per minute. SPRINGS: Only springs flowing 25 gallons per minute or less, where the proposed use is domestic or stockwatering, will be considered as ground water appropriations. After approval of this application, some type of artificial diversion must be constructed to qualify for a water right.



Above diagram represents one full section. Locate well accurately in small square representing 40 ac.

- If use is not irrigation, mark the point(s) or area(s) of use in the tabulation below.
- If for irrigation use: continued on the attached sheet
 - Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation below.
 - 1/4 Land will be irrigated from this well only.
 - 1/4 Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

Township	Range	Sec.	NE $\frac{1}{4}$				NW $\frac{1}{4}$				SW $\frac{1}{4}$				SE $\frac{1}{4}$				TOTALS
			NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	
41N	70W	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		2											X	X			X	X	
		3											X	X			X	X	
		10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		11	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
		12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
41N	69W	6															X	X	
		7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		8							X		X	X	X	X					

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

12. The well is to be constructed on lands owned by Powder River Coal Company
(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 a co-applicant.)

13. The water is to be used on lands owned by Powder River Coal, USA, Wyoming state
(If landowner is not the applicant, a copy of the agreement relating to usage of appropriated water on the land should be submitted to this office. If the landowner is included as a co-applicant on the application, this procedure need not be followed.)

REMARKS: 2) Water from Permit U.W. 29356 will continue to be used to supply the Rochelle Mine. Additional areas not shown on table includes 41N-69W, N $\frac{1}{2}$ of Section 18, NW $\frac{1}{4}$ of Section 17; 42N-69W, S $\frac{1}{2}$ of Section 30, All of Section 31; 42N-70W, S $\frac{1}{2}$ of Section 25, All of Section 36.

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.

John A. Nadolski
Signature of Applicant or Authorized Agent

Dec 17, 19 87
Date

THE LEGALLY REQUIRED FILING FEE MUST ACCOMPANY THIS APPLICATION

DOMESTIC AND/OR STOCK WATERING USES (Domestic use is defined as a single-family dwelling and the watering of lawns and gardens not exceeding one (1) acre)	\$10.00
IRRIGATION, MUNICIPAL, INDUSTRIAL, MISCELLANEOUS	\$25.00
MONITOR (For water level measurements or chemical quality sampling)	NO FEE
IF WELL WILL SERVE MULTIPLE USES, SUBMIT ONLY ONE (THE HIGHER) FILING FEE.	

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

THE STATE OF WYOMING)

) ss.

STATE ENGINEER'S OFFICE)

This instrument was received and filed for record on the 21st day of December, A. D. 19 87, at 11:30 o'clock A. M.

Permit No. U.W. 7612

[Signature]
for State Engineer

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This application is approved subject to the condition that the proposed use shall not interfere with any existing rights to ground water from the same source of supply and is subject to regulation and correlation with surface water rights, if the ground and surface waters are interconnected. The use of water hereunder is subject to the further provisions of Chapter 169, Session Laws of Wyoming, 1957, and any subsequent amendments thereto.

Granting of a permit does not guarantee the right to have the water level or artesian pressure in the well maintained at any specific level. The well should be constructed to a depth adequate to allow for the maximum development and beneficial use of ground water in the source of supply.

If the well is a flowing artesian well, it shall be so constructed and equipped that the flow may be shut off when not in use, without loss of water into surface formations or at the surface.

FOR ADDITIONAL CONDITIONS AND LIMITATIONS SEE ATTACHED STATUS SHEET

Approval of this application may be considered as authorization to proceed with construction of the proposed well.

Construction of well 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, 19 89.

~~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 10th day of JANUARY, A.D. 19 88.

Gordon W. Fassett
Gordon W. Fassett, State Engineer

NOTICE OF EXPIRATION
SEP. 30 1988 OF COMMENCEMENT

MICRO FILMED SEP 10 1988

Attachment sheet for the Rochelle Number 2 I.P. No. 9-11-353

Township	Range	Sec	NE 1/4				NW 1/4				SW 1/4				SE 1/4				Totals
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
41	69	18	X	X	X	X	X	X	X	X									
41	67	17					X	X	X	X									
42	69	30											X	X			X	X	
42	69	31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
42	70	25											X	X			X	X	
42	70	36	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

The water from this well will be piped to the mine water storage tank where it will be commingled with water from the Rochelle Number 1 well, Permit No. UW59356. The water is then piped to the shop and office for use as potable and sanitary supply, and for dust suppression & firefighting in the coal chusher. The water is also loaded into water trucks and hauled throughout the area shown in item 9 for dust suppression on the haul roads.
See plat filed as T. 11-2-50-12 (19-2)

PERMIT NO. U.W. 76141
T.F. No. U.W. 19-11-383
PERMIT STATUS

MICRO FILMED MAR 3 '88

Priority Date December 21, 1987

Approval Date January 10, 1988

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 each month during the previous January 1 to December 31, twelve (12) month period.
3. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.
4. The report shall contain at least two (2) semi-annual measurements of the pumping water level in the well as measured after a minimum of twenty-four (24) consecutive hours of pumping. The dates the measurements were obtained and period of time the well was pumped prior to obtaining the measurements must be specified.
5. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "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.
7. This permit will be automatically cancelled December 31, 2030 unless a written request for an extension of time has been received by the State Engineer prior to December 31, 2030.
8. Part I of the Proof of Appropriation is required under this permit. However, Parts II and III are waived.

January 10, 1988
DATE OF APPROVAL

Gordon W. Fassett
Gordon W. Fassett, State Engineer

April 25, 1988--Water from this well may be stored in the Rochelle Shop Reservoir, Permit No. 9365 Res., to facilitate distribution throughout the mining operation. The reservoir is located in Lot 14 (SE $\frac{1}{4}$ SW $\frac{1}{4}$) of Section 10, T.41N., R.70W., dep. resurvey. Uses and area of use will remain the same as shown herein.

MICRO FILMED MAY 2 '88

October 3, 1988 - Request for extension of time for commencement, completion of construction and completion of beneficial use granted until December 31, 1989. Letter of request filed in Miscellaneous Notices under Permit No. U.W. 76141. Applicant notified by letter on OCT. 14 1988.

10-14-88
Date of approval

Richard G. Stockdale
RICHARD G. STOCKDALE, ADMIN.
Ground Water Division

MICRO FILMED OCT 21 '88

SEP 29 1988 NOTICE OF EXPIRATION OF TIME FOR COMPLETION & COMPLETION OF BENEFICIAL USE MAILED

MICRO FILMED JUL 24 '89

SEP 29 1988 NOTICE OF EXPIRATION OF TIME OF COMMENCEMENT MAILED MICRO FILMED SEP 13 '89

PERMIT NO. 76141

PERMIT STATUS

Priority Date December 21, 1987 Approval Date January 10, 1988

October 10, 1989 - Notice of Commencement on September 01, 1989 received.

MICRO
FILMED OCT 30 '89

November 15, 1990 - Statement of Completion on December 03, 1989 received in affidavit form.

November 15, 1990 - Proof of Beneficial Use on April 17, 1990 received in affidavit form.

MICRO
FILMED APR 12 '91

August 5, 1996 - This permit has been enlarged by Permit No. U.W. 103533 for additional areas of use only. There is no physical enlargement of this well.

MICRO
FILMED

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

IF WELL IS TO BE
ABANDONED, SEE STATEMENT OF COMPLETION AND DESCRIPTION OF WELL
ITEM 15, PAGE 4

NOV 15 1990
MICRO FILMED APR 12 '91

NOTE: Do not fold this form. Use typewriter or
print neatly with black ink.

PERMIT NO. U.W. 76141 NAME OF WELL Rochelle Number 2

1. NAME OF OWNER Rochelle Coal Company

2. ADDRESS Caller Box 3034 Gillette, WY Zip Code 82717-3034

3. USE OF WATER: Domestic Stock Watering Irrigation Municipal Industrial Miscellaneous *out PEP permit*

4. LOCATION OF WELL: SE 1/4 SW 1/4 of Section 10, T. 41 N., R. 70 W., of the 6th P.M. (or W.R.M.),
Wyoming, being specifically _____
(Bearing and Distance)
or 4704 ft. ~~North~~ South and 2060 ft. East ~~West~~ from the NW corner of Section 10, T. 41 N., R. 70 W.
(Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled Water/Mud Rotary Dug Driven Jetted
(Type of Rig)
Other _____

6. CONSTRUCTION: Total Depth of Well 5265 ft. Depth to Static Water Level 521 ft.

a. Casing Schedule New Used
20" diameter from 0 ft. to 167 ft. Material Steel Gage 2
13 3/8" diameter from 0 ft. to 2431 ft. Material Steel Gage J-55, 54.5#
8 5/8" diameter from 2431 ft. to 4870 ft. Material Steel Gage J-55, 24#

b. Perforations: Type of perforator used Needle jet, DuPont 3 1/8", 12-gram charge
Size of perforations 0.222 inches by 8+ inches.
Number of perforations and depths where perforated:
_____ perforations from _____ ft. to _____ feet.
_____ perforations from _____ ft. to _____ feet.



c. Was well screen installed? Yes No
Diameter: 7.12" slot size: 15 set from 4863 feet to 5006 feet.
Diameter: 7.12" slot size: 15 set from 5120 feet to 5215 feet.

d. Was well gravel packed? Yes No Size of gravel 20/40

e. Was surface casing used? Yes No Was it cemented in place? Yes No

7. NAME & ADDRESS OF DRILLER Degaugh Well Service, Douglas, Wyoming

8. DATE OF COMPLETION OF WELL (Including pump installation) 12-03-89

9. PUMP INFORMATION: Manufacturer Centrilift Type Submersible 16-Stage
Source of power 2400-volt Horsepower 200 Depth of Pump Setting 1376
Amount of Water Being Pumped 400 Gallons Per Minute. (For springs or flowing wells, see Item 11.)

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Town-Ship	Range	Sec.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTALS
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
41N	70W	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		2																	
		3											X	X			X	X	
		10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		15					X				X	X				X	X		
41N	69W	6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
		8						X			X	X	X	X					

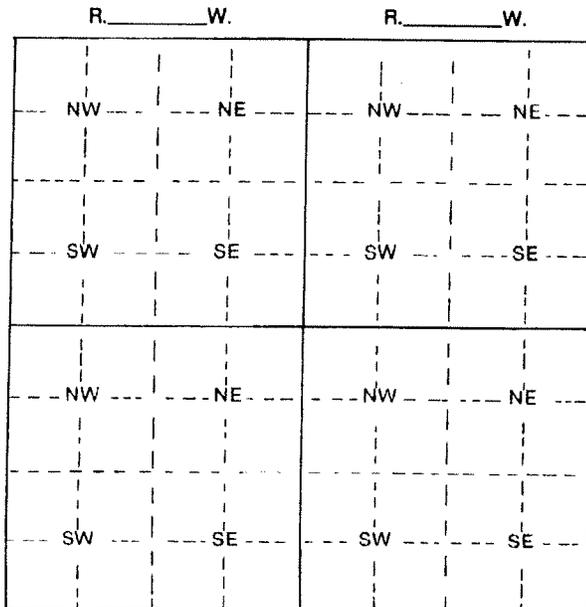
TOTAL NUMBER OF ACRES TO BE IRRIGATED _____

Original Supply _____ acres

Supplemental Supply _____ acres

14. PLAT

- a. If the well is to be used for irrigation, industrial, miscellaneous or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.
- b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.
- c. A separate map may be submitted if the information required cannot be shown on this plat.



Scale: 2" = 1 Mile

T. _____ N.

SEE FIGURE 1, ATTACHED

T. _____ N.

REMARKS: _____

15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

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

Frederick W. VonKaenel
Signature of Owner or Authorized Agent

Nov. 13, 1990
Date

THE STATE OF WYOMING)
County of CONVERSE)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____

Frederick W. VonKaenel this 13th day of November, 19 90

My Commission Expires August 18, 19 94

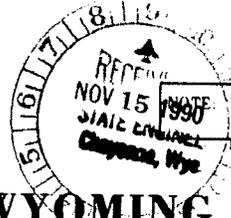
Delma A. Gibson
Notary Public

Date of Receipt NOV 15 1990, 19 _____

Date of Priority December 21, 1987, 19 _____

Date of Approval NOV 28 1990, 19 _____

[Signature]
for State Engineer



Do not fold this form. Use typewriter or print neatly with black ink.

MICRO FILMED NO 1

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 2 (1)

U.W. DISTRICT Campbell Co

STATEMENT OF CLAIM

DATE OF PRIORITY December 21, 1987

PERMIT NO. U.W. 76141

WELL REGISTRATION

LOCATION SE 1/4 SW 1/4 of Section 10

NAME OF WELL Rochelle Number 2

T. 41 N. R. 70 W.

- Name of Claimant(s) Rochelle Coal Company
- Address Caller Box 3034, Gillette, WY Zip Code 82717-3034
- For What Purpose(s) is Water Used? Use: Dust suppression for haulage Date First Used April 17, 1990
crushing, and screening coal, also sanitary and firefighting.
Use: _____ Date First Used: _____, 19____ Use: _____ Date First Used _____, 19____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

PART II

For Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or sec Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

- The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.
- The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7 1/2 minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:
 - The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.
 - The scale on said quadrangle map must be one to twenty-four thousand.
 - An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.
 - The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.
 - Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

A "CERTIFICATE OF OWNERSHIP" FROM THE COUNTY CLERK'S OFFICE SHOWING OWNERSHIP OR CONTROL OF LAND(S) INVOLVED MUST ACCOMPANY THIS FORM.

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

Frederick W. VonKaenel
Signature of Owner or Authorized Agent

Nov. 13, 19 90
Date

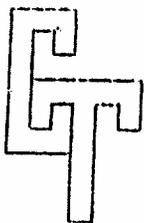
THE STATE OF WYOMING)
County of CONVERSE)

I hereby certify that the foregoing statement was signed in my presence and sworn to before me by _____

Frederick W. VonKaenel this 13th day of November, 1990

My Commission Expires August 18, 19 94 Delmar D. Gibson
Notary Public

Date of Receipt NOV 15 1990, 19 _____



CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

MICRO FILMED APR 12 '91

6100 S. STRATLER
MURRAY, UTAH 84107
(801) 262-7291

TO: EarthFax Engineering, Inc.
7324 South 1300 East STE 100
Midvale, UT 84047

DATE: 11-3-89

SAMPLE ID: Lab #U045587 - C-118-04 Rochelle Well #2, Campbell
Co., WY, Submitted 10-23-89

CERTIFICATE OF ANALYSIS

<u>PARAMETER</u>	<u>DETECTED</u>
Alkalinity as CaCO ₃ , mg/l	823
Bicarbonate as HCO ₃ , mg/l	944
Carbonate as CO ₃ , mg/l	24.4
Chloride as Cl, mg/l	49.9
Calcium as Ca, mg/l	3.4
Flouride as F, mg/l	4.00
Hardness as CaCO ₃ , mg/l	29.9
Magnesium as Mg, mg/l	0.5
Nitrate as NO ₃ -N, mg/l	0.153
Potassium as K, mg/l	6.6
Silica as SiO ₂ , mg/l	61.3
Sodium as Na, mg/l	443
Sulfate as SO ₄ , mg/l	75
Sulfide as H ₂ S, mg/l	<.1
TDS, mg/l	1,210
Arsenic as As, mg/l	<.01
Barium as Ba, mg/l	<.01
Cadmium as Cd, mg/l	<.01
Copper as Cu, mg/l	0.063
Iron as Fe (T), mg/l	1.06
Iron as Fe (D), mg/l	0.22
Lead as Pb, mg/l	0.020
Manganese as Mn, mg/l	0.028
Mercury as Hg, mg/l	<.0002
Selenium as Se, mg/l	<.002
Silver as Ag, mg/l	<.01
Zinc as Zn, mg/l	<.01
Cation, meq/l	19.66
Anion, meq/l	19.46


Rex Henderson

MICRO
FILMED APR 12 '91

ROCHELLE WATER-SUPPLY WELL NO. 2
PERFORATION SCHEDULE

<u>Number of Perforations</u>	<u>Depth</u>
160	2510 - 2550'
140	3015 - 3050'
144	3642 - 3678'
120	3750 - 3780'
184	4084 - 4130'
96	4168 - 4192'
96	4344 - 4368'
136	4524 - 4558'
TOTALS	
1076	269'

All perforations are 0.222" diameter, 8+" penetration, produced by DuPont 3 1/8" 12-gram charges. Perforation performed by Petro-Log, Inc.

ROCHELLE WATER-SUPPLY WELL NO. 2

SCREEN ASSEMBLY

<u>Depth Interval</u>	<u>Material</u>
4823.34 - 4824.84	Stainless Steel Blank
4824.84 - 4854.84	Mild Steel Blank
4854.84 - 4863.06	Stainless Steel Blank
4863.06 - 5006.04	Stainless Steel Screen
5006.04 - 5015.95	Stainless Steel Blank
5015.95 - 5050.96	Mild Steel Blank
5050.96 - 5120.36	Stainless Steel Blank
5120.36 - 5215.68	Stainless Steel Screen
5215.68 - 5225.40	Stainless Steel Blank
5225.40 - 5265.00	Mild Steel Blank

Screen is 7.12-inch diameter continuous wire-wound stainless steel, 15-slot, manufactured by Johnson Division. Annulus between screen and formation gravel-packed with 20-40 mesh silica sand.

**POWDER RIVER
COAL COMPANY**

MICRO
FILMED

APR 07 2000

339 A. Antelope Rd.
Caller Box 3034
Gillette, Wyoming 82717-3034
(307) 484-0064
Fax (307) 484-4613

February 11, 1993

Wyoming State Engineer's Office
Ground Water Section
Herschler Building - Fourth Floor East
122 West 25th Street
Cheyenne, Wyoming 82002

Film

CERTIFIED MAIL #P114447472
RETURN RECEIPT REQUESTED

RE: 1992 Annual Reports for the Rochelle Mine

Dear Sirs:

Enclosed are the Annual Reports for the following permits for 1992:

Rochelle Mine No. 1 Well
(Permit No. U.W. 29356)

Rochelle Mine No. 2 Well
(Permit No. U.W. 76141)

Rochelle Mine Pit Sump I
(Permit No. U.W. G3073)

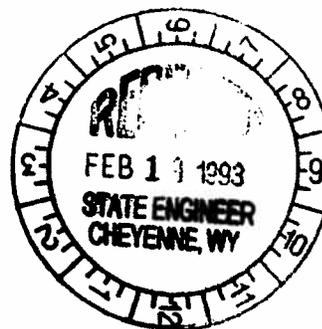
If you have any questions, please feel free to contact me.

Sincerely yours,

John A. Nadolski
John A. Nadolski
Hydrology Supervisor

JAN/dag
Enclosures

c: W. Burget w/o Enc.
R. Haroian w/Enc.
C. Jennings w/Enc.
P. Murphree w/Enc.
K. Werner w/Enc.
Reading File
file (b/ENV/1-5-2-1)
(b/ENV/1-5-107-1)
(b/ENV/1-5-1-1)
(Disk#1-SEO/Reports)



ROCHELLE MINE NO. 2 WELL, PERMIT NO. U.W. 76141

The Rochelle Mine No. 2 Well was placed on line on April 17, 1990. A Statement of Completion and Proof of Appropriation and Beneficial Use of Ground Water were submitted to the State Engineer's Office on November 12, 1990.

A Micrometer flow meter was used to measure flow from the well in 1992. A total of 92,343,300 gallons (283.4 acre-feet) of water was pumped from the well in 1992. Water from the well was used for dust suppression and/or sanitary use in the following locations:

Township 41 North, Range 70 West

- Section 2: SW $\frac{1}{4}$ of the SW $\frac{1}{4}$
- 3: S $\frac{1}{4}$
- 10: SE $\frac{1}{4}$,
N $\frac{1}{4}$ and SE $\frac{1}{4}$ of the SW $\frac{1}{4}$,
NE $\frac{1}{4}$,
NW $\frac{1}{4}$
- 11: N $\frac{1}{4}$ of the SW $\frac{1}{4}$,
NW $\frac{1}{4}$ of the SE $\frac{1}{4}$,
SW $\frac{1}{4}$ of the NE $\frac{1}{4}$,
W $\frac{1}{4}$ and SE $\frac{1}{4}$ of the NW $\frac{1}{4}$
- 15: NE $\frac{1}{4}$, SE $\frac{1}{4}$ and SW $\frac{1}{4}$ of the NW $\frac{1}{4}$

Powder River Coal Company conducted two 24-hour shut-in tests and two 24-hour pumping tests in 1992. Results of the test are summarized in the table below.

DATE	TIME	STATIC WATER LEVEL (FT.)	FLOW RATE (GPM)	COMMENTS
April 21	1325	1560	420	Pump On
April 22	1335	1615	390	Pumps On \geq 24 Hours
April 23	1440	910	-0-	Pump Off 25 Hours
December 1	1002	1432	-0-	
December 2	0955	1621	360	Pump On 24 Hours
December 3	1005	1100	-0-	Pump Off 24 Hours



MICRO FILMED JUN 15 1994
Rochelle Coal Company

Call Box 3035
Gillette, Wyoming 82717-3035
(307) 464-1512 Fax (307) 464-4706

*RAY - FYE
Filing
D*

January 17, 1994

Wyoming State Engineer's Office
Ground Water Section
Herschler Building - Fourth Floor East
122 West 25th Street
Cheyenne, Wyoming 82002

CERTIFIED MAIL #P387132172
RETURN RECEIPT REQUESTED

RE: 1993 Annual Reports for the Rochelle Mine

Dear Sirs:

Enclosed are the Annual Reports for the following permits for 1993:

Rochelle Mine No. 1 Well
(Permit No. U.W. 29356)

Rochelle Mine No. 2 Well
(Permit No. U.W. 76141)

Rochelle Mine Pit Sump I
(Permit No. U.W. 69073)

If you have any questions, please feel free to contact me.

Sincerely yours,

John A. Nadolski
John A. Nadolski
Senior Hydrologist

JAN/dag
Enclosures

- c: W. Burget (PRCC) w/o Enc.
- R. Haroian (RCC) w/Enc.
- P. Murphree (PRCC) w/Enc.
- F. VonKaenel (PRCC) w/o Enc.
- K. Werner (RCC) w/Enc.

Reading File
file (b/ENV/1-5-2-1)
(b/ENV/1-5-107-1)
(b/ENV/1-5-1-1)

(c:\wp51\seo\reports.wp)

MICRO
FILMED JUN 15 1994

ROCHELLE MINE NO. 2 WELL, PERMIT NO. W-11-70141

The Rochelle Mine No. 2 Well was placed on line on April 17, 1990. A Statement of Completion and Proof of Appropriation and Beneficial Use of Ground Water were submitted to the State Engineer's Office on November 12, 1990.

A Micrometer flow meter was used to measure flow from the well in 1993. A total of 87,667,000 gallons (269.0 acre-feet) of water was pumped from the well in 1993. Water from the well was used for dust suppression and/or sanitary use in the following locations:

Township 41 North, Range 70 West

- Section 2: SW₄ of the SW₄
- 3: SW₄
- 10: SE₄,
NW₄ and SE₄ of the SW₄,
NE₄,
NW₄
- 11: NW₄ of the SW₄,
NW₄ of the SE₄,
SW₄ of the NE₄,
NW₄ and SE₄ of the NW₄
- 15: NE₄, SE₄ and SW₄ of the NW₄

Powder River Coal Company conducted two 24-hour shut-in tests and two 24-hour pumping tests in 1993. Results of the test are summarized in the table below.

DATE	TIME	STATIC WATER LEVEL (FT.)	FLOW RATE (GPM)	COMMENTS
April 20	0917	903	-0-	Pump Off 3 Hours
April 21	0950	880	-0-	Pump Off 27 Hours
April 22	1000	1604	320	Pump On 24 Hours
September 28	0905	1064	-0-	Pump Off
September 29	0950	1639	340	Pump On 24 Hours
September 30	1150	1018	-0-	Pump Off 26 Hours



MAY 26 1999
Powder River Coal Company
 North Antelope & Rochelle Mines
 Caller Box 3035
 Gillette, Wyoming 82717-3035
 (307) 464-1512 Fax (307) 464-4706



February 5, 1999

Wyoming State Engineer's Office
 Ground Water Section
 Herschler Building - Fourth Floor East
 122 West 25th Street
 Cheyenne, Wyoming 82002

*File in
 with
 117
 113142
 45.
 [Signature]*

RE: 1998 Annual Report for the Rochelle Mine

Dear Sirs:

Enclosed are the Annual Reports for the following permits for 1998:

- Rochelle No. 1 Well (Permit No. U.W. 29356 and 103534)
- Rochelle No. 2 Well (Permit No. U.W. 76141 and 103533)
- West Pit Sump No. 1 (Permit No. U.W. 101749)
- East Pit Sump No. 1 (Permit No. U.W. 101750)

If you have any questions, please contact me at 464-4772.

Sincerely,

[Signature]

Bryan W. Hansen
 Environmental Specialist

Enclosures

C: J. Nadolski
 R. Haroian

ROCHELLE NO. 2 WELL AND ENLARGEMENT, PERMIT NOS. U.W. 76141 AND 103533

A Micrometer flow meter was used to measure water produced from the Rochelle No. 2 Well.

Total pumpage for 1998 was 78,186,200 gallons (239 acre-feet). Water was used for dust suppression and/or sanitary use in the following locations:

Township 41 North, Range 70 West

- Section 1: W 1/2 of the SW 1/4, SW 1/4 of the NW 1/4
- 2: S 1/2, W 1/2 of the NW 1/4
- 3: Entire Section
- 4: E 1/2
- 9: NE 1/4, N 1/2 of the SE 1/4
- 10: N 1/2, SE 1/4, N 1/2 and SE 1/4 of the SW 1/4
- 11: Entire Section
- 12: W 1/2 of the NW 1/4, W 1/2 of the SW 1/4
- 15: NW 1/4
- 16: E 1/2 of the NE 1/4, NE 1/4 of the SE 1/4

Township 42 North, Range 70 West

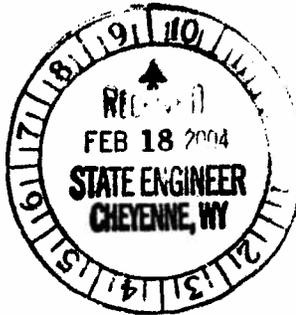
- Section 33: SE 1/4 of the SE 1/4
- 34: S 1/2 of the SW 1/4, S 1/2 of the SE 1/4
- 35: SW 1/4 of the SW 1/4

Powder River Coal Company conducted two 24-hour pump tests and two 24-hour shut-in tests in 1998. Test results are summarized in the table below:

DATE	TIME	STATIC WATER LEVEL (FT.)	FLOW RATES (GPM)	COMMENTS
May 6	0800	1705	0	Pump Off
May 7	0800	839	0	Pump Off 24 Hours/Begin Pumping
May 8	0735	1629	330	Pump On 24 Hours
November 18	0805	1671	500	Pump On
November 19	0755	1751	350	Pump On 24 Hours/Pump Off
November 20	0800	885	0	Pump Off 24 Hours



February 5, 2004



MICRO
FILMED

APR 12 2004

Powder River Coal Company
North Antelope/Rochelle Mine
Call Box 3035
Gillette, Wyoming 82717-3035
(307) 464-0054 Fax: (307) 464-4865

Wyoming State Engineers Office
Ground Water Section
Herschler Building - Fourth Floor East
122 West 25th Street
Cheyenne, WY 82002

Re: 2003 Annual Report for the North Antelope/Rochelle Mine

Dear Sirs:

Enclosed are the 2003 annual reports for the following permits:

- North Antelope Mine No. 201 Well (Permit No. U.W. 53030)
- NARM Well # 4 (Permit No. U.W. 125742)
- NARM Well # 6 (Permit No. U.W. 125740)
- NARM Well # 8 (Permit No. U.W. 133879)
- NARM Well # 9 (Permit No. U.W. 133880)
- NARM Well # 12 (Permit No. U.W. 145454)
- North Antelope Mine Sump I and Enlargement (Permit No U.W. 53031 and U.W. 57655)
- North Antelope Mine Sump II (Permit No. U.W. 61712)
- North Antelope Mine Sump III (Permit No. U.W. 79942)
- North Antelope Mine Sump IV (Permit No. U.W. 79943)
- North Antelope Mine Sump V (Permit No. U.W. 79944)
- West Pit Sump No. 1 (Permit No. U.W. 101749)
- Rochelle No. 1 and Enlargement Well (Permit No. U.W. 29356 and 103534)
- Rochelle No. 2 Well (Permit No. U.W. 76141 and 103533)
- East Pit Sump No. 1 (Permit No. U.W. 101750)

Attached is information pertaining to conditions 3, 4 and 5 of the above permits requiring an annual report stating the total amount of water used, the type of meter used for the measurements, and the areas of use and or application. Conditions 4 and 5 of the permit require at least two measurements of the water level in the well after 24 consecutive hours of pumping and after 24 consecutive hours after pumping had ceased. Conditions 4 and 5 were modified by letter from the SEO on October 6, 1988 to include submittal of available information. Please find this data in attached Table 1: 2003 Pump Test.

Should you have any questions or require further information, please contact me at 464-4730.

Sincerely,

DaLyn Chervenka
Environmental Specialist

CC: Bryan Hansen NARM, Phil Murphee NARM
word/seconrp03.doc

WGHG
FILKIFF

APR 12 2004

North Antelope/Rochelle Mine is divided between a west side and an east side. The following wells and sumps located on the west side (80050, 125742, 125740, 133879, 133880, 145454, 53031, 81742, 79942, 79943, 79944, 491749) are beneficially used in the following west side locations:

T41N R70W: Sec 4, 5, 6, 7, 8, 9, 16, 17, 18, 21

T41N R71W: Sec 1

T42N R70W: Sec 28, 29, 30, 31, 32, 33

T42N R71W: Sec 38



NORTH ANTELOPE MINE NO. 201 WELL PERMIT NO. WMM-53039

The North Antelope Mine # 201 well, located in the SESW Section 16, T41N, R70W, was first put to beneficial use on July 16, 1982. A Proof of Appropriation and Beneficial Use of Ground Water form was sent to your office on December 23, 1982.

The measuring devices presently used in the pumping system from the 201 Well are a Turbo Badger Meter (3-inch) with a totalizer and a Rockwell International (4-inch) Model W-1000 with a totalizer. Total pumpage from the 201 well during 2003 was 74,820,100 gallons (229.6 acre-feet)

NORTH ANTELOPE/ROCHELLE MINE WELL # 4 (U.W. 125742)

Mine well # 4, located NWSW Section 9, T41N R70W, provides water to the facilities as well as for dust suppression. There was 82,262,800 gallons (252.4 acre feet).

NORTH ANTELOPE/ROCHELLE MINE WELL # 6 (U.W. 125740)

Well # 6 was designed to augment natural flow in reclaimed Porcupine Creek. No water was pumped from the well in 2003 because adjacent reclamation is not complete.

NORTH ANTELOPE/ROCHELLE MINE # 8 (U.W. 133879)

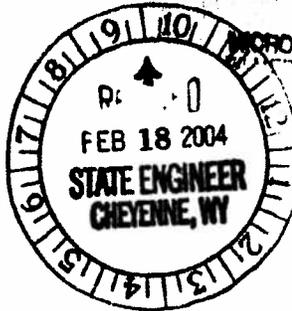
Mine well # 8, located in the NWSE Section 16, T41N R70W was drilled to provide water for facilities but was not pumped in 2003.

NORTH ANTELOPE/ROCHELLE MINE WELL # 9 (U.W. 133880)

Mine well #9, located in the SENW of Section 16, T41N R70W, provides water to the facilities as well as for dust suppression. There was 10,483,200 gallons (32.2 acre feet) pumped in 2003.

NORTH ANTELOPE/ROCHELLE MINE WELL # 12 (U.W. 145454)

Mine # 12, located in the SENE of Section 16, T41N R70, provides water to the facilities as well as for dust suppression. There was 17,280,000 gallons (53.0 acre feet) pumped in 2003.



APR 12 2004

SUMPS

NORTH ANTELOPE MINE SUMP I AND ENLARGEMENT. PERMIT NO. U.W. 7885

No water was pumped from the sump in 2003.

NORTH ANTELOPE MINE SUMP II. PERMIT NO. U.W. 61712

North Antelope Sump II, located in the NESW of Section 16, T41N R70W, was first put to beneficial use on September 20, 1983 and is metered by a 4-inch Model W-1000, manufactured by Rockwell International. Total pumpage for 2003 was 55,753,000 gallons (171.1 acre-feet)

NORTH ANTELOPE MINE SUMP III. PERMIT NO. U.W. 78942

No water was pumped from the sump in 2003.

NORTH ANTELOPE MINE SUMP IV. PERMIT NO. U.W. 78943

Mine Sump #4, located in the SENE of Section 6, T41N R70W. The meter used in 2003 was a Badger 2100 (Solar). A total of 3,321,900 gallons (10.2 acre feet) of water was pumped from the sump in 2003.

The water was used for dust suppression and pollution control. Water was pumped from the sump into one of North Antelope/Rochelle Mine Complex' reservoirs and then into water trucks for use in dust suppression.

NORTH ANTELOPE MINE SUMP V. PERMIT NO. U.W. 78944

Mine Sump #5, located in the NESW of Section 8, T41N, R70W. The meter used in 2003 was a Badger 2100 (Solar). A total of 2,235,900 gallons (6.9 acre-feet) of water was pumped from the sump in 2003. Water was used for dust suppression.

WEST PIT SUMP NO. 1. PERMIT NO. U.W. 101749

A Statement of Completion and Description of Well and Part I of the Proof of Appropriation for U. W. 101749 was sent to the State Engineer's Office on February 4, 1997. The location of this sump is in the NESW Section 8, T41N R70W. 9,516,500 gallons (29.2 acre feet) of water was pumped in 2003.



APR 12 2004

North Antelope/Rochelle Mine is divided between a west side and an east side. The following wells and sumps located on the east side (28358, 103534, 101750) are beneficially used in the following east locations:

T41N R70W: Sec 1, 2, 3, 4, 10, 11, 12, 15

T42N R70W: Sec 26, 27, 33, 34, 35, 36

ROCHELLE NO. 1 WELL AND ENLARGEMENT. PERMIT NO. U.W. 88958 AND 103534

Two meters were used to measure water produced from the Rochelle No. 1 Well. They are a Badger totalizing meter (Model 58305) and a Neptune/Trident totalizing meter. Total pumpage for 2003 was 831,000 gallons (2.6 acre feet).

ROCHELLE NO. 2 WELL AND ENLARGEMENT. PERMIT NOS. U.W. 78441 AND 103533

A Micrometer flow meter was used to measure water produced from the Rochelle No. 2 Well. Total pumpage for 2003 was 38,928,400 (113.3 acre feet). Water was used for dust suppression and/or sanitary use in the following locations:

EAST PIT SUMP NO. 1. PERMIT NO. U.W. 101750

A Statement of Completion and Description of Well and Part I of the Proof of Appropriation for U. W. 101750 was sent to the State Engineer's Office on February 4, 1997. The location of this sump is in the SWNE Section 12, T41N, R70W, of Campbell County. Approximately 6,416,900 gallons (19.7 acre feet) of water was used or pumped from this sump in 2003.

NORTH ANTELOPE/ROCHELLE COAL-DEWATERING WELLS

DW-36-80A (U.W. 125744), DW-36-80B (U.W. 125745), DW-36-80 (U.W. 125748), and DW-36-110 (U.W. 125748) were mined through entirely; therefore, these coal-dewatering wells no longer exist.



APR 12 2004

Table 1: 2003 Pump Test

Pump Tests 2003 Annual Report Year 2003			
Date	Flow Rate (gpm)	SWL (feet)	Comments
201 Well			
November 5, 2002	0	418	Start 24 hours off
November 6, 2002	0	324	End 24 hours off
November 7, 2002	0	297	Begin 24 hours on
November 8, 2002	220	518	End 24 hours on
December 17, 2002	250	311	Start 24 hours off
December 18, 2002	0	293	End 24 hours off
September 2, 2003	0	380	Start 24 hours off
September 3, 2003	0	327	End 24 hours off
September 4, 2003	220	519	End 24 hours on
RCC#1 Well			
November 14, 2002	0	344.2	Start 24 hours on
November 15, 2002	85*	698.7	End 24 hours on
November 19, 2002	0	352.2	Start 24 hours off
November 20, 2002	0	352.2	End 24 hours off
December 17, 2002	0	352.2	Start 24 hours on
December 18, 2002	90*	698.7	End 24 hours on
September 8, 2003	0	375.3	Start 24 hours on
September 9, 2003	90*	675.6	End 24 hours on
September 10, 2003	0	375.3	End 24 hours off
RCC#2 Well			
November 14, 2002	340	1855.8	Start 24 hours off
November 15, 2002	0	1347.6	End 24 hours off
November 19, 2002	350	1855.8	Start 24 hours on
November 20, 2002	340	1867.4	End 24 hours on
December 17, 2002	335	1860.0	Start 24 hours off
December 18, 2002	0	1347.6	End 24 hours off
September 8, 2003	0	1347.6	Start 24 hours off
September 9, 2003	0	1347.6	End 24 hours off
September 10, 2003	325	1821.2	End 24 hours on
NARC#4 Well			
October 1, 2002	0	274	> 24 hours off - Pump Replacement
December 6, 2002	-170	1085	> 24 hours on
December 17, 2002	-170	1073	Start 24 hours off
December 18, 2002	0	634	End 24 hours off

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLER BLDG., 4-E CHEYENNE, WYOMING 82002

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER

CHA 23858
5000
7/22/02

APPLICATION FOR WELLS AND SPRINGS

Note: Only springs flowing 25 gallons per minute or less, where the proposed use is **MICRO** domestic and/or stock watering, will be considered as ground water appropriations. **DEC 23 2002**

FOR OFFICE USE ONLY

PERMIT NO. U.W. 146195

WATER DIVISION NO. 2 DISTRICT 1

U.W. DISTRICT Campbell Co.

Temporary Filing No. U.W. 34-2-160

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

ALL ITEMS MUST BE COMPLETED BEFORE APPLICATION IS ACCEPTABLE

NAME AND NUMBER OF WELL or SPRING 17-1-LFH

1. Name of applicant(s) Thunder Basin Coal Company, LLC Phone: 307-464-2300

2. Address of applicant(s) P.O. Box 406 Wright WY 82732
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

3. Name & address of agent to receive correspondence and notices Eric Sandberg
P.O. Box 406 Wright WY 82732 Phone: 307-464-2338
(MAILING ADDRESS) (CITY) (STATE) (ZIP)

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. Number of stock tanks? _____

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 oil/gas 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: Plant washdown water, pollution control (dust) - see remarks

Monitor, Observation or Test Well: (Describe in REMARKS)

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, SE 1/4 SE 1/4 of Sec. 17, T. 43 N., R. 70 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 5000 feet.

7. (a) MAXIMUM instantaneous flow of water to be developed and beneficially used: 1000 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: 525,600,000
Circle appropriate units: (Gallons) (Acre Feet) A four person family utilizes approximately one (1) acre-foot of water per year or 325,000 gallons.

8. Mark the point(s) or area(s) of use in the tabulation box below.

TABULATION BOX

TWP	RNG	SEC	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTAL				
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼					
			See Attachments																				

9. If for irrigation use:

a. Describe MAXIMUM acreage to be irrigated in each 40 acre subdivision in the tabulation box above.

b. Land will be irrigated from this well only.

c. Land is irrigated from existing water right(s) with water from this well to be additional supply. Describe existing water right(s) under REMARKS.

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

permit # 146195

MICRO FILMED DEC 23 2002

ATTACHMENT SHEET FOR THE 17-1-LFH Well

Township	Range	Section	NE 1/4				NW 1/4				SW 1/4				SE 1/4				Totals
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
43N	70W	16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	22			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	26		X	X		X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	32	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	33	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	34	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	35	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
42N	70W	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
42N	70W	3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	4			X		X	X	X	X	X	X	X			X	X		
43N	70W	7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	70W	9		X	X		X	X	X	X	X	X	X			X	X	X	
43N	70W	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
43N	71W	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
42N	70W	1						X	X				X	X					
42N	70W	4	X	X		X	X	X							X			X	
42N	70W	5	X																
43N	70W	36	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
44N	71W	36			X	X			X	X	X	X	X	X	X	X	X	X	
44N	71W	35			X	X									X	X	X	X	
44N	70W	31										X	X			X	X		
44N	70W	32										X	X			X	X		
44N	70W	33										X	X						

PERMIT NO. 146195
T.F. No. U.W. 34-2-160

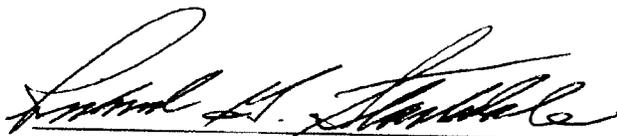
PERMIT STATUS

Priority Date July 22, 2002 Approval Date AUG 12 2002

ADDITIONAL CONDITIONS AND LIMITATIONS:

1. This well may only be completed for production of water from the Lance/Fox Hills Formation. The applicants must obtain written consent from the State Engineer before any ground water may be produced from any geologic formation other than the Lance/Fox Hills Formation.
2. This well will be cased with new or new-like quality casing and will be cemented from a depth of at least ten feet below the top of the Lance/Fox Hills to the land surface to eliminate the commingling of ground water from different aquifers.
3. A meter acceptable to the State Engineer is required to accurately measure the total quantity of water produced from this well.
4. 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 each month during the previous January 1 to December 31, twelve (12) month period.
5. The report shall identify the well by name, location, permit number and shall identify the type of meter used for the measurement.
6. The report shall contain at least two (2) semi-annual measurements of the static water level in the well as measured twenty-four (24) consecutive hours after pumping has ceased. The dates the measurements were obtained and the period of time the well was "shut-in" prior to obtaining the measurements must be specified.
7. The State Engineer may, upon written request, waive all or any portion of these conditions and limitations.
8. This permit will be automatically cancelled **December 31, 2023** unless a written request for an extension of time has been received by the State Engineer prior to **December 31, 2023**.
9. Part I of the Proof of Appropriation is required under this permit. However, Parts II and III are waived.

8/12/02
DATE


Patrick T. Tyrrell, State Engineer
fo

February 3, 2003 - Statement of Completion on December 16, 2002 received.
February 3, 2003 - Proof of Beneficial use on December 16, 2002 received.
February 3, 2003 - Gamma Ray log filed in Electric log drawer.

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DEC 23 2002

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SEP 16 2004

STATE OF WYOMING
OFFICE OF THE STATE ENGINEER
HERSCHLER BUILDING
CHEYENNE, WYOMING 82002
(307) 777-6163

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SEP 16 2004

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL OR SPRING

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

PERMIT NO. U.W. 146195 NAME OF WELL (SPRING) 17-1-LPH

1. NAME OF OWNER THUNDER BASIN COAL CO., LLC

2. ADDRESS P.O. Box 406
 Please check if address has changed from that shown on permit
City Wright State Wyoming Zip Code 82732 Phone No. 307-464-2300

3. USE OF WATER: Domestic Stock Watering Irrigation Municipal Industrial Miscellaneous
Monitor or Test Coal Bed Methane Explain proposed use (Example: One single family dwelling) _____

4. LOCATION OF WELL (SPRING): SE 1/4 SE 1/4 of Section 17, T. 43 N., R. 70 W., of the 6th P.M. (or W.R.M.),
Subdivision Name _____ Lot _____ Block _____

If surveyed, bearing, distance and reference point: _____

5. TYPE OF CONSTRUCTION: Drilled Rotary _____ Dug Driven Other
(Type of Rig)
Describe: _____

6. CONSTRUCTION: Total Depth of Well/Spring 4850 ft. NOTE: See attachment for completion info.
Depth to Static Water Level 780 ft. (Below land surface)

a. Diameter of borehole (Bit size) _____ inches.
b. Casing Schedule New Used
_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____
_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____

*See Attached log for
Construction details*

c. Was casing cemented: Yes No Cemented Interval, From _____ feet to _____ feet.

d. Number of sacks of cement used _____ type of cement _____

e. Perforations: Type of perforator used _____
Size of perforations _____ inches by _____ inches.

Number of perforations and depths where perforated:
_____ perforations from _____ ft. to _____ feet.
_____ perforations from _____ ft. to _____ feet.

f. Was well screen installed? Yes No
Diameter: _____ slot size: _____ set from _____ feet to _____
Diameter: _____ slot size: _____ set from _____ feet to _____

g. Was well gravel packed? Yes No Size of gravel _____

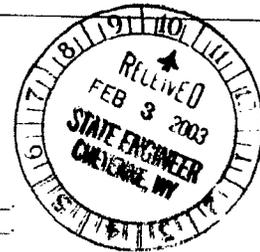
h. Was surface casing used: Yes No Was it cemented in place? Yes No

7. NAME & ADDRESS OF DRILLING COMPANY TYVO, LLC, P.O. Box 500, Upton, WY 82730

8. DATE OF COMPLETION OF WELL (including pump installation) OR SPRING (first used) 12/16/02

9. PUMP INFORMATION: Manufacturer Centralift Type Submersible
Source of power electric Horsepower 230 Depth of Pump Setting or intake 1742 ft
Amount of Water Being Pumped 375 Gallons Per Minute. (For Springs or flowing wells, see item 10.)
Total Volumetric Gallons Used Per Calendar Year. 197,100,000 gallons

10. FLOWING WELL OR SPRING (Owner is responsible for control of flowing well).
If well yields artesian flow or if spring, yield is n/a gal./min. Surface pressure is _____ lb./sq. inch, or _____ feet of water.
The flow is controlled by: valve cap plug
Does well leak around casing? Yes No



Permit No. U.W. 146195

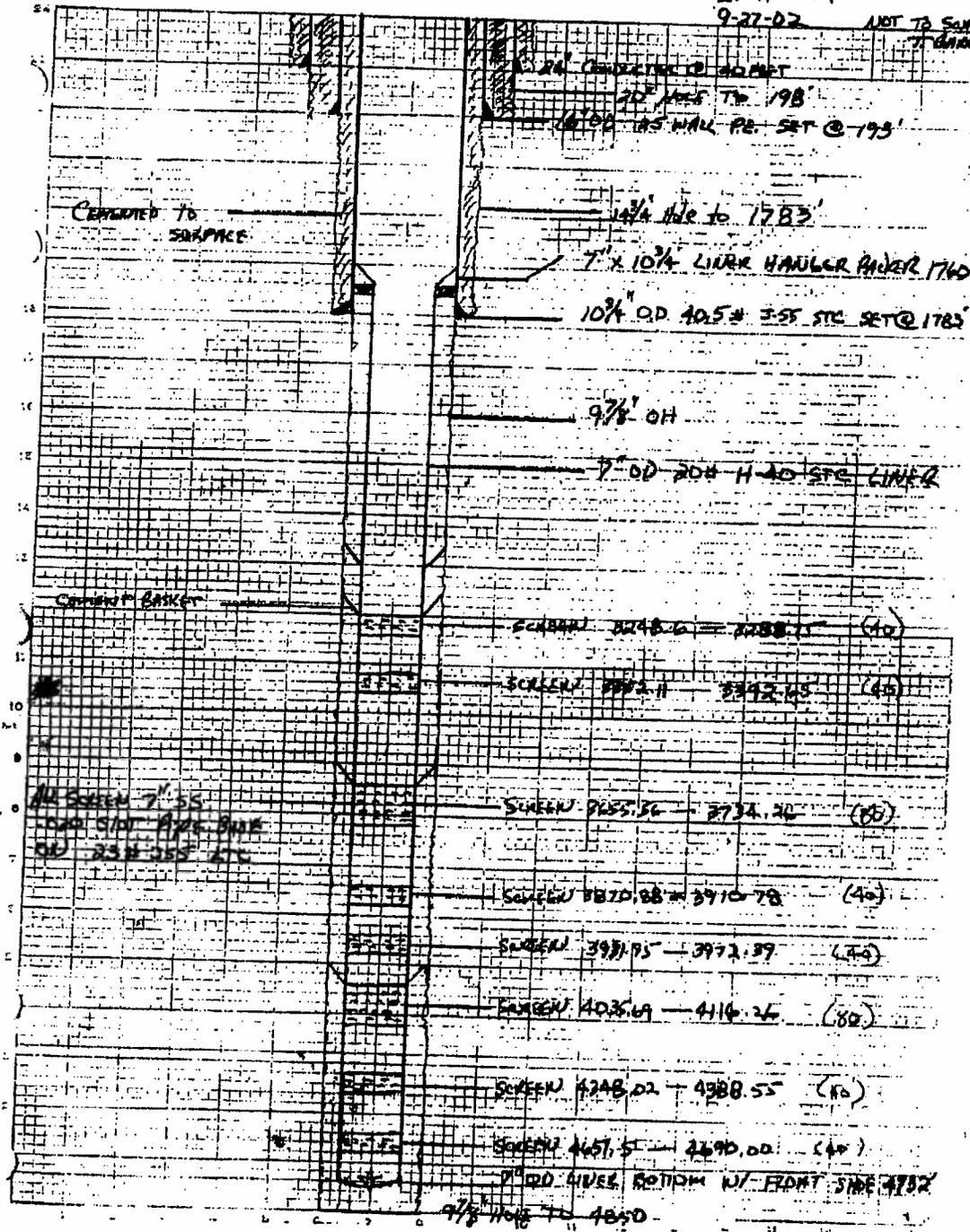
Book No. 1031 Page No. 07

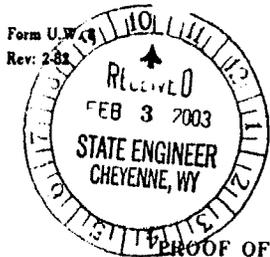
ATTACHMENT SHEET FOR STATEMENT OF COMPLETION
 PERMIT No. U.W. 146195

MICRO FILMED SEP 16 2004

THUNDER BASIN COAL
 LPH - 01

9-27-02 NOT TO SCALE
 1/4" = 100'





NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

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SEP 16 2004

PROOF OF APPROPRIATION AND BENEFICIAL USE OF GROUND WATER

The owner is responsible for submitting Parts I and II of this form. Part III will be prepared by a State Engineer Representative at time of inspection.

PART I

WATER DIVISION 2(1)
 PERMIT NO. U.W. 146195
 NAME OF WELL 17-1-LFH

U.W. DISTRICT CAMPBELL
 DATE OF PRIORITY JULY 22, 2002
 LOCATION SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 17
 T. 43 N., R. 80 W.

- Name of Claimant(s) THUNDER BASIN COAL CO., LLC
- Address P.O. Box 406, Wright, WY 82732 Zip Code _____
- For What Purpose(s) is Water Used? Use: industrial Date First Used 12/16/02
 Use: _____ Date First Used: _____ Use: _____ Date First Used: _____

If use is for irrigation, give date irrigation was completed on all lands under this Permit: _____

MAP NOT RECORDED

PART II

Etc. Irrigation, Industrial, Municipal and Miscellaneous Wells

A plat which has been certified by a licensed professional engineer or land surveyor shall be submitted to accompany this form. The plat shall be in accordance with Sec. 33-29-111 Wyoming Statutes 1977 or see Chapter V and VI, Manual of Regulations and Instructions issued by the State Engineer's Office. (Minimum scale shall be 2" = 1 mile.) The map shall be prepared with waterproof black ink on tracing linen or an acceptable equivalent and shall show on a suitable scale the legal subdivisions, the accurate location of the well or wells, storage facilities, if any, main canals, streams, highways and other important cultural features. Land ownership will be shown, if there is more than one owner under the permit.

IRRIGATION WELLS

Acreage irrigated under terms of this permit will be clearly shown with a distinctive pattern and a distinction clearly made between lands having an original supply and those provided a supplemental supply. Where use is for supplemental supply for lands with a right from another source, indicate the priority or permit number of the source, the source of supply and the name of the ditch, pipe line or other well. Conveyance system will be shown and described. Indicate method of irrigation being used.

INDUSTRIAL WELLS

In addition to the information outlined above, industrial users will locate and describe conveyance facilities to the point(s) of use, giving as accurately as possible the location of points of use. Permits for other sources of water must be identified.

MUNICIPAL WELLS

The plat will show the area of use and show and describe the means of conveyance of the water from the well to the connection with the distribution system for a municipal water system.

MISCELLANEOUS WELLS

- The linen plat for wells where the use is described as miscellaneous and where the yield flow of the well exceeds twenty-five (25) gallons per minute must show the area of use and describe and show the means of conveyance from the well to the distribution system and/or points of use.
- The plat for wells where the use is described as miscellaneous and where the yield or flow is twenty-five (25) gallons per minute or less may be a 7 1/2 minute United States Geological Survey Quadrangle map in lieu of a linen tracing provided the U.S. Geological Survey Quadrangle map is in compliance with the following conditions:
 - The entire United State Geological Survey quadrangle map must be submitted to the State Engineer's Office.
 - The scale on said quadrangle map must be one to twenty-four thousand.
 - An identified section corner or quarter corner must be shown on said quadrangle map along with Section, Township and Range.
 - The section in which the well is located and the section(s) where the area(s) or point(s) of use are located must be subdivided into forty (40) acre tracts and the well location and area(s) or point(s) of use clearly labeled and described.
 - Said quadrangle map showing the well location and area(s) or point(s) of use must be certified by a professional engineer or land surveyor licensed to practice within the State of Wyoming.

SEE REVERSE SIDE

MICRO
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SEP 16 2004

TYVO, LLC
PO Box 500
Upton, WY 82730
Telephone: 307-686-1125
Fax: 307-686-1158

Thunder Basin Coal Company

Well LFH - 01

12-26-02

Pumping Water Level 1,614 (2 weeks) (363 gpm)
Airline Setting 1,704
Pump Length 38.26'
Bottom of Pump @ 1,742
On 39 Joints (1,704)
5 1/2" OD 15.5 # Pipe
Water Temperature 120.5° F
Conductivity 2,475



MICRO
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Form U.W. 6

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

IF WELL IS TO BE
ABANDONED, SEE
ITEM 15, PAGE 4

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL

(For wells used only for stock or domestic purposes, use Form U.W. 7)

PERMIT NO. U.W. 11012

NAME OF WELL Central - WSW # 5-2

1. NAME OF OWNER Inexco Oil Company

2. ADDRESS 308 Lincoln Tower Building, Denver, Colorado Zip Code 80203

3. USE OF WATER: Domestic Stock Watering Irrigation Municipal Industrial Commercial
Other Waterflood Operations

4. LOCATION OF WELL: NW 1/4 NW 1/4 of Section 7, T. 44 N., R. 70 W., of the 6th P.M. (or W.R.M.), Wyoming, being specifically 750' ENL - 1140' ENL
(Bearing and Distance)
or ft. North and ft. East from the corner of Section T. N., R. W.
(Strike out words not needed).

5. TYPE OF CONSTRUCTION: Drilled Rotary Dug Driven Jetted
(Type of Rig)

6. CONSTRUCTION: Total Depth 4940 ft. Depth to Water Level Unknown ft. (Behind Surface Casing)

a. Casing Schedule New Used

13 3/8 diameter from Surface ft. to 706 ft. Material _____ Gage _____
8 5/8 diameter from Surface ft. to 4939 ft. Material _____ Gage _____
_____ diameter from _____ ft. to _____ ft. Material _____ Gage _____

b. Perforations: Type of perforator used _____

Size of perforations 0.10 inches by 0.10 inches. Jet Shots

Number of perforations and depths where perforated:

3432 perforations from 2004 ft. to 4830 feet. net of 858' of sand perforated
_____ perforations from _____ ft. to _____ feet.

c. Was well screen installed? Yes No

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

Diameter: _____ slot size: _____ set from _____ feet to _____ feet.

d. Was well gravel packed? Yes No Size of gravel _____

e. Was surface casing used Yes No Was it cemented in place? Yes No

7. NAME & ADDRESS OF DRILLER Stuarco Drilling Co. 2117 First National Bank Building
Denver, Colorado 80202

8. DATE OF COMPLETION OF WELL (including pump installation) September, 1972

9. PUMP INFORMATION: Manufacturer Reda Pump Co. Type J-400 Submersible

Source of power Electric Horsepower 400 Depth of Pump Setting 3540

Amount of Water Being Pumped 408 Gallons Per Minute.

Permit No. U.W. 11012

Book No. 60 Page No. 55

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Township	Range	Sec.	NE $\frac{1}{4}$				NW $\frac{1}{4}$				SW $\frac{1}{4}$				SE $\frac{1}{4}$				TOTALS
			NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	
44N	70W	7						X											Water Supply Well
44N	70W	6						X											Inj. Well
44N	70W	7						X											" "
44N	70W	8											X						" "
44N	70W	18						X											" "
44N	71W	1						X											" "
44N	71W	2						X											" "
44N	71W	11						X											" "
44N	71W	12						X											" "
44N	71W	13						X											" "

TOTAL NUMBER OF ACRES TO BE IRRIGATED _____

Original Supply _____ acres

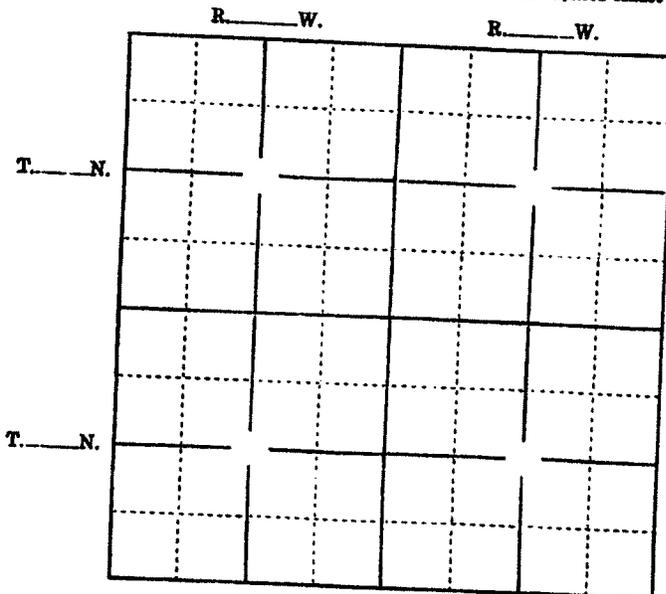
Supplemental Supply _____ acres

14. PLAT

a. If the well is to be used for irrigation, industrial, public utility or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.



Scale: 2" = 1 Mile

See Plat submitted with application for permit

REMARKS: Water is conveyed by buried steel line pipe

16. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment below.

It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

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

W.P. Emmett
Signature of Owner or Authorized Agent

8/13 19 73
Date

Date of Receipt AUG 15 1973 AB 19 73

Date of Priority October 27 19 71

Date of Approval Oct. 25 19 73

[Signature]
for State Engineer

4565 5-2-72

MICROFILMED JUN 6 '72
MICROFILMED FEB 11 '74

Form U.W. 6

NOTE: Do not fold this form. Use typewriter or print neatly with black ink.

IF WELL IS TO BE ABANDONED, SEE ITEM 15, PAGE 4

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

STATEMENT OF COMPLETION AND DESCRIPTION OF WELL

(For wells used only for stock or domestic purposes, use Form U.W. 7)

PERMIT NO. U.W. 11002 NAME OF WELL Central - WSW #1-1

- NAME OF OWNER INEXCO OIL COMPANY
- ADDRESS 308 Lincoln Tower Building, Denver, Colorado Zip Code 80203
- USE OF WATER: Domestic Stock Watering Irrigation Municipal Industrial Commercial
Other Waterflood operations.
- LOCATION OF WELL: NE 1/4 SW 1/4 of Section 16, T. 45 N., R. 70 W., of the 6th P.M. (or W.R.M.), Wyoming, being specifically 2610' FSL and 1790' FWL
(Bearing and Distances)
or _____ ft. North and _____ ft. East from the _____ corner of Section _____, T. _____ N., R. _____ W.
(Strike out words not needed).
- TYPE OF CONSTRUCTION: Drilled Rotary _____ Dug Driven Jetted
(Type of Rig)
Other _____
- CONSTRUCTION: Total Depth 4453 ft. Depth to Water Level unknown ft. (behind surface casing)
 - Casing Schedule New Used

<u>13-3/8"</u> diameter from <u>SURFACE</u> ft. to <u>729</u> ft.	Material _____	Gage _____
<u>8-5/8"</u> diameter from <u>729</u> ft. to <u>4445</u> ft.	Material _____	Gage _____
_____ diameter from _____ ft. to _____ ft.	Material _____	Gage _____
 - Perforations: Type of perforator used G. O. WIRELINE SERVICES
Size of perforations 0.10 inches by 0.10 inches. Jet shots
Number of perforations and depths where perforated:
2781 perforations from 2030 ft. to 4324 feet. Net of 650' of sand perforated.
_____ perforations from _____ ft. to _____ feet.
- Was well screen installed? Yes No
Diameter: _____ slot size: _____ set from _____ feet to _____ feet.
Diameter: _____ slot size: _____ set from _____ feet to _____ feet.
- Was well gravel packed? Yes No Size of gravel _____
- Was surface casing used Yes No Was it cemented in place? Yes No
1302 Old National Bank Building
- NAME & ADDRESS OF DRILLER Lohmann-Johnson Inc. Evansville, Indiana 47708
- DATE OF COMPLETION OF WELL (including pump installation) April, 1972
- PUMP INFORMATION: Manufacturer Reda Pump Company Type downhole
Source of power Electric Horsepower 200 Depth of Pump Setting 2570'
Amount of Water Being Pumped 350 Gallons Per Minute.

13. TABULATION

a. If for irrigation, the land proposed to be irrigated should be described in the following tabulation. Describe in the "Remarks" section, under Item 14, the means of conveying the water to the lands and the method of irrigation.

(Give irrigable acreage in each legal subdivision. If proposed use is for supplemental supply for lands with a right from another source, indicate in the tabulation the priority or permit number, the source of supply and the name of the ditch or other well.)

b. If not used for irrigation, show the area and point(s) of use and location of well in the tabulation below. Also describe the method of conveyance in the "Remarks" section under Item 14.

Township	Range	Sec.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTALS
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	
45N	70W	16	X							X									Water well
45N	70W	9																X	Injection well
45N	70W	15																X	Injection well
45N	70W	16																X	Injection well

TOTAL NUMBER OF ACRES TO BE IRRIGATED _____

Original Supply _____ acres

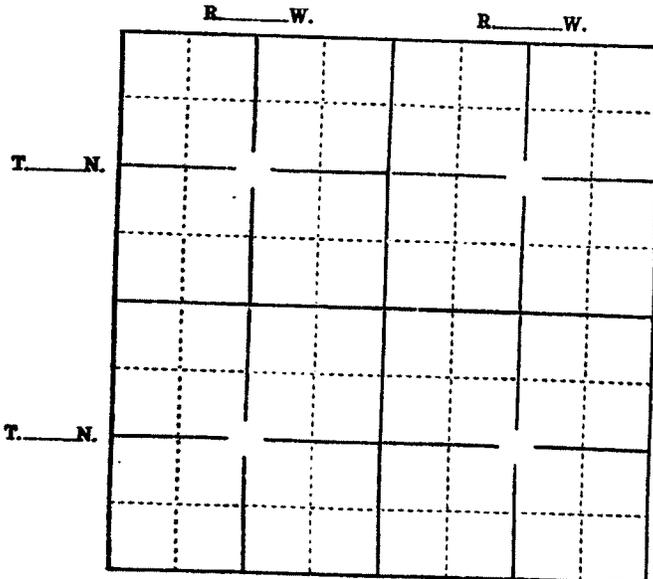
Supplemental Supply _____ acres

14. PLAT

a. If the well is to be used for irrigation, industrial, public utility or municipal use, show the location of the well on the plat below. For such uses, a plat certified by a licensed engineer or land surveyor is required to be submitted at the time the Proof of Appropriation and Beneficial Use of Ground Water is submitted.

b. For other uses, accurately show the well location, point of use or uses and describe method of conveyance of water to points of use on plat and in "Remarks" section below. Make certain location on plat agrees with written description.

c. A separate map may be submitted if the information required cannot be shown on this plat.



Scale: 2" -- 1 Mile

See plat submitted with Application for Permit.

REMARKS: Water is conveyed by buried steel line pipe.

15. IF WELL IS TO BE ABANDONED, complete Items 1 through 8, Item 12 (Log of Well) and state reason for abandonment below.
It is the responsibility of the owner to properly plug or fill in the well in order to prevent contamination of ground water and to cover or cap the well at ground level.

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

V.P.L.
Signature of Owner or Authorized Agent

4/27 1972
Date

MAY 1 1972 PLS
Date of Receipt 19

October 27 1971
Date of Priority

May 18 1972
Date of Approval

Richard D. J. [Signature]
for State Engineer

APPENDIX B

CAMPBELL COUNTY WELL INVENTORY

Campbell County Well Permits between 3,000 feet deep and 7300 feet deep producing >100 GPM

Permit #	Terminals	Flow	Depth	Hydro-Surface	Applicant	Facility Name	Total Actual	Well Depth
P27437W	56	N	73	W	RANGER OIL CO.	WS-1	100	3350
P9926W	47	N	69	W	TENNECO OIL COMPANY	WSW 3	100	3380
P93629W	56	N	75	W	NORTH FINN	ENL. JOE CREEK UNIT WSW #1	100	3850
P51935W	55	N	74	W	CRYSTAL EXPLORATION & PRODUCTION CO.**LEON ODEKOVEN	ENL. ODEKOVEN WATER SUPPLY WELL #1	100	4010
P81533W	54	N	73	W	NORTH FINN	#1 NORTH CARSON WATERSUPPLY	100	4100
P28296W	48	N	71	W	W. A. MONCRIEF	ROURKE #9	100	4480
P81378W	46	N	74	W	L. P. GLG ENERGY	HOUSE CREEK NORTH UNIT WATER SUPPLY WELL #1	110	6500
P14805W	55	N	73	W	DAVIS OIL CO.	ROGERS MUDDY SAND UNIT WATER SUPPLY #1	117	3500
P14805W	55	N	73	W	DAVIS OIL CO.	ROGERS MUDDY SAND UNIT WATER SUPPLY #1	117	3500
P56459W	45	N	75	W	EXXON COMPANY U.S.A.**ALBERT W. SCHLAUTMANN	HARTZOG DRAW UNIT WATER SUPPLY WELL #2	117	7168
P59135W	45	N	75	W	ALBERT W. SCHLAUTMANN** EXXON MOBIL CORPORATION	ENL. OF HARTZOG DRAW UNIT WATER SUPPLY WELL #2	117	7168
P1232W	50	N	72	W	CITY OF GILLETTE	FOXHILLS #1	125	3479
P27742W	49	N	74	W	UNION OIL COMPANY OF CALIFORNIA	W.S.W. #1	145	5580
P97251W	41	N	73	W	KERR-MCGEE CORP.	33-8 WSW	146	6840
P59134W	44	N	75	W	ALBERT W. SCHLAUTMANN** EXXON MOBIL CORPORATION	ENL. OF HARTZOG DRAW UNIT WATER SUPPLY WELL #1	146	7252
P52981W	44	N	75	W	EXXON COMPANY U.S.A.**ALBERT W. SCHLAUTMANN	HARTZOG DRAW UNIT WATER SUPPLY WELL #1	146	7252
P59152W	56	N	73	W	INC. BRUG LAND & LIVESTOCK CO.	WS1	150	3350
P59152W	56	N	73	W	INC. BRUG LAND & LIVESTOCK CO.	WS1	150	3350
P59152W	56	N	73	W	INC. BRUG LAND & LIVESTOCK CO.	WS1	150	3350
P91978W	57	N	73	W	JIN EXPLORATION & PRODUCTION	MCCLOURE #32-11 WSW	158	3030
P82755W	43	N	72	W	DEAN COSNER**KERR MCGEE CORP.	WATER SUPPLY WELL #3	160	6150
P82754W	45	N	73	W	ODEKOVEN WATER & HOT OIL, INC.**KERR MCGEE CORP.	WATER SUPPLY WELL #2HOUSE CREEK UNIT	160	6350
P24598W	57	N	75	W	ATLANTIC RICHFIELD CO.	ENL. RECLUSE NORTH UNIT W.S.#1	175	4000
P55070W	47	N	71	W	BOWDEN ENERGY COMPANY	DUVALL 1 20	181	4650
P62986W	50	N	72	W	INTEGRITY OIL & GAS COMPANY	MOONEY #1 (W.S.W.#1)	190	4150
P14239W	56	N	72	W	PACIFIC ENTERPRISES OIL CO (USA)	WHITTAIL UNIT WSW #1	200	3040
P14239W	56	N	72	W	PACIFIC ENTERPRISES OIL CO (USA)	WHITTAIL UNIT WSW #1	200	3040
P63392W	50	N	72	W	INTEGRITY OIL AND GAS COMPANY	ENL. MOONEY #1 (W.S.W.#1)	200	4150

Campbell County Well Permits between 3,000 feet deep and 7300 feet deep producing >100 GPM

Permit #	Overhead	The Permit	Depth	Well Status	Applicant	Facility Name	Yield Acre-ft	Well Depth
P11009W	45	N	71	W	INEXCO OIL CO.	CENTRAL WSW #4.1	200	5000
P139977W	44	N	74	W	YATES PETROLEUM CORP.	URBAN CS FEE #1	200	7067
P66144W	50	N	72	W	CITY OF GILLETTE	ENL FOX HILLS #3	210	4436
P2040W	50	N	70	W	ATLANTIC RICHFIELD COMPANY	ROZET UNIT WS WELL #1	230	3138
P2083W	50	N	70	W	ATLANTIC RICHFIELD COMPANY	ROZET UNIT W. S. #2A	233	3075
P59136W	44	N	75	W	ALBERT W. SCHLAUTMANN** EXXON MOBIL CORPORATION	ENL OF HARTZOG DRAW UNIT WATER SUPPLY WELL #3	233	7105
P56845W	44	N	75	W	EXXON COMPANY U.S.A.**ALBERT W. SCHLAUTMANN	HARTZOG DRAW UNIT WATER SUPPLY WELL #3	233	7105
P11007W	45	N	71	W	INEXCO OIL CO.	CENTRAL WSW #3.1	250	4750
P2084W	50	N	70	W	ATLANTIC RICHFIELD COMPANY	ROZET UNIT W.S. #3A	271	3307
P11004W	45	N	70	W	INEXCO OIL CO.	CENTRAL WSW #2.1	275	4510
P71834W	44	N	72	W	WRIGHT WATER AND SEWER DISTRICT	RJ 4	300	3015
P5156W	57	N	75	W	T. R RANCH LIABILITY CO. LTD	RECLUSE NORTH UNIT W S #1	300	4000
P11011W	44	N	71	W	INEXCO OIL CO.	CENTRAL WSW #5.1	300	5110
P42028W	50	N	72	W	CITY OF GILLETTE** BLACK HILLS POWER & LIGHT COMPANY	ENL FOX HILLS #3	340	4436
P30005W	50	N	72	W	CITY OF GILLETTE	FOX HILLS #3	340	4436
P9258W	46	N	71	W	INEXCO OIL CO.	GRADY UNIT WATER WELL #1	350	4830
P11012W	44	N	70	W	INEXCO OIL CO.	CENTRAL WSW #5.2	350	4940
P63396W	50	N	72	W	INTEGRITY OIL & GAS COMPANY	WSW #2	355	4140
P9259W	46	N	71	W	INEXCO OIL CO.	GRADY UNIT WATER WELL #2	357	4830
P69133W	44	N	75	W	EARL CAMBLIN, ATTORNEY** EXXON MOBIL CORPORATION	HARTZOG DRAW UNIT WATER SUPPLY WELL #5	365	7095
P66605W	44	N	75	W	LARRY GILBERTZ** EXXON MOBIL CORPORATION	HARTZOG DRAW UNIT WATER SUPPLY WELL #4	365	7168
P11003W	45	N	70	W	INEXCO OIL CO.	CENTRAL - WSW #1-2	374	4358
P6856W	56	N	74	W	T. R. RANCH LIABILITY CO. LTD	RECLUSE NORTH UNIT W S #2	375	3850
P67365W	47	N	71	W	CORDERO CORDERO MINING COMPANY	PW 23-1	375	4130
P146195W	43	N	70	W	THUNDER BASIN COAL COMPANY	17-1-LFH	375	4850
P142303W	51	N	72	W	WESTERN FUELS - WYOMING, INC.	FOX HILLS # 1	400	3820
P11005W	45	N	70	W	INEXCO OIL CO.	CENTRAL WSW #2.2	400	4425
P76141W	41	N	70	W	ROCHELLE COAL COMPANY	ROCHELLE #2	400	5265

Campbell County Well Permits between 3,000 feet deep and 7300 feet deep producing > 100 GPM

Permit #	Township	Well Class	Depth	Well Depth	Applicant	Property Name	Field Name	Well Depth
P2509W	57	N	74	W	AMOCO PRODUCTION COMPANY	WATER SUPPLY WELL #1	420	3430
P4423W	55	N	73	W	AMOCO PRODUCTION COMPANY	WATER SUPPLY #1 WELL (COLLUMS FIELD)	420	3502
P14810W	51	N	71	W	AMOCO PRODUCTION COMPANY	SPRINGEN RANCH WATER SUPPLY #2	450	3620
P12773W	53	N	72	W	CHEVRON OIL COMPANY - WESTERN DIVISION	GAS DRAW UNIT WATER SOURCE WELL #2	475	3479
P12772W	54	N	72	W	CHEVRON OIL COMPANY - WESTERN DIVISION	GAS DRAW UNIT WATER SOURCE WELL #1	475	3703
P108708W	50	N	72	W	CITY OF GILLETTE	FOX HILLS #5	500	4170
P60723W	50	N	72	W	CITY OF GILLETTE	FOXHILLS #4	550	4350
P149556W	50	N	71	W	BLACK HILLS CORPORATION D/B/A BLACK HILLS POWER AND LIGHT CO.	WYODAK WELL NO. 14	600	3654
P9928W	51	N	71	W	AMOCO PRODUCTION COMPANY	SPRINGEN RANCH WATER SUPPLY #1	625	3685
P85458W	50	N	72	W	CITY OF GILLETTE	BNL FOX HILLS #3	950	4436
						Average Production Rate (gpm)	275	

APPENDIX D
2012 ENVIRONMENTAL SUMMARY



February 8, 2012

Mr. Michael J. Ruffatto
President
North American Power Group, Ltd
8480 East Orchard Road, Suite 4000
Greenwood Village, Colorado 80111-5027

Subject: Environmental Summary for the 2012 Project Update

Dear Mike:

This letter report presents a summary of the current environmental monitoring being conducted in the vicinity of the project by the Black Thunder Mine, and a summary of consultation with the Wyoming Game and Fish Department (WGFD) for the project. **Attachment 1** to this letter includes a summary of the environmental work completed to-date at the Two Elk project site. This information is being provided in accordance with a letter request from the Wyoming Department of Environmental Quality's (WDEQ) Industrial Siting Council (ISC) dated April 26, 2011 and a follow-up meeting in Cheyenne, Wyoming on July 21, 2011.

Current Environmental Monitoring

The Black Thunder Mine occurs immediately adjacent to the Two Elk project site (**Attachment 2**). The mine has conducted annual environmental surveys at the mine since the mid-1980's in accordance with WDEQ, Land Quality Division (LQD) Coal Rules and Regulations. Surveys are conducted for big game, upland game birds, raptors, lagomorphs (rabbits and hares), migratory birds, federally listed species, and waterfowl and shorebirds. Methods and results of the 2008 to 2011 surveys are summarized below.

- Big game - Bi-annual surveys are conducted by vehicles and light wing aircraft, and include the Black Thunder mine and a 2-mile perimeter, which includes the Two Elk project site. The last survey was conducted in 2010 and found pronghorn, mule deer, and elk. Approximately 2,039 pronghorns, 91 mule deer, and 25 elk were found in the 2-mile perimeter that includes the Two Elk project site.
- Upland game birds - Upland game birds, namely sage grouse, are surveyed by vehicle every third year. The last survey was conducted in 2010. The nearest occupied sage grouse lek is the Payne lek located approximately 3.4 miles south of the Black Thunder Mine permit area and the Two Elk project site.

- Raptors - Raptor surveys are conducted annually by aerial and vehicular surveys and include the Black Thunder mine and a 2-mile perimeter, which includes the Two Elk project site. No raptor nests were found within 1 mile of the Two Elk project site.
- Lagomorphs – Nighttime vehicular surveys are conducted annually as an index of prey for raptors. The 2011 surveys found an average of 1.3 animals per mile, which was a slight increase from the previous year. Lagomorph populations are cyclic in nature, and the population in this area appears to be recovering from an outbreak of tularemia that affected the population between 2007 and 2010.
- Migratory birds including shorebirds and waterfowl – Annual pedestrian and vehicular surveys are conducted on the Black Thunder Mine and a 0.5 mile perimeter, which includes the Two Elk project site. In 2011, suitable nesting habitat was identified for 17 of the 40 Migratory Bird Species of Management Concern for coal mines in Wyoming. Sixteen species of concern were documented on or within 0.5 mile of the Black Thunder Mine.
- Federally listed species – There are currently four species in Campbell County listed or involved in the Endangered Species Act (ESA) listing process: the blowout penstemon (endangered); Ute ladies'-tresses orchid (threatened); greater sage-grouse (candidate); and mountain plover (proposed). Mountain plover and sage grouse surveys are conducted simultaneously with surveys for other bird species. No suitable habitat for the blowout penstemon or the Ute ladies'-tresses orchid exists at the Black Thunder Mine. No federally listed species have been encountered in the area. The black-footed ferret is no longer a federally listed species in Campbell County and a block clearance for this species has been issued throughout Wyoming; however, the Black Thunder Mine continues to document black-tailed prairie dog colonies on the mine and within a 2-mile buffer around the perimeter. In 2011, approximately 1,110 acres of prairie dog colonies were found within the 2-mile perimeter of the mine, which includes the Two Elk project site.

Wyoming Game and Fish Department Consultation

Tetra Tech initiated informal consultation with the WGFD in December of 2006. Tetra Tech requested that WGFD respond regarding any wildlife issues of concern and any required surveys that should be conducted within a 3-mile buffer of the Two Elk project site. In January of 2007, WGFD offered the following comments (**Attachment 3**):

- Although there is designated crucial winter range for elk within the buffer, WGFD expects minimal impacts to this species since this habitat lies more than 2 miles from the project site.
- Sage grouse use this general area, but there are no known sage grouse leks within 3 miles of the project site.



- Bald eagles winter in the vicinity, and other raptor species use the area throughout the year. To minimize impacts to these species, WGFD recommends burying power lines or using design criteria for overhead lines as outlined in the Avian Power Line Interaction Committee (APLIC 2006) guidelines.

We appreciate the opportunity to provide environmental services for the Two Elk project. Please call me if you have any questions at 303.447.1823.

Sincerely,
TETRA TECH

A handwritten signature in blue ink that reads 'Selina Koler'.

Selina Koler

Enclosed: Attachment 1 – Summary of Environmental Conditions at the Two Elk Project Site
Attachment 2 – Figure of Black Thunder Mine and Two Elk Project Site
Attachment 3 – Consultation Letter from WGFD



October 31, 2007

Mr. Michael J. Ruffatto
President
North American Power Group, Ltd
8480 East Orchard Road, Suite 4000
Greenwood Village, Colorado 80111-5027

Subject: Summary of Environmental Conditions at the Two Elk Project Site

Dear Mike:

This letter report presents an updated summary of the existing conditions at the Two Elk project site with regard to environmental resources. Tetra Tech has assessed the environment at the project site, located in Section 36, Township (T) 43 North (N), Range (R) 70 West (W), and within any additional resource-specific Areas of Impact (AOI). The project access road is not included in this report because it has already been permitted and is under construction. The findings presented in this document are based on review of past Two Elk project documentation, review of geographic information system (GIS) data and aerial photography, agency consultation, desktop analysis, and field surveys conducted in August and September 2007. The methods and findings for the following resource areas are presented below: land use and recreation, hazardous substances, noise, visual resources, cultural resources, surface water, wetlands, vegetation, and wildlife.

Land Use and Recreation

The AOI for land use and recreation is the project site and immediately surrounding lands. Land use in the vicinity of the project site is primarily surface mining operations. The project site is located immediately east of the Black Thunder Mine, the nation's largest surface coal mine. Other major coal mines in the vicinity include North Antelope/Rochelle and Jacobs Ranch. Oil and gas extraction and transport is also common in the area. Other land uses in the area include livestock grazing, recreational hunting for big game, and dry-land crops (URS and WEST 2000, WY-GAP 1996). The nearest recreational area mapped by the Wyoming Gap Analysis Project (WY-GAP, 1996) is Keyhole State Park, located 48 miles northeast of the project site, near Moorcroft. Based on the predominantly industrial setting of the project site, Tetra Tech anticipates no land use conflicts (including recreation) for the Two Elk project.



Hazardous Substances

The AOI for hazardous substances is the project site. In 2000, a Phase I Environmental Site Assessment (ESA) was conducted in all of Section 36 and various adjacent areas (GROUND 2000). This assessment was conducted to recognize obvious environmental conditions associated with hazardous substances or petroleum products with a potential to impact the Property. The ESA report was based on collection of data for the Property in question per the ASTM Standard E 1527-00, including review of historical records and maps, historical aerial photographs, a search of regulatory agency records, and a site reconnaissance. GROUND concluded that the existing on-site oil well/distribution facility is representative of a *de minimus* condition and in proper working order, does not present a significant material risk or harm to public health or environment, and generally would not be the subject of an enforcement action if brought to the attention of the appropriate governmental agency. The assessment found no evidence of "recognized environmental conditions" in connection with the subject Property as of November 28, 2000.

Noise

Current sources of noise in the vicinity of the project site include mining operations at the Black Thunder Mine, immediately west of the project site, and traffic on State Highway 450, 1 mile north of the project site. Based on review of aerial photography (NAIP 2006) and field reconnaissance on August 22, 2007, Tetra Tech has determined that the closest structure that may be a sensitive noise receptor (e.g., residence, school, hospital) is located in the northwest quarter of Section 7 T42N R69W, approximately 1.25 miles south-southeast of Section 36. Tetra Tech anticipates no noise issues for the Two Elk project, based on the existing sources of noise in the area and the distance of the project site from sensitive noise receptors.

Visual Resources

The AOI for visual resources is the viewshed encompassing the project site, as viewed from the primary public viewing point in the area. Tetra Tech conducted a site visit on August 22, 2007 to assess the project's viewshed. The project's primary public viewing point will be from State Highway 450, which runs generally east-west approximately 1 mile north of the project site. The current dominant feature in this viewshed is the Black Thunder Mine, immediately west of the Two Elk project site, which consists of visible elements such as significant surface disturbance, facilities, equipment and vehicles, dust and smoke, telephone lines, and electric transmission and distribution lines. Other components of the viewshed include undeveloped riparian and grassland/shrubland mixed habitats. The extent to which the Two Elk facilities will be visible from the highway is limited because of topography that extends between the highway and the project site. Similarly, visibility of the project will be limited on School Creek Road, which runs generally north-south approximately 0.75 mile east of the project site, because of topography that extends between that road and the project site. Furthermore, traffic volumes on State Highway 450 are very low (Felsburg Holt & Ullevig 2005). Based on the projected limited visibility of the project



facilities and the existing industrial setting of the project's viewshed, Tetra Tech anticipates no conflicts with regard to scenic quality.

Cultural Resources

The AOI for cultural resources is locations where ground disturbance may occur, which would include the permanent footprint of the project and the temporary use areas such as construction laydown areas. Tetra Tech's subcontractor, Antiquus, conducted a Class I file search of Section 36 with the Wyoming State Office of Historic Preservation. The file search revealed that five previous inventories had been conducted in portions of this section, including one for the Two Elk project (Powers 2000). One site had been recorded in this section (an historic cairn), but it was not considered to be eligible for listing on the National Register of Historic Places (NRHP). On September 7 through 15, 2007, Antiquus conducted a Class III intensive pedestrian cultural resource inventory of 585 acres in Section 36, which included all portions of the section that were not surveyed in 2000. The results of the 2007 pedestrian survey included relocation of the previously recorded ineligible site and two new records of isolated finds (IFs). Antiquus concluded that none of the cultural resources within Section 36 are significant cultural properties. Tetra Tech has submitted the 2007 inventory report (Antiquus 2007) to the Wyoming State Historic Preservation Office (SHPO) to obtain concurrence.

Surface Water

The AOI for surface water is the Upper Cheyenne River Basin (EPA 2007, URS 2005). The project site occurs approximately 1 mile south of the confluence of the intermittent waterways Little Thunder Creek and North Prong Little Thunder Creek and approximately 1 mile west and north of the intermittent School Creek.

In order to identify the extent and characteristics of waters of the United States (WUS) at the project site, Tetra Tech conducted a desktop data review followed by a field survey of Section 36 on August 22, 2007. Desktop review of topographic maps (USGS 1971), aerial photography (NAIP 2006), National Wetlands Inventory (NWI) data (USFWS 1980-1982), and National Hydrography Dataset (NHD) data (USGS 2006) indicated that no perennial waters occur within the section, that one intermittent drainage may be present, and that ephemeral drainages may occur in the section.

During the field visit, the locations mapped as potential WUS were assessed for the presence of open water or a defined bed and bank. It was determined that the features at the project site do not meet these criteria for WUS.

Wetlands

The AOI for wetland resources is the project site where ground disturbance may occur, which would include the permanent footprint of the project and temporary use areas such as construction laydown areas. In order to identify the extent and characteristics of U.S. Army Corps of Engineers



(USACE) jurisdictional wetlands at the project site, Tetra Tech conducted a desktop data review followed by a field survey of Section 36 on August 22, 2007.

NWI data (USFWS 1980-1982) depict two wetland areas at the project site, one that intersects the southern portion of the Unit 2 footprint and one in the southeastern quarter of Section 36. These areas are classified as PEMA, which represents a feature that is characterized as palustrine emergent temporarily flooded. Palustrine emergent is a wetlands vegetation pattern in which persistent and nonpersistent grasses, rushes, sedges, forbs, and other herbaceous or grass-like plants are the dominant vegetation. For the mapped wetland at the Unit 2 site, Natural Resources Conservation Service (NRCS) soils data (1998-2006) show soil map unit 143, Felix clay, ponded, 0-2 percent slopes. This soil type is found in depressions and playas and is on the Wyoming hydric soils list (NRCS 2007). The other mapped wetland is soil map unit 213, Terro-Taluce sandy loams, 6 to 30 percent slopes, which is not on the Wyoming hydric soils list (NRCS 2007). USGS (1971) topographic maps, aerial photography (NAIP 2006), and NHD data (USGS 2006) suggest that neither of these mapped wetlands have a surface hydrology connection to a WUS. This data review indicated that there may be a seasonal, isolated wetland within a portion of the Unit 2 footprint and another small seasonal, isolated wetland in the southeastern quarter of Section 36.

During the field visit, the locations mapped as potential wetlands were assessed for the presence of wetland indicators, including hydrology, vegetation, and soils. The area mapped as a wetland in Unit 2 is a depression in the landscape that may collect water during very infrequent periods of extremely heavy precipitation; however, it displays no wetland indicators. The area lacks a surface hydrologic connection to a WUS, and characteristics of the area include very dry soil and bare ground, upland grasses listed in the vegetation section, field pennycress which is an invasive plant that grows in disturbed areas, and an active black-tailed prairie dog colony. The area mapped as a wetland in the southeastern quarter of the section is a very small depression that shows evidence of ponding during precipitation events because of the presence of slightly greener grasses; however, it displays no wetland indicators. The area lacks a surface hydrologic connection to a WUS, and characteristics of the area include very dry soil and upland grasses listed in the vegetation section.

The new paved access road from State Highway 450 to the Two Elk units has been permitted and constructed under a USACE Section 404 Nationwide Permit (NWP) 14 for one road crossing at Little Thunder Creek (USACE 2007). Tetra Tech identified no other areas at the project site that will require formal wetland delineation or a USACE permit to construct.

Vegetation

The AOI for vegetation resources is the project site where ground disturbance may occur, which would include the permanent footprint of the project and temporary use areas such as construction laydown areas. All of Section 36 is mapped by the WY-GAP (1996) as Wyoming big sagebrush; however, field observations on August 22, 2007 revealed that the project site is a combination of sagebrush shrubland, mixed-grass prairie, and areas dominated by invasive species. Common



vegetation species at the project site include: Russian thistle, western wheatgrass, blue grama, soft brome, fringed sage, broom snakeweed, Wyoming big sagebrush, prickly pear, field pennycress, curlycup gumweed, yucca, slender wheatgrass, and cheatgrass. None of these species is on the Wyoming Weed and Pest Council's (2006) list of designated noxious and prohibited weeds; however, several of these species are indicative of disturbed habitat. In addition, in the very northeastern portion of the section, small ponderosa pine trees are scattered at the higher elevations.

Tetra Tech requested a database search from the Wyoming Natural Diversity Database (WYNDD 2006) to identify plant species of concern for the project site and surrounding areas (T39-44N R69-72W, Converse and Campbell Counties, Wyoming). The WYNDD (2006) botany comments reported that there are no known threatened or endangered plant species in the request area. In addition, habitat at the project site was assessed during the August 22, 2007 field visit, which verified that there is no suitable habitat for the federally listed Ute-ladies' tresses orchid in Section 36.

WYNDD (2006) reported that there are known populations of four species of special concern in the request area; however, this is typically not a statutory category and is unlikely to be an issue for the Two Elk project unless there is a federal driver. Furthermore, three of the four species are not likely to occur at the project site. There is no suitable habitat for dwarf woolly-heads or seapurslane at the project site, and while suitable habitat for crown-seed fetid-marigold occurs, there are only two extant occurrences in Wyoming and neither is from Campbell County. The fourth species, Barr's milkvetch, is a U.S. Forest Service (USFS) Region 2 Sensitive species and has the potential to occur at the project site; therefore, this species would become more of a concern if the project includes a USFS component. Assuming no USFS involvement, no species-specific plant surveys will be required at the project site.

Wildlife

The AOI for wildlife resources varies depending on the species and the project. Tetra Tech conducted desktop research, review of previous Two Elk project documentation, and agency consultations for several miles surrounding the project site, and assessed the project site and immediately surrounding areas during the August 22, 2007 field visit.

In general, wildlife species that may be present at the project site are those that inhabit grasslands and sagebrush shrublands. Other habitats in the vicinity of the project site include grass riparian and a very limited amount of ponderosa pine. Wildlife observed during the 2006 (Tetra Tech 2006) and 2007 field visits included pronghorn antelope, black-tailed prairie dog, cottontail rabbit, white-tailed jackrabbit, western meadowlark, American kestrel, magpie, golden eagle, rough-legged hawk, red-tailed hawk, and a variety of migratory passerine birds.

Tetra Tech requested that the Wyoming Game and Fish Department (WGFD) comment on a 3-mile buffer of the project site in order to cover the cumulative impacts analysis area. We requested

that WGFD respond regarding any wildlife issues of concern within this area and any required surveys that should be conducted prior to submittal of the Two Elk Unit 2 Industrial Siting Council (ISC) application or prior to construction of the proposed project. WGFD (2007) offered the following comments:

- Although there is designated crucial winter range for elk within the buffer, WGFD expects minimal impacts to this species since this habitat lies more than 2 miles from the project site.
- Sage grouse use this general area, but there are no known sage grouse leks within 3 miles of the project site.
- Bald eagles winter in the vicinity, and other raptor species use the area throughout the year. To minimize impacts to these species, WGFD recommends burying power lines or using design criteria for overhead lines as outlined in the Avian Power Line Interaction Committee (APLIC 2006) guidelines.

Tetra Tech also requested a database search from the WYNDD (2006) to identify wildlife species of concern for the project site and surrounding areas (T39-44N R69-72W, Converse and Campbell Counties, Wyoming). A total of 63 species were included in the WYNDD report (2006), but this included many levels of species statuses, most of which are not applicable to the Two Elk project at this time because of the lack of a federal driver. The species discussed in the following text are the subset of species that should be addressed for the Two Elk project, assuming no federal component. This decision was based on the species' status, WGFD (2007) comments, WYNDD (2006) results, and assessment of the habitat suitability for these species during the project site field visit on August 22, 2007. A summary for each species or group of species of interest is provided below. Note that if the project includes USFS or BLM involvement, then several of the additional species listed in the WYNDD (2006) report will have to be addressed.

- The bald eagle was previously listed as federally threatened under the Endangered Species Act (ESA), but was recently delisted (USFWS 2007). However, this species is still of concern to agencies, and it is protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act. Bald eagles may use the project site for winter foraging; therefore, the Two Elk project should continue to address potential impacts to this species. However, because no suitable nesting or roosting habitat is present at the project site, no surveys specific to this species will be necessary.
- Similarly, golden eagles are protected under the MBTA and the Bald and Golden Eagle Protection Act. This species was observed in the area during the 2006 field visit (Tetra Tech 2006) and may use the project site for foraging; therefore, the Two Elk project should address potential impacts to this species. However, because no suitable nesting or roosting habitat is present at the project site, no surveys specific to this species will be necessary.

- Other raptors are also protected under the MBTA. The project site does not have suitable nesting habitat for most raptors because the scattered trees in the northeastern portion of the section and in the adjacent land to the north and east are generally not large enough to support raptor nesting, but a limited number of raptor species may be able to use the project site for ground nesting. If project construction will begin during the breeding season (March through August), it is advisable to conduct a raptor nesting survey prior to construction to identify any temporal and spatial restrictions that may apply.
- The greater sage grouse is a candidate for listing under the ESA. The project site and surrounding area do not have high quality habitat for this species, and there are no known leks in the vicinity; therefore, no surveys specific to this species will be required.
- The yellow-billed cuckoo is also a candidate for ESA listing. No suitable habitat for this species occurs within or near the project site.
- In 2002, a mountain plover survey was conducted for the Two Elk access road because this species was proposed as federally threatened (URS 2002). Because this species has since been denied listing under the ESA and because Section 36 contains a very limited amount of very marginal habitat for this species, no surveys specific to this species are recommended for the construction of the Two Elk facility.
- Also in 2002, a black-footed ferret survey was conducted for the Two Elk access road. The black-footed ferret is still designated as federally endangered. However, black-footed ferret surveys are no longer required in black-tailed prairie dog colonies statewide in Wyoming (USFWS 2004).
- Burrowing owls are protected under the MBTA. A limited amount of suitable habitat exists for this species at the project site; however, the suitable habitat is a black-tailed prairie dog colony that lies within the Unit 2 footprint. Therefore, if project construction will begin during the breeding season (March 15 through October 31), it is advisable to conduct a burrowing owl protocol survey (CDOW 2007) prior to construction to identify any temporal and spatial restrictions that may apply.

References

- Antiquus. 2007. North American Power Group Two Elk Energy Park, Section 36 T43N R70W, Cultural Resource Inventory Report, Campbell County, Wyoming. Prepared for Tetra Tech, Inc. September 28.
- Avian Power Line Interaction Committee (APLIC). 2006. Suggested practices for avian protection on power lines: The state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- Colorado Division of Wildlife (CDOW). 2007. Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls When Conducting Prairie Dog Control. March.



- Environmental Protection Agency (EPA). 2007. Surf Your Watershed, Wyoming [Web Page]. Located at <http://cfpub.epa.gov/surf/state.cfm?statepostal=WY>. Accessed October 29, 2007.
- Felsburg Holt & Ullevig. 2005. Two Elk Generation Station Traffic Impact Study. Prepared for North American Power Group, Ltd. Centennial, Colorado. June.
- Ground Engineering Consultants, Inc. (GROUND). 2000. Phase I Environmental Site Assessment, Proposed Two Elk Power Generation Facility, Wyoming Highway 450 and School Creek Road, Campbell County, Wyoming. Prepared for North American Power Group. Englewood, Colorado. November 28.
- National Agriculture Imagery Program (NAIP). 2006. Piney Canyon Quadrangle.
- Natural Resources Conservation Service (NRCS). 1998-2006. Soil Survey Geographic (SSURGO) Database [Web Page]. Located at <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/>
- NRCS. 2007. National Hydric Soils List by State [Web Page]. Located at <http://soils.usda.gov/use/hydric/lists/state.html>. Accessed October 29, 2007. February.
- Powers Elevation Company, Inc. (Powers). 2000. Cultural Resource Management Report: A Class III Cultural Resource Inventory for the North American Power Group's Two Elk Power Plant Campbell County, Wyoming. Prepared for URS Greiner Woodward Clyde, Denver, Colorado. March 24.
- Tetra Tech. 2006. Memorandum from D. Kane to T. Schuller, Project Manager, Tetra Tech. RE: Two Elk Project, Units 1 to 3 Project Area. Biologist, Tetra Tech, Boulder, Colorado. October 8.
- URS Greiner Woodward Clyde (URS). 2002. Two Elk Power Plant Access Road Report on Survey Results for Mountain Plovers, Nesting Raptors, and Black-footed Ferrets. Denver, Colorado. Prepared by Thunderbird Wildlife Consulting, Inc. Gillette, Wyoming. July.
- URS. 2005. Final Report Wetland Delineation Report for the Two Elk Power Plant Access Road, Campbell County, Wyoming. Prepared for North American Power Group Ltd. Denver, Colorado. March 30.
- URS and Western EcoSystems Technology, Inc. (WEST). 2000. Biological Assessment, Biological Evaluation, and Wildlife Specialist Report, Two Elk Coal-Fired Steam Electric Generation Plant and Associated Access Road and Transmission Line. U.S. Forest Service, Douglas Ranger District, Thunder Basin National Grassland. March 1.
- U.S. Army Corps of Engineers (USACE). 2007. Letter from M. A. Bilodeau to D.D. Yueh, Two Elk Generation Partners LP, Greenwood Village, Colorado. RE: Section 404 Nationwide Permit 14. Program Manager, Wyoming Regulatory Office. April 10.
- U.S. Fish and Wildlife Service (USFWS). 1980-1982. National Wetlands Inventory Map, Piney Canyon Quadrangle. US Fish and Wildlife Service, Denver.



- USFWS. 2004. Letter to Interested Party from B. Kelly, Field Supervisor, Wyoming Field Office, USFWS. RE: Black-footed ferret surveys block clearance. February 2.
- USFWS. 2007. Endangered and Threatened Wildlife and Plants; Removing the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife; Final Rule; Endangered and Threatened Wildlife and Plants; Draft Post-Delisting and Monitoring Plan for the Bald Eagle (*Haliaeetus leucocephalus*) and Proposed Information Collection; Notice. Federal Register Vol. 72, No. 130. Pages 37346-37372. July 9.
- U.S. Geological Survey (USGS). 1971. Digital Raster Graphic, Piney Canyon Quadrangle.
- USGS. 2006. National Hydrography Dataset (NHD). Environmental Systems Research Institute (ESRI), Redlands, California, USA. October 1.
- Wyoming Game and Fish Department (WGFD). 2007. Two Elk Expansion Project Proposal. Cheyenne, Wyoming. January 3.
- Wyoming Gap Analysis Project (WY-GAP). 1996. University of Wyoming, Spatial Data and Visualization Center, Laramie, Wyoming. December 1.
- Wyoming Natural Diversity Database (WYNDD). 2006. Data compilation for D. Kane, completed October 16, 2006. Unpublished report. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming.
- Wyoming Weed and Pest Council. 2006. Wyoming Weed and Pest Council [Web Page]. Located at <http://www.wyoweed.org/>. Accessed: November 13, 2006.

Conclusion

We appreciate the opportunity to provide environmental services for the Two Elk project. Please call me if you have any questions at 303.447.1823.

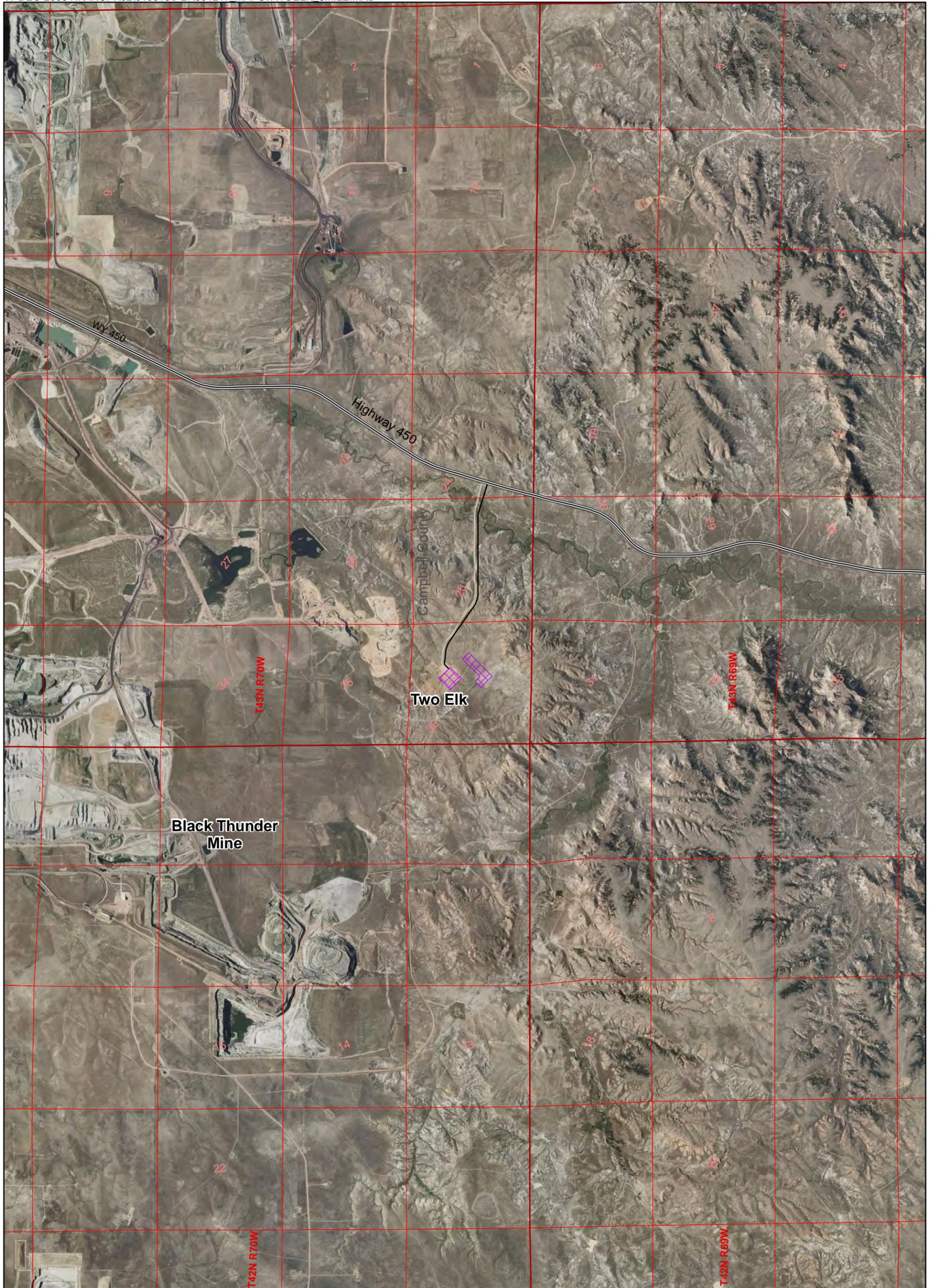
Sincerely,
TETRA TECH

A handwritten signature in black ink that reads "Elaine Porter".

Elaine Porter
Ecologist

A handwritten signature in blue ink that reads "Tisha Conoly Schuller".

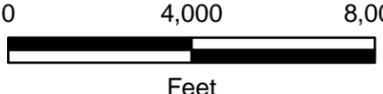
Tisha Conoly Schuller
Project Manager



Legend

-  Highway
-  Access Road
-  Two Elk Facility Area Units 1 & 2





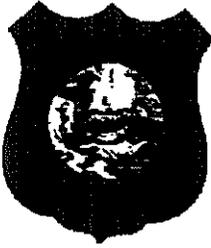
WYOMING POWER COMPANY
CAMPBELL COUNTY, WY

FIGURE 1

TWO ELK FACILITIES

PROJECT: 01-0318	DATE: FEB 9, 2012
REV: 0	BY: CRL CHECKED: TLS

 Tetra Tech, Inc.



WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4610

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January 3, 2007

WER 9710.05

Tetra Tech Inc.

Two Elk Expansion Project Proposal

Elaine Porter
Ecologist
Tetra Tech Inc.
4900 Pearl East Circle, Suite 300 W
Boulder, CO 80301

Dear Ms. Porter:

The staff of the Wyoming Game and Fish Department has reviewed the proposal for the Two Elk Expansion Project. We offer the following comments for your consideration.

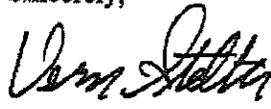
Although there is designated crucial winter range for elk within your requested three-mile buffer, we expect minimal impacts to this species since this habitat lies more than two miles from the project site. Sage grouse use this general area, but there are no known sage-grouse leks within three miles of the project site.

Bald eagles winter in the vicinity, and other raptor species use the area throughout the year. To minimize impacts to these species, we recommend burying any necessary power lines. If overhead lines are necessary, we recommend using design criteria outlined in:

Avian Power Line Interaction Committee (APLIC). 2006. Suggested practices for avian protection on power lines: The state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

Thank you for the opportunity to comment.

Sincerely,


for JOHN EMMERICH
DEPUTY DIRECTOR

JE:VS:gfb
cc: USFWS