SUBLETTE COUNTY
SOCIOECONOMIC IMPACT STUDY

PHASE I FINAL REPORT

Prepared for

Sublette County Commissioners

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
BLS	Bureaus of Labor Statistics
DEIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EMS	Emergency Medical Service
ERG	Ecosystem Research Group
FEIS	Final Environmental Impact Statement
FTE	Full Time Equivalent
FY	Fiscal Year
GDP	Gross Domestic Product
GIS	Geographic Information System
IMPLAN	IMPLAN® economic impact modeling system
JIDP	Jonah Infill Drilling Project
M	Million
NAICS	North American Industry Classification System
NEPA	National Environmental Policy Act
RMP	Resource Management Plan
ROD	Record of Decision
SEIS	Supplemental Environmental Impact Statement
SIC	Standard Industrial Classification
USDI	United States Department of Interior
USFS	Unites States Forest Service
WYDOT	Wyoming Department of Transportation

EXECUTIVE SUMMARY

As the population of Sublette County has grown, the county and its municipalities have worked diligently to keep up with the necessary improvements to infrastructure. Higher crime rates have required more law enforcement personnel; higher student enrollment numbers have required more teachers in the schools; increased maintenance of the roads has required more crews and equipment; and a lack of available workers in the area has led to understaffed businesses and overworked employees.

Within the past ten years, Sublette County has changed from a primarily rural agricultural county to the largest gas-producing county in the state, producing 44% of Wyoming's gas in 2006 (Wyoming Oil and Gas Conservation Commission 2007). The recent Bureau of Land Management (BLM) Resource Management Plan (RMP) Draft Environmental Impact Statement (DEIS) Preferred Alternative proposes drilling more than 7,000 additional wells over the 20-year life of the plan (USDI 2007).

This report is a direct response to the RMP DEIS which lacks adequate disclosure of socioeconomic impacts. Indeed, both positive and negative impacts should be considered in the National Environmental Policy Act (NEPA) document and considered during decision making. The purpose of Phases I and II of this analysis is to ensure that the beneficial effects from energy development are sufficient to mitigate the adverse direct, indirect, and cumulative impacts. In exploring the adequacy of mitigation it is necessary to analyze and fully disclose foreseeable net negative impacts.

The benefits of energy resource development are well known. Development increases the revenue stream to businesses and to state and local governments. The multiplier effect captures the benefits from initial spending that ripple through the local/regional economy. Specific beneficial impacts include higher wages, more employment opportunities, and an increase in local and state revenues. Thus, the investigation of adverse impacts in this report is not indicative of an anti-industry or anti-development bias; it is a reflection of the structure of environmental consequence analysis, disclosure, and the required mitigation under NEPA law.

The US Department of Interior (USDI) Instruction Memorandum No. 2002-167 describes the socioeconomic-related impacts that must be considered by the BLM while preparing an Environmental Impact Statement (EIS) for an RMP (USDI 2002).

> BLM is required to integrate social science and economic information in the preparation of informed, sustainable land use planning decisions. Section 202 of FLPMA [Federal Land Policy and Management Act] requires BLM to integrate "physical, biological, economic, and other sciences" in developing land-use plans [43 USC § 1712]. Section 102 of NEPA [National Environmental Policy Act] requires Federal agencies to "insure the integrated use of the natural and social sciences…in planning and decision making" [42 USC § 4332].

See also the BLM Land Use Planning Handbook (H-1601-1) Appendix D (USDI 2005b), which replaced the Instruction Memorandum No. 2002-167. This similar guidance is more recently updated and in-depth than in the Instruction Memorandum, stating:

> By statute, regulation, and Executive order the BLM must utilize social science in the preparation of informed, sustainable land use planning decisions. Section 202(c)(2) of FLPMA [Federal Land Policy and Management Act] requires BLM to integrate physical, biological, economic, and other sciences in developing landuse plans (43 USC 1712(c)(2)). FLPMA regulations 43 CFR [Code of Federal Regulations] 1610.4-3 and 1610.4-6 also require BLM to analyze social, economic, and institutional information. Section 102(2)(A) of NEPA requires Federal agencies to "insure the integrated use of the natural and social sciences . . . in planning and decision making" (42 USC 4332(2)(A)).

The Jonah Infill Drilling Project (JIDP) Final Environmental Impact Statement (FEIS) (USDI 2006b), the Pinedale Anticline Supplemental Environmental Impact Statement (SEIS) (USDI 2006a), and the RMP DEIS (USDI 2007) have reported socioeconomic impacts, but a review of those impacts specific to Sublette County has not previously been generated though the vast majority of impacts occur there. Furthermore, assumptions used in the RMP DEIS analysis do not reflect the effects of rapid growth associated with a surge in well drilling activity in the coming years. Rather than simply averaging an estimated 372 wells every year over the life of the plan (20 years), a more detailed analysis that more accurately reflects a realistic drilling and production schedule is needed to fully disclose the economic effects to counties.

Past and current trends in population; employment and income; public services and quality of living; and economy and revenues were analyzed and are summarized using tables and figures throughout this document. Data allowing, trends from 1990 onward and from 2000 onward were presented and compared. Additionally, economic effects resulting from oil and gas development in Sublette County were evaluated using the IMPLAN® economic impact modeling system, the same model used by the BLM in their analysis. Three scenarios were analyzed using the latest (2006) economic data: 372 wells drilled per year (from the RMP DEIS Preferred Alternative), 518 wells drilled in 2007 (estimated from the JIDP FEIS and Pinedale Anticline SEIS), and 555 wells drilled in the peak year of 2009 (estimated from the JIDP FEIS and Pinedale Anticline SEIS).

KEY POINTS

Population

- The oil and gas industry has a direct and significant influence on the population of Sublette County. This affects nearly all sectors of the community, particularly related to housing construction and public services, as well as cultural changes that come with population growth.

- The population of Sublette County has increased 52% since 1990 and 24% from 2000 to 2006. This contrasts to only a 14% increase since 1990 and a 4% increase from 2000 to 2006 in the state of Wyoming as a whole. The magnitude of this population increase is most likely grossly underestimated given that the transient population of oil and gas workers is not counted as residents (USDI 2006; Town of Marbleton 2007).

- Much of the oil and gas employment is made up of a transient workforce whose population numbers are difficult to estimate. According to the data supplied, during the development phase, 83 of the 156 local employees per well (53%) were estimated to be residing in man-camps or motels (Hiner 2007). The difficulties in measuring this workforce mean that it often becomes a fluid, unaccounted-for pressure on the county infrastructure.

- Population effects are an important part of the socioeconomic analysis and stem directly from changes in employment. Counties require detailed information to plan for increasing service demands for health and welfare, education, policing, emergency services, and public works.

Employment and Income

- Significant wage variation exists between oil and gas industry-related jobs and other employment sectors across the county. This is of concern to permanent Sublette County residents who work outside of the Mining Sector (which encompasses oil and gas), as higher average wages for industry workers can drive up the cost of living, including housing and services, making it harder to experience the same quality of life on non-Mining Sector income.

- Inflation rates in southwest Wyoming have been as much as 3.25% higher than those experienced at the state and up to 4.75% higher than national levels over the last four years. As employers raise wages, they also must increase product costs to continue turning a profit, a feedback loop causing further localized inflation.

- The combined projected development of the Jonah and Pinedale Anticline fields predicts that the majority of labor-intensive development will occur between 2007 and 2018, with additional development occurring and slowing by 2025 (Figure ES-1).

- Annual direct Full Time Equivalent (FTE) employment over the life of the plan begins with an estimated 1,854 FTE employees in 2007. Employment peaks in 2018, with approximately 1,894 FTE development workers and 209 FTE production workers, for a total of 2,103 FTE workers for that year. Employment drops quickly after 2018 as drilling ends. The expected largest decrease in employment would occur around 2019 when approximately 750 FTE positions for oil and gas workers from the previous year will no longer be needed (Figure ES-2), as well as a number of associated (indirect and induced) jobs.

- Ecosystem Research Group's (ERG's) IMPLAN analysis estimated 3,939 direct, indirect, and induced FTE jobs based on the BLM's estimate of drilling 372 wells per year (RMP DEIS Table 4-13). This scenario understates the economic and population effects, given that it is based on average drilling over the life of the plan, which ignores the surge in growth of employment at the beginning of the development period. In contrast, ERG's IMPLAN estimates using information from the JIDP FEIS and Pinedale Anticline SEIS show 4,409 direct, indirect, and induced FTE jobs needed to support the industry in 2009, the peak drilling year, a difference of 470 FTE industry-related jobs, a 6% growth added to the current population of 7,350.

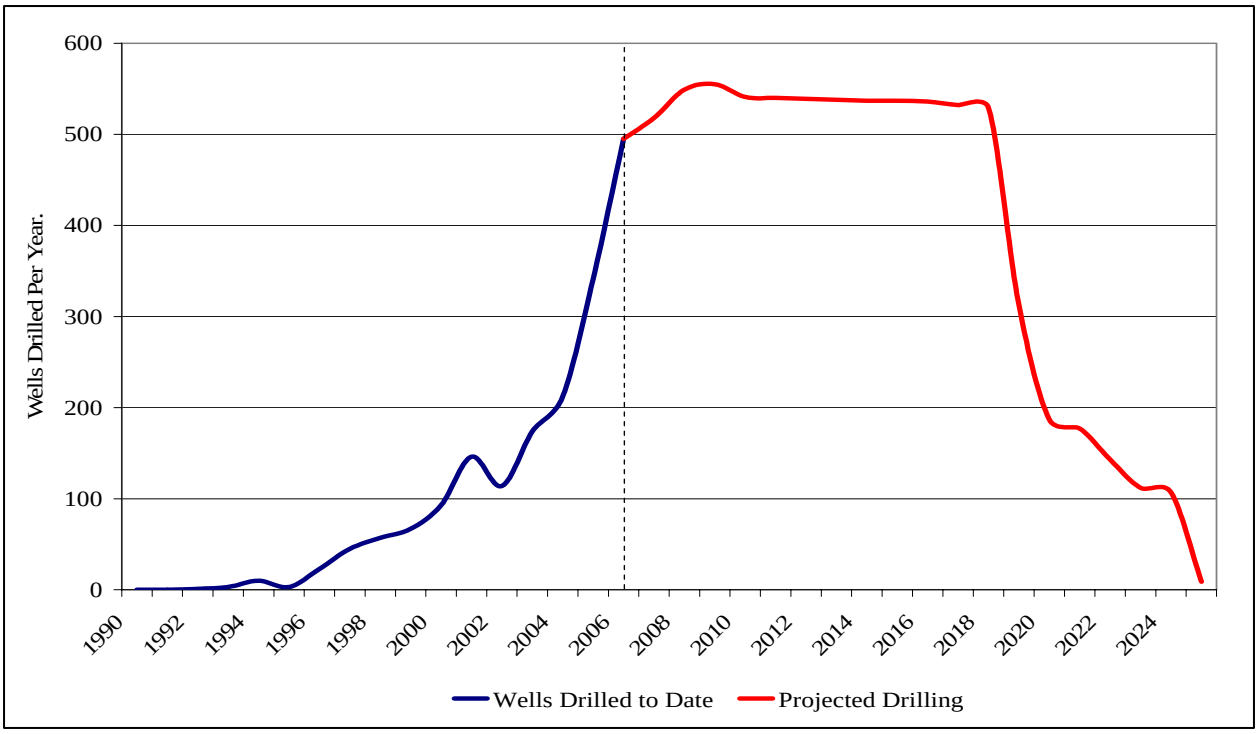

Figure ES-1 Annual completed and projected drilling in Jonah and Pinedale Anticline fields (USDI 2006a, 2006b)

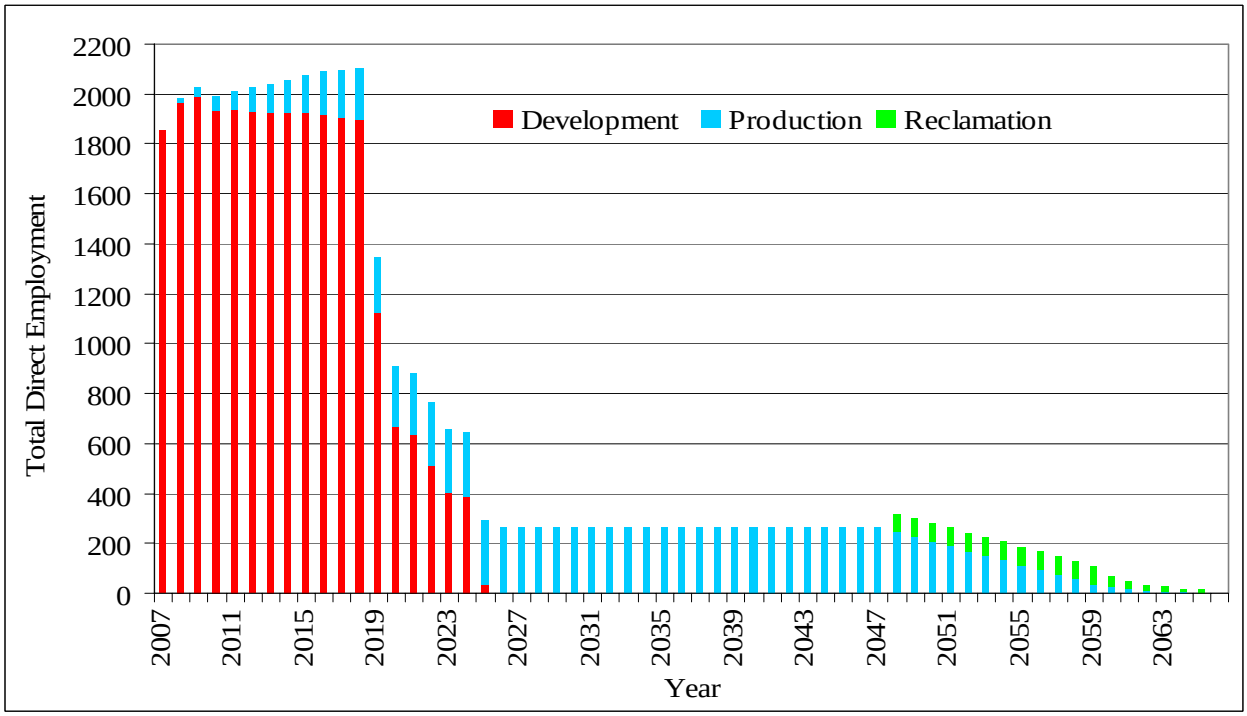

Figure ES-2 Projected total annual FTE employment based on development proposed in the RMP DEIS

Economy and Revenues

- Although mineral revenues have helped fund infrastructure and other projects across the state, local governments have benefited from state severance taxes and federal mineral royalties. In 2006, these distributions accounted for, at most, 3.6% of revenues in Sublette County, Big Piney, Marbleton, and Pinedale. Mineral revenue for the county is provided primarily though the county gross products tax.

- Sublette County and its municipalities currently require large capital projects to address the infrastructure impacts associated with increased population. Basic services such as road and bridge maintenance and adequate water and sewer facilities now consume significant portions of annual budgets. The three largest municipalities in Sublette County have allocated between 60% and 90% of their entire general fund budgets to capital improvement projects in 2007–2008 compared to a range of 8% to 28% in 2000 and 2001.

Public Services/Quality of Living

- The average house price increased about $24,000 per year in Sublette County over the period of 2000 to 2006. It increased about $12,000 per year across the state over the same period.

- The Department of Housing and Urban Development estimated median family income in the county at $59,400 (Wyoming Community Development Authority 2007), allowing for the purchase of a $225,000 house; however, only 16% of homes listed for sale on Jan. 1, 2007, were at or below this price (Jacquet 2007). This makes locating affordable housing difficult for service employees, such as those working in the Arts, Food, and Accommodations Sector, who earned on average $22,000 per year as of 2005.

- The average cost per month of a detached, single-family rental house in Sublette County has risen more than 90% since 2000, which was 60% higher than the average rental price for similar homes across Wyoming in 2006.

- ERG's IMPLAN analysis indicates that drilling and production schedules are important to accurately estimate economic and social effects accruing to Sublette County. The oil and gas industry will strongly affect the timing and demand for housing—both temporary and permanent, and single- and multiple-family.

Energy development requires drilling/development, production, and post-production/reclamation workers. This work is done by the energy companies as well as a multitude of subcontractors building roads, running drilling rigs, building pipelines, etc. Many industry workers are transient, or intermittent county residents, while others become permanent residents that bring families with them. The large influx of energy development workers has indirect effects by raising the number of people working in related sectors like the service industry (food and accommodations) and construction. As these other sectors grow they too require additional employees who bring families to the area. This enlarged population in turn increases demand on county infrastructure and public services. It is clear that the industry's presence has impacted Sublette County, as this report shows a rising demand for housing, teachers, school buildings, road maintenance, medical facilities, and so on. The presence of a large number of newcomers has also changed the cultural landscape of the county. Phase I explores impacts to Sublette County in terms of population, employment, income, and public services, while Phase II will focus on refining

employment and population projections and quantifying monetary impacts to the county as compared to county income generated by the industry.

1. INTRODUCTION

Energy extraction has occurred in Sublette County for over a century. In recent years most of the development has occurred in two major energy fields in the county, the Jonah Field and the Pinedale Anticline, as well as other less productive fields such as Big Piney, LaBarge, Castle Creek, Hogsback, Riley Ridge, Saddle Ridge, and Tip Top. The primary products from these fields are natural gas and, on a much smaller scale, crude oil. Low-level energy extraction has occurred in Sublette County since the late 19th century; however, the county experienced a surge in production following the 1998 (USDI 2000a) decision to drill 497 wells in the Jonah Field. Not long after, the Pinedale Anticline Project Area Record of Decision (ROD) approved drilling 700 producing wells (USDI 2000b). Within the past ten years, Sublette County has changed from a primarily rural agricultural county to the largest gas producing county in the state, producing 44% of Wyoming's gas in 2006 (Wyoming Oil and Gas Conservation Commission 2007). In 2007, a report from Wyoming Department of Employment, Research & Planning stated that "Sublette County was by far the fastest growing county in the state" (Bullard 2007). Beyond the readily apparent positive effects of this large influx of energy dollars, Sublette County has incurred direct costs in the form of infrastructure maintenance and improvements, and more subtle, indirect costs with the shifting of the community's cultural identity.

Both the positive and negative environmental and social consequences of energy development, including direct, indirect, and cumulative effects, must be quantified as a requirement of the National Environmental Policy Act (NEPA) §1502.15. Scoping for the Bureau of Land Management (BLM) Resource Management Plan (RMP) Draft Environmental Impact Statement (DEIS) (USDI 2007) did not identify socioeconomics as one of the nine key issues. US Department of Interior (USDI) Instruction Memorandum No. 2002-167 describes the socioeconomic-related impacts that must be considered by the BLM while preparing an Environmental Impact Statement (EIS) for an RMP (USDI 2002).

> BLM is required to integrate social science and economic information in the preparation of informed, sustainable land use planning decisions. Section 202 of FLPMA [Federal Land Policy and Management Act] requires BLM to integrate "physical, biological, economic, and other sciences" in developing land-use plans [43 USC § 1712]. Section 102 of NEPA requires Federal agencies to "insure the integrated use of the natural and social sciences…in planning and decision making" [42 USC § 4332].

The document further states

> The scope and depth of social science and economic information should be scaled to the resource issues addressed in the planning effort and should provide decision makers with an analysis of the consequences of implementing the various alternatives identified in the planning process. The types of information that could and should be collected and documented may vary by region. Social science and economic considerations should also be tailored to the issues identified through scoping and other collaborative and consultative processes.

> Social and economic analysis should be incorporated into the following chapters of RMP/EIS documents: 1) planning issues, as determined through scoping; 2) description of social and economic conditions and trends to provide context in the "Affected Environment" chapter of the EIS; 3) management actions that could minimize adverse social and economic consequences resulting from the alternatives in the Management Alternatives chapter; 4) evaluation of social and economic effects of alternatives in the "Environmental Consequences" section, and 5) methods for identifying, collecting and analyzing social and economic information in an appendix or other appropriate place in the RMP/EIS.

See also the BLM Land Use Planning Handbook (H-1601-1) Appendix D (USDI 2005b), which replaced the Instruction Memorandum No. 2002-167. This similar guidance is more recently updated and in-depth than in the Instruction Memorandum, stating:

> By statute, regulation, and Executive order the BLM must utilize social science in the preparation of informed, sustainable land use planning decisions. Section 202(c)(2) of FLPMA [Federal Land Policy and Management Act] requires BLM to integrate physical, biological, economic, and other sciences in developing landuse plans (43 USC 1712(c)(2)). FLPMA regulations 43 CFR [Code of Federal Regulations] 1610.4-3 and 1610.4-6 also require BLM to analyze social, economic, and institutional information. Section 102(2)(A) of NEPA requires Federal agencies to "insure the integrated use of the natural and social sciences . . . in planning and decision making" (42 USC 4332(2)(A)).

Although the Jonah Infill Drilling Project (JIDP) Final Environmental Impact Statement (FEIS) (USDI 2006b), the Pinedale Anticline Supplemental Environmental Impact Statement (SEIS) (2006), and the RMP DEIS (USDI 2007) have reported socioeconomic impacts, a review of those impacts specific to Sublette County has not been generated. Ecosystem Research Group (ERG) prepared this document on behalf of Sublette County and its municipalities to independently assess potential socioeconomic impacts to their communities as a result of recent and future oil and gas development in the county.

1.1 PURPOSE

This report is a direct response to the RMP DEIS which lacks adequate disclosure of socioeconomic impacts. Indeed, both positive and negative impacts should be considered in the NEPA document and considered during decision making. The ERG Phase II Report will ultimately consider mitigation as per Section 1502.16 (h) of the Council on Environmental Quality Regulations which states that discussions on environmental consequences shall include, "Means to mitigate adverse environmental impacts." Positive impacts are indeed considered through increases in jobs and tax revenue but these positive impacts do not require mitigation. In exploring the adequacy of mitigation it is necessary to analyze and fully disclose potential negative impacts. In order to calculate adverse impacts one must fully characterize them. Thus, the investigation of adverse impacts in this report is not indicative of an anti-industry or anti-development bias; it is a reflection of the structure of environmental consequence analysis, disclosure, and the required mitigation under NEPA law.

Specifically, the purpose of Phases I and II of this analysis is to ensure that the beneficial effects from energy development are sufficient to mitigate the adverse direct, indirect, and cumulative impacts. Therefore this socioeconomic report, while recognizing the beneficial impacts to Sublette County, focuses predominantly on determining the extent of adverse socio-economic effects that need to be mitigated. This analysis is by no means designed to be critical of the energy industry and the development of public lands for energy resources. However, an assessment of adverse impacts by nature may convey an unintentional bias against the energy industry. We fully understand the significance of monetary benefits that accrue to local communities as a function of energy development. The fact that we do not focus on the favorable impacts of energy operations should not be taken as a criticism.

The benefits of energy resource development are well known. Development increases the revenue stream to businesses and to state and local governments. The multiplier effect captures the benefits from initial spending that ripple through the local/regional economy. Specific beneficial impacts include higher wages, more employment opportunities, and an increase in local and state revenues. The Petroleum Association of Wyoming (PAW) in their comments on the Draft Sublette County Socioeconomic Impact Study point out many of the benefits that accrue to state and local governments. The PAW rightly states that many non-energy related communities experiencing similar growth patterns suffer many of the same growing pains without the benefit of the increased revenue from royalties. Public comments were collected and content analysis performed for the Phase I draft report; this final version of the report reflects suggested changes.

1.2 ENERGY PROJECT PHASES

Energy projects occur in three phases (development, production, and post-production/reclamation), each having its own distinct effect on the local socioeconomics. Analysis in this document explores these three phases and the associated impacts.

1.2.1 Development Phase

The development phase is the most labor-intensive period of an energy project and includes road construction, creation of well pads, moving drilling rigs, drilling of the gas wells, stimulation of the gas formation, and construction of the pipeline infrastructure (USDI 2005a). This phase requires the employment of thousands of workers, many of whom are transient non-residents. The BLM predicts that the development phase in Sublette County will last until approximately 2025.

1.2.2 Production Phase

The BLM predicts the average life of a well at about 40 years (USDI 2006a). During the production phase (post-construction and drilling), the labor intensity of operations drops considerably (USDI 2005a),

and the majority of personnel needed during this phase are typically local residents and permanent employees of the operators. Workovers, or comprehensive maintenance, are performed on each well every ten to 20 years during production, requiring an additional workforce of approximately 70 worker-days per well per workover (USDI 2005a).

The volume of natural gas produced from a well in the Pinedale Anticline or Jonah Field is extremely high during the first three to five years of production. It then drops considerably, stabilizing at a much lower level of production from years 10 through 40. Severance taxes and royalty payments reflect this trend (USDI 2006a).

Given a 40-year lifespan, initial wells drilled in the Jonah and Pinedale Anticline fields will become non-productive around 2040, and final wells will cease production around 2065. Overall, the majority of wells in these fields will become non-productive between 2050 and 2060.

1.2.3 Post-production/Reclamation Phase

As wells run dry, relatively light activity occurs as the tanks and machinery are removed and reclamation begins (USDI 2005a). After the wells are plugged, cleaned up, reclaimed, and abandoned, the project concludes, and the workforce no longer is needed.

1.3 OVERVIEW OF RECENT AND CURRENT ENERGY DEVELOPMENT

Commercial oil and gas production in Sublette County first was recorded in 1903 (Wyoming Oil and Gas Conservation Commission 2007). This first phase of growth peaked in the late 1970s and declined sharply after Exxon failed to complete phase two of its drilling project (USDI 2006). Production increased in the mid-1990s and increased again in 2000 when the Pinedale Anticline ROD approved 900 well pad locations and 700 producing wells. Prior to the JIDP FEIS, 533 wells were completed or were slated to be drilled (USDI 2006a). Table 1.3-1 depicts Sublette County's energy development through August 2007. Shown are all drilled wells on record with the Wyoming Oil and Gas Conservation Commission, whether producing, shut-in, abandoned, or other types.

Table 1.3-1 Oil and Gas Wells Developed by Decade, Sublette County (Wyoming Oil and Gas Conservation Commission 2007)

Field	Decade of Development												Total
	?[1]	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	
Jonah									1	2	177	974	1,154
Pinedale					1	2	9	4		8	32	962	1,018
La Barge	11	1	3	156	54	66	53	116	142	83	155	82	922
Big Piney	1		1	11		18	147	69	28	50	93	115	533
Tip Top	1		1			1	39	59	41	15	131	72	360
Hogsback					1		23	17	15	1	41	37	135
Castle Creek						7	14	4	3	5			33
Saddle Ridge								15	9		2		26
Riley Ridge							2	3	2	6		6	19
Total	13	1	5	167	56	94	287	287	241	170	631	2,248	4,200

[1] Unknown development dates

Figure 1.3-1 shows annual completed drilling through August 2007 for the Pinedale Anticline and Jonah fields individually. Figure 1.3-2 shows the combined drilling for the Jonah and Pinedale Anticline fields by year. Data for completed drilling came from Geographic Information System (GIS) files downloaded from the Wyoming Oil and Gas Conservation Commission Web site. Numbers represent all wells for which drilling operations began in that year (referred to as spud date in the database); where spud date was not provided, completion year was used instead. Figure 1.3-3 depicts existing energy development in the county through August 2007.

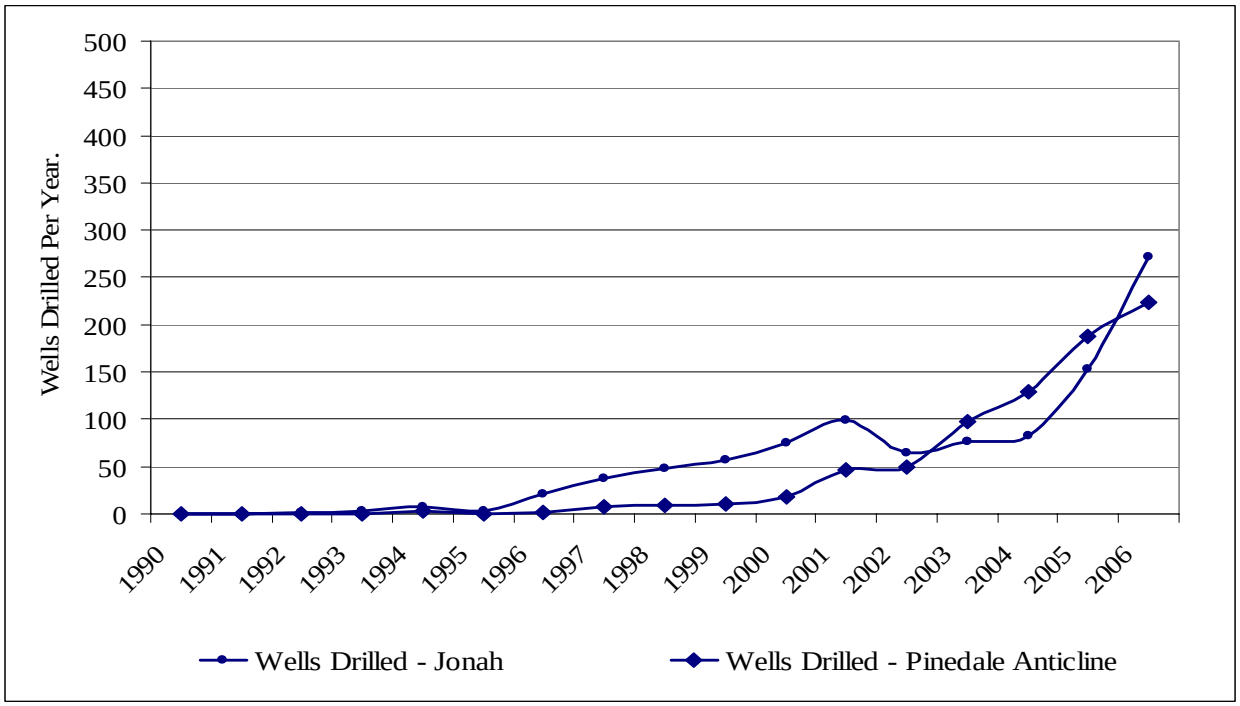

Figure 1.3-1 Annual completed drilling for Jonah and Pinedale Anticline fields individually (Wyoming Oil and Gas Conservation Commission 2007)

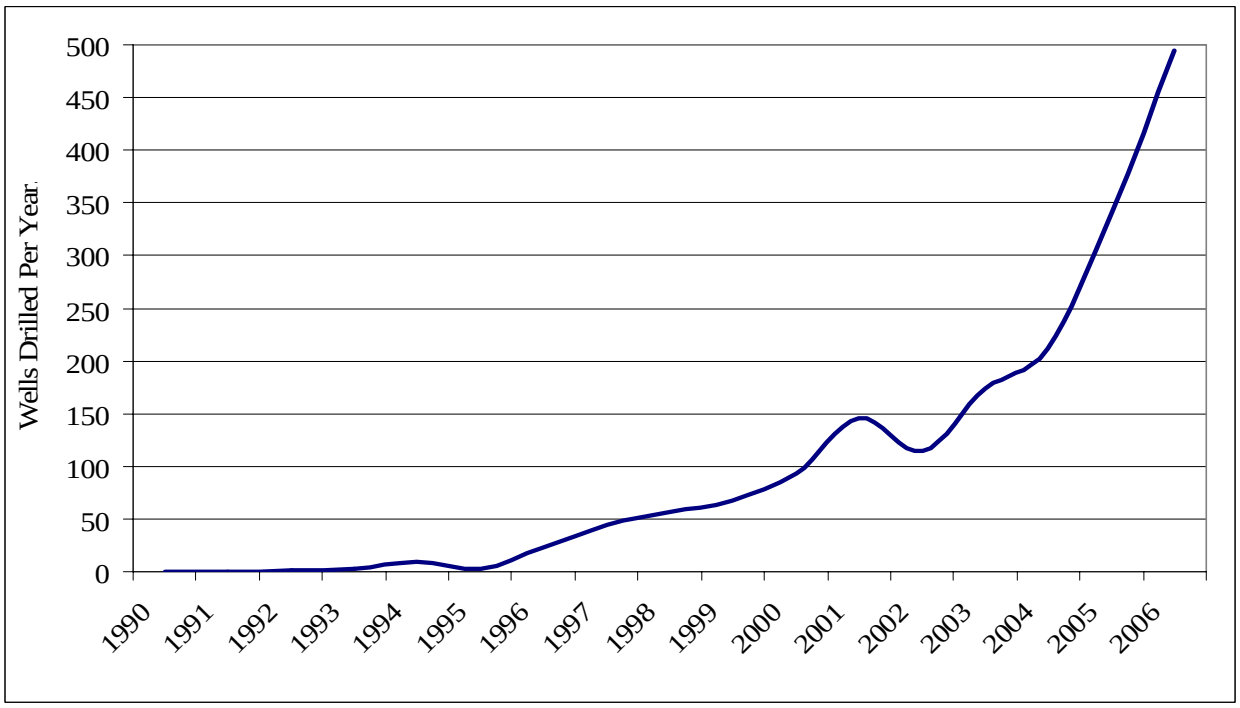

Figure 1.3-2 Annual completed drilling in Jonah and Pinedale Anticline fields combined (Wyoming Oil and Gas Conservation Commission 2007)

Figure 1.3-3 Sublette County energy development (through August 2007)

Placeholder for 11x17 map

1.4 REVIEW OF DRAFT RESOURCE MANAGEMENT PLAN SOCIOECONOMIC ANALYSIS

The Pinedale RMP DEIS Chapter 3 (Affected Environment) identifies several community characteristics for Lincoln, Sublette, and Sweetwater counties, including population, culture, history, employment rates, earnings, tax revenues, housing, and public services. Chapter 4 (Environmental Consequences) describes projections, by alternative, for number of jobs, population change, quality of life, and more. The BLM clearly recognizes key issues in these counties related to rapid population growth as a result of economic development. Most notable are the current housing crisis, the increasing demand for emergency services, increased traffic and traffic infractions, and growth in the crime rate. For example, the RMP DEIS includes data collected from the Pinedale Anticline Working Group Socioeconomic Task Group that correlates increased crime rates with increasing activity on the rigs (USDI 2007). As the BLM points out, these are important issues to the counties and will be significantly affected by increased drilling and production.

The intent of Chapter 4 of the RMP DEIS is to estimate the socioeconomic effects resulting from four alternatives; however, it does not meet the requirements as set out in the aforementioned Instruction Memorandum. The analysis is exceedingly general and fails to address the issues as described in Chapter 3. In the RMP DEIS, the economic effects were estimated using the IMPLAN® economic impact modeling system (IMPLAN), based on 2003 data for a period of 20 years and discounted to 2003 dollars at 7%. The BLM estimated a constant rate of development based on 183% growth in the number of wells drilled between 2006 and 2020. The total number of wells drilled will increase from 2,979 wells in 2006 to 8,439 in 2020 (USDI 2007).

While these assumptions simplify the economic analysis, they do not reflect the effects of rapid growth associated with a surge in well drilling activity. Rather than an annual average estimate of 372 wells, a more detailed analysis that more accurately reflects the drilling and production schedule is needed to fully disclose the economic effects to counties. Such an analysis is presented in Section 4 of this document.

With the majority (91%) of the Pinedale Planning Area within Sublette County (Figure 1.4-1), in several places the RMP DEIS understates the impacts to the county. For example, the change in the civilian labor force between 1996 and 2005 was 71% for Sublette County, while it was only 19% for the combined Sublette, Lincoln, and Sweetwater three-county analysis area (USDI 2007). The RMP DEIS reports that from 1990 to 2004, employment in the three-county area grew by 23%, while employment across the state grew by 28%, showing the study area at a slower growth rate than the state. To the contrary, from 1990 to 2004 Sublette County alone grew from 2,592 workers to 4,376, a change of 69% in total employment, almost three times the state average.

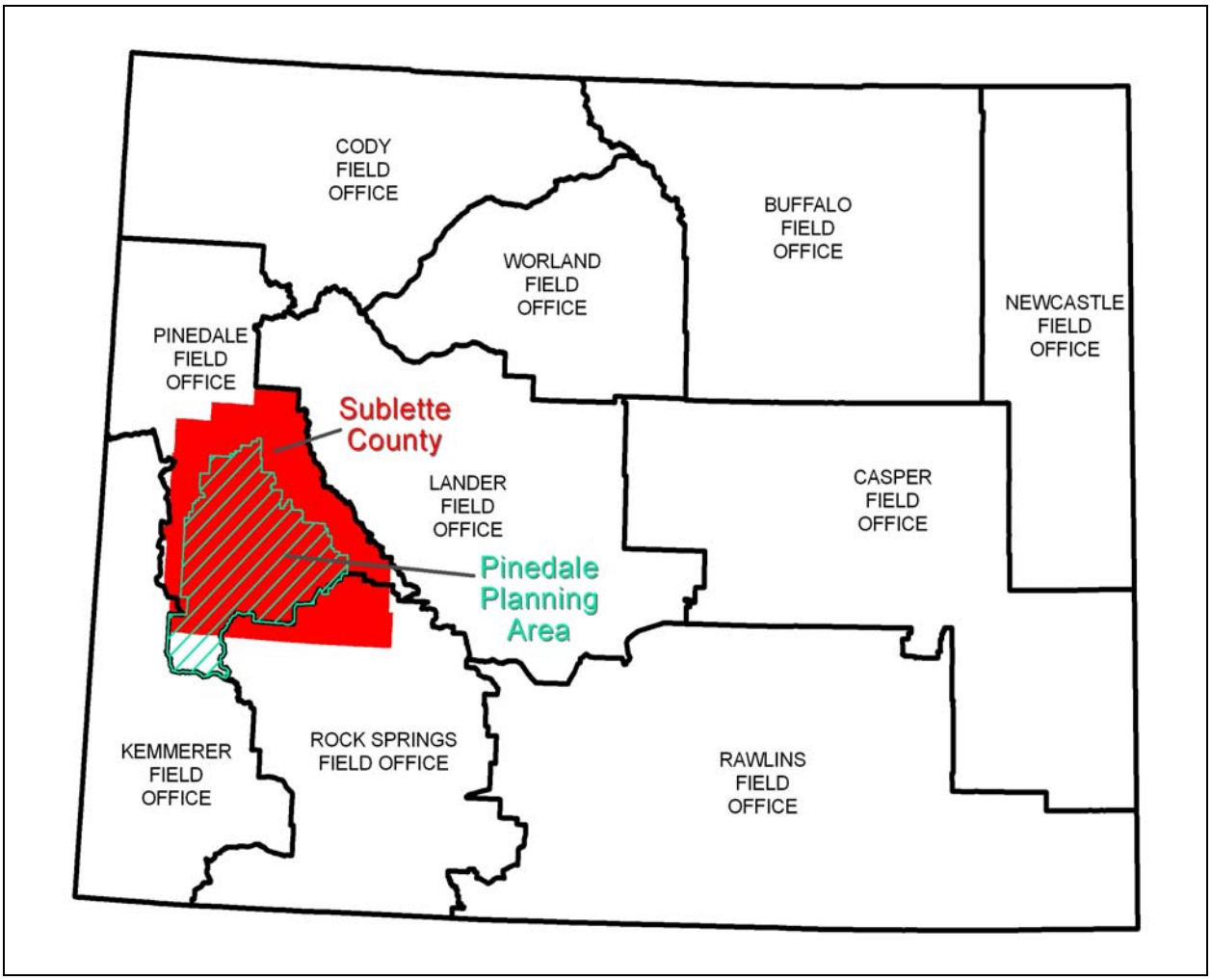

Figure 1.4-1 BLM Field Offices and Pinedale Planning Area in relation to Sublette County

Clearly, economic benefits arising from economic activity will accrue to the region, particularly Sublette County. The important issue that should be addressed is the degree to which benefits are balanced with the inevitable costs that will accrue to communities and the environment. Also important is to show the socioeconomic effects to individual counties, given that they will be affected differently. Such analysis is omitted from the EIS.

Overall, the BLM fails to provide in-depth analysis and identify measures within its authority to reduce or avoid potentially adverse effects resulting from the alternatives, as legally required by the Instruction Memorandum No. 2002-167. The RMP DEIS socioeconomic analysis is based on a set of assumptions that are not meaningful in that they do not provide direction for action or mitigation.

A summary of the effects listed in the RMP DEIS Preferred Alternative include the following:

- Employment would be an average of 12,000 jobs per year over the three-county area, although no Full Time Equivalent (FTE) employment is discussed.
- Total present value of taxes would be greater than $11.7 billion.
- Changes in regional employment would not have an influence on population, given trends and temporary and seasonal nature of jobs.
- "The increase in the number of wells over the next 16 years would continue to affect community stability and connectiveness."
- "Impacts on housing from population growth and seasonal influx of workers would be expected."
- "It is likely that under Alternative 4, there would be continued increases in population and influxes of newcomers…This can lead to an erosion of social integration and community satisfaction…"
- Quality of life would vary depending on values, but crime and traffic would detract from quality of life.
- The need for emergency services would grow.
- Communities would come under increased pressure, with increasing need for expansion and infrastructure.

The findings above are somewhat contradictory and only speculate as to the full range and extent of impacts. The results estimating population growth are inconsistent and do not rely on or include demographic details that would enable counties to estimate demand for single and multiple family housing, and temporary housing for transient and seasonal workers. Also missing from the BLM's analysis is an estimate of the required infrastructure and cost to accommodate population growth (Council on Environmental Quality 1978). This is especially true for Sublette County, which will experience the greatest effects of development.

In order to provide a more realistic analysis, the BLM should have considered the following:

- Annual population growth and demographics
- Infrastructure
    - Traffic and roads
    - Medical and emergency service facility requirements
    - Social service demand
    - Education demand and infrastructure
    - Policing demand
    - Justice and detention facilities
- Increased demand for housing
    - Housing type
    - Community plans and infrastructure.

ERG's analysis included these elements, data allowing, as is described throughout this report.

Tax revenue estimates, while in the billions of dollars, are not specified by the level of government in the analysis. The BLM has not stated how much counties and local municipalities would receive and thus have not estimated the full costs and benefits of growth and possible additional funds necessary to accommodate growth in each county. While the BLM acknowledges a need for increased emergency services and policing as a result of increasing crime, the agency neither estimates what such increases would involve nor the extent of the increased demand for professionals, supporting infrastructure, and services.

To fully estimate the socioeconomic effects of the proposed alternatives, more detailed analysis than is presented in the RMP DEIS is required. While Chapter 3 of the RMP DEIS is thorough in identifying the current economic conditions and important issues, Chapter 4 of the document does not describe how conditions will change, the degree to which they will change, and potential mitigation or activities that should be undertaken if adverse effects are to be avoided.

2. BACKGROUND AND METHODS

2.1 STUDY AREA

Sublette County is located in western Wyoming and covers approximately 3.2 million acres. One of 23 counties in the state, Sublette County is the sixth largest. The Wind River Range runs north to south along the eastern portion of the county, the Gros Ventres lay to the north, and the Wyoming Range runs along the western side. The central portion of the county is a valley comprised of a sagebrush steppe eco-region. Elevation ranges from 6,280 feet in the valley to 13,400 feet in the Wind River Range.

2.1.1 Sublette County History

Sublette County, the youngest county in Wyoming, was created in 1921 and officially established as a county in 1923. It was named after the fur trapper and explorer William L. Sublette and carved from land that was previously parts of Lincoln and Fremont counties. Long before the county's incorporation, however, the area was important for fur trapping, as well as sheep and cattle ranching. The area held a number of historic fur-trading rendezvous between 1824 and 1840, which brought together native populations and some of the West's most famous mountain men and explorers. Permanent populations of cattle and sheep ranchers began to settle the area in the mid to late 1800s.

Geographically isolated from railroads and population centers, the county retained its "frontier" culture for far longer than many areas of Wyoming and the West, and it remained one of the least densely populated areas in the state until well into the 20th century. Today the county has three incorporated towns: Big Piney, Marbleton, and Pinedale.

2.1.1.1 *Big Piney and Marbleton*

One of the first settlements in the area was the town of Big Piney, which was formally incorporated on July 5, 1913, but well established by the late 1880s. By one historical account, by 1890 "the burgeoning frontier town boasted a general store, dance hall, blacksmith shop, and a saloon dubbed 'Bucket of Blood.'" (Blevins et al. 2005). In 1930, the town was given the distinction of being called the "Ice Box of the Nation" due to having the lowest recorded temperatures in the country.

The town of Marbleton was started about a mile to the north of Big Piney in the early 1900s to alleviate flooding problems in that town, although the new settlement stayed smaller in size until the mid-to-late 20th century. The two towns, while close in proximity, retain separate governments to this day. Today, the towns are largely comprised of descendants of the original settlers, and a number of working cattle ranches surround the town's boundaries. A PBS television documentary titled "Do You Mean There Are

Still Real Cowboys?" was filmed in Big Piney in 1987, and cattle drives down the town's streets are common to this day.

Oil and natural gas fields were discovered in southwestern Sublette County and northeastern Lincoln County early in the 20th century, but they were not developed in earnest until the 1950s and 1960s, and with greater intensity again during the late 1970s and early 1980s. These fields, the Calpet and Riley Ridge, placed growth pressures on Big Piney and Marbleton during these times, especially the early 1980s. The two towns saw industry infrastructure and businesses move into the region, along with increases in permanent and temporary residents. Gas processing plants were constructed in northern Lincoln County, and a gas and oil operator (today called EOG Resources) placed its headquarters in Big Piney. The company constructed a series of houses for its employees; EOG still uses them for this purpose today. A "tent city," also known as a "man-camp," was constructed south of town to accommodate temporary workers.

The "boom" in Big Piney and Marbleton was relatively short-lived, occurring primarily between the late 1970s and early 1980s, but the intense growth, lasting infrastructure, and long-term jobs in the area changed the culture of the towns to reflect the "boom and bust" mentality. Toward the end of the era, the towns began to plan for large growth only to see the activity dry up as Exxon's "Phase II" failed to materialize (Blevins et al. 2005). As a testament to the influence of oil and gas, Big Piney constructed old drilling derricks in a town park along U.S. Highway 189, and the Marbleton town logo includes a cowboy riding a pumping oil well.

2.1.1.2 *Pinedale*

The more northern town of Pinedale was established in 1912. Also largely a ranching town, (along with some logging and forestry operations at the time), it was chosen over Big Piney to be the county seat soon after the county's establishment in 1923 in what was a very close and contested election. Various illegal voting activities were alleged, and Pinedale's selection as county seat strained relations between the county's two population centers. Pinedale later became both a tourist destination for hunting, fishing, and hiking as well as a "stopover" for tourists on their way to nearby Grand Teton and Yellowstone National Parks. Pinedale also is comprised of descendants of many of the original settlers, although the outlying areas of the town and northern Sublette County have seen slow but steady growth, largely due to second-home owners and retirees attracted to the viewsheds, wildlife, and small town atmosphere.

Natural gas reserves were discovered in the Pinedale Anticline in the 1950s, but they were not extensively developed until half a century later. Even when development began in the 1970s and 1980s, Pinedale and the more northern portions of the county did not see nearly as many impacts from the oil and gas activity as did the southwest portion of the county. As the mining culture and the mentality of "boom and bust" were incorporated into Big Piney and Marbleton, the town of Pinedale retained its small town culture of

ranching, mountaineering, and frontierism, and began, instead, to cultivate the growing interest from the tourism industry in the area's abundance of available recreation opportunities.

2.1.2 Sublette County Today

Sublette County contains more than 1,300 lakes, a small percentage of which feed tributaries forming the Green River. As many of the lakes are remote, they provide solitary recreation opportunities for fishing and camping. Boating is possible on the more accessible lakes and on the Big Sandy Reservoir located at the south end of the county. Some of these water sources are also necessary to the productive farms and ranches in the area.

Eighty percent of the county is public land including BLM, State, and U.S. Forest Service (USFS). As shown in Table 2.1-1, the county's largest land owner is the BLM, followed closely by the USFS. Private lands make up the third largest land ownership category, followed by state of Wyoming lands.

Table 2.1-1 Sublette County Land Ownership (WyGISC 2007)

Owner	Acres	Percent
BLM	1,272,968	40%
USFS	1,142,994	36%
Private Lands	596,237	19%
State of Wyoming	122,999	4%
Other (open water)	32,888	1%
Total	3,168,086	100%

* Data from GIS Land Cover dataset does not specify ownership of water coverage

Two major wilderness areas in Sublette County include the Bridger Wilderness and the Gros Ventre Wilderness. The county's federal lands offer a wealth of recreational opportunities, including hiking, mountain biking, rock climbing, snowmobiling, hunting, and downhill and cross-country skiing.

According to the U.S. Census Bureau, Sublette County's estimated population was 7,359 in 2006. Three major municipalities exist in Sublette County: Pinedale, Marbleton, and Big Piney. Other towns include Cora, Daniel, Boulder, and Bondurant. Pinedale is the county seat and the largest town in the county with an estimated population of 1,846 in 2006. After grade school, students from LaBarge (in Lincoln County) attend high school in the Sublette County School District No. 9. (Note: School attendance numbers and service numbers will include La Barge residents; otherwise, La Barge was not incorporated into the document). Figure 2.1-1 displays the land ownership within Sublette County. The county's municipalities, major routes, and rivers are shown as well.

Figure 2.1-1 Sublette County Land Ownership

Placeholder for 11x17 map

2.2 DATA SOURCES

For the purpose of analyzing recent trends, current data for Sublette County was requested from state and county personnel. Much of the county-specific data was provided by Jeffery Jacquet, socioeconomic analyst for Sublette County, and Laurie Latta, coordinator of the Sublette Community Partnership. Additional data was gathered from federal, state, and county database clearinghouses; related reports; and personal communication with county and town personnel and employees and representatives of the private sector. The results are summarized in tables and figures throughout the document. Trends and statistics are presented, and projections are quantified and explained for multiple subject areas.

In certain areas of the report, requested data either was not supplied or was supplied too late to be incorporated. Data on mental health and family services, although requested several times, was not supplied or was insufficient. Industry data on worker residency was not available because much of the development and construction workforce is supplied through contractors and subcontractors, and was not available at the time of this report.

2.2.1 Industry

Data regarding industry development was supplied by: the Wyoming Oil and Gas Conservation Commission; Margaret Spearman of The Spearman Company representing Shell, Ultra, and Questar companies; and the Pinedale BLM Office. Data was taken from related NEPA documents as well, including the RMP DEIS, JIDP FEIS, and the Pinedale Anticline SEIS.

2.2.2 Population

Population information came from the following sources:

- United States Census Bureau (2007)
- Wyoming Department of Administration and Information Economic Analysis Division (2006)
- Wyoming Department of Revenue (2007).

2.2.3 Employment

Statistics for employment were collected from the U.S. Department of Labor, Bureau of Labor Statistics (BLS) Web site (United States Department of Labor 2007a). In 2001, the federal government changed the classification system used to report employment and wages. It was changed from the Standard Industrial Classification (SIC) to the North American Industry Classification System (NAICS). At this time, some industry classifications were broken into smaller categories, some were combined into larger categories, and some were reclassified into a different industry sector. Because of this, employment and

wages data by sector was not directly compared with any data before 2001. Also, at the time of collection, 2006 data was incomplete and limited the analysis to years 2001–2005.

Customized tables were created from the State and County Employment and Wages section of the BLS Web site, which supplies data for the Quarterly Census of Employment and Wages (2001 forward). Our query specified all private establishments within Sublette County. For each major industry (with a two-digit NAICS code) we selected five attributes to compare: number of employees, number of establishments, total wages in thousands, average weekly pay, and average annual wage.

Since each BLS employment sector made up a considerably smaller percentage of the employment population than the Mining Sector, some employment sectors were combined to make up larger sectors for overall comparison with the Mining Sector. For example, in Section 3, the largest employment sectors (aside from mining) are displayed as Construction and Manufacturing (combined BLS sectors NAICS 23, 31, 32, and 33), Wholesale and Retail Trades (combined BLS sectors NAICS 42, 44, and 45), and Arts, Food and Accommodations (combined BLS sectors NAICS 71 and 72).

Within the BLS data, the following employment sectors combined made up less than 10% of the overall establishments and had employment data that was not disclosed; therefore, they were not incorporated into the graphs: NAICS 55, Management of Companies and Enterprises, had only two establishments for 2004 and 2005; all other data was non-disclosed. NAICS 56, Administrative and Waste Services, had 19 establishments in 2004 and 25 establishments in 2005; all other data was non-disclosed. NAICS 61, Educational Services, had only two establishments for 2004 and 2005; all other data was non-disclosed. NAICS, 62 Health Care and Social Assistance, had 12 establishments in 2004 and 13 in 2005; all other data was non-disclosed.

Unemployment data came from the United States Department of Labor and the State of Wyoming Department of Employment.

2.2.4 Public Services/Quality of Living

Housing numbers were derived from information from the United States Census Bureau, Wyoming Community Development Authority, Wyoming Department of Administration and Information Economic Analysis Division, and the Wyoming Department of Revenue. Median family income information was procured from the U.S. Department of Housing and Urban Development. Housing costs were collected from the Wyoming Department of Administration and Information Economic Analysis Division; additional information was gathered from the Wyoming Community Development Authority.

Information regarding school enrollment numbers came from the district offices at School District No. 1 and School District No. 9. Supplemental statistical information came from the Wyoming Department of Education.

Data for the Transportation section was collected from the Wyoming Department of Transportation (WYDOT) statewide database, the Pinedale WYDOT office, and the Sublette County Road and Bridge Department. Traffic count information was supplied by WYDOT in the form of a statewide database. The database was queried for select points along roads and highways in Sublette County. The WYDOT traffic count database provided year-by-year traffic estimates specific to sections of highways and offered traffic estimates both for all vehicles and for heavy trucks alone.

General crime data came from the Unified Crime Reports. Current data or county-specific data not included in the reports was supplied by Richard Russell, Wyoming Unified Crime Reporting program manager. Circuit court data was extracted from the Circuit Court Monthly Activity Reports; however, information regarding circuit court appearances came from Curt Haws, Circuit Court judge, Circuit Court of the Ninth Judicial District in Sublette County. Data for the Sublette County Jail was supplied by Lieutenant Wes Johnston of the Sublette County Sheriff's Department.

Data regarding emergency medical services and patient visits was collected from the Sublette County Rural Health Care Board.

Water and sanitary waste data was collected from the clerk at the Big Piney town offices and from the assistant clerk at the Marbleton town offices. The town of Pinedale was unable to supply usage data for its water and sewer. However, Pinedale recently upgraded its sewer treatment plant and the unplanned increase in population is placing additional pressure on the system.

Data sources for solid waste included Rick Hoffman, Sublette County supervisor, who supplied data on tonnage for the Sublette County Landfill and Materials Analysis Reports by Account; Colleen Grandsen, owner/operator of BNC Trash Service; Nelson Engineering, Economic Analysis Study, April 2003; and Marti Seipp, Sublette Citizens for Recycling Impact Analysis.

Data regarding social and cultural changes from the natural gas development is largely qualitative in nature, consisting of interviews and surveys performed by the University of Wyoming and other state agencies, as well as interviews that have appeared in the media.

2.2.5 Economy and Revenue

Information regarding Sublette County and municipal revenues was collected from the Wyoming Department of Revenue and the Wyoming Legislative Service Office. County and municipal

expenditures were extracted from the Sublette County budgets and the municipal budgets for Big Piney, Marbleton, and Pinedale.

2.3 DATA ANALYSIS

Past and current trends in population, employment and income, public services and quality of living, and economy and revenues were analyzed and are summarized in tables and figures throughout the document. As data was available, trends from 1990 onward and from 2000 onward were presented and compared. Qualitative and anecdotal information supplemented quantitative information where data was lacking.

ERG estimated the economic effects resulting from oil and gas development in Sublette County using the IMPLAN® economic impact modeling system. Three scenarios were analyzed with IMPLAN: 372 drilled wells per year (from the RMP DEIS Preferred Alternative Table 4-13), 518 wells drilled in 2007 (estimated from the JIDP FEIS and Pinedale Anticline SEIS), and 555 wells drilled in the peak year of 2009 (estimated from the JIDP FEIS and Pinedale Anticline SEIS). Economic effects on Sublette County including direct, indirect, and induced effects were reported. Indirect effects are employment effects arising from inter-industry effects. Induced effects result from household expenditures in the input/output analysis. Direct-hire labor force for drilling and production was based on the JIDP FEIS and Pinedale Anticline SEIS. All numbers are reported in FTEs, making these results not comparable to the BLM's IMPLAN analysis presented in the RMP DEIS, which presented total number of jobs and no discussion of FTE employment.

3. EXISTING ENVIRONMENT

The existing environment section describes past and current trends related to population changes, employment and income, public services and quality of living, and economy and revenues. Public services and quality of living encompass housing, education/schools, roads/transportation, police/crime, medical services and facilities, water and waste services, and cultural and social impacts of oil and gas development. This section supplies background information for recent trends, while projections based on the RMP DEIS Preferred Alternative are presented in Section 4.

3.1 POPULATION

Population in Sublette County has grown dramatically in the last 15 years. A main contributor to population growth is oil and gas development in and around the county. In the early 1990s a struggling economy in California caused a large outflow of population from that state (Liu 2007). This outflow went mainly into neighboring states and the nearby Rocky Mountain region (Liu 2007). During this time, from 1991 to 1995, the state of Wyoming showed a 1% yearly increase in population (Liu 2007), which for the prior decade (1981 through 1990) had declined about 1% per year. This trend decreased as the California economy strengthened in the late 1990s (Liu 2007). However, as the emigration from California into Wyoming was declining, the oil and gas industry was growing in and around Sublette County, causing the population to remain on the rise. Based on previous trends, the county's population would be expected to increase 20% between 2000 and 2010; however, with the increased growth rate from 2000 to 2006 due to the oil and gas activity, population is expected to rise 30% between 2000 and 2010, corresponding with natural gas field activity (Jacquet 2006). The population is now high enough that it is stressing the infrastructure designed to support it (Jensen 2007; Town of Big Piney 2007a; Town of Marbleton 2007a). From county offices to local diners, businesses are short staffed and/or require more space to operate under the increased workload (Jensen 2007; Lankford 2007; Town of Big Piney 2007a; Town of Marbleton 2007a). Additionally, the transient nature of much of the oil and gas workforce results in an immeasurable population in the area that puts further pressure on the county infrastructure (Town of Marbleton 2007a).

3.1.1 Population Change

Population in Sublette County increased 24% from 2000 to 2006. These figures sharply contrast to statewide increases of only 14% since 1990 and 4% from 2000 to 2006. Based on 17 years of data (1990–2006) of urban areas in Sublette County, Pinedale has the fastest growing population. Over the 17-year period (1990 to 2006) the county's population increased by approximately 134 individuals per year, with the majority of the increase, approximately 92 individuals a year, taking place in rural areas outside of municipal limits. Table 3.1-1 and Figure 3.1-1 show population trends over the 7- and 17-year periods.

Table 3.1-1 Population Growth per Year (Wyoming Department of Administration and Information Economic Analysis Division 2006)

	1990–2006		2000–2006	
	Number Per Year	Overall change in %	Number Per Year	Overall change in %
Sublette County	+134	+52	+237	+24
Rural	+92	+63	+138	+25
Pinedale	+31	+56	+68	+30
Marbleton	+12	+36	+23	+19
Big Piney	-1	-0.7	+8	+10

Sublette County's growing population correlates with the increase in the rate of oil and gas drilling that has occurred in that area (Figures 3.1-1 and 3.1-2). Although oil and gas production is not the only factor influencing the change in population in Sublette County, the industry fundamentally influences the county's population, as is further demonstrated in Section 4.

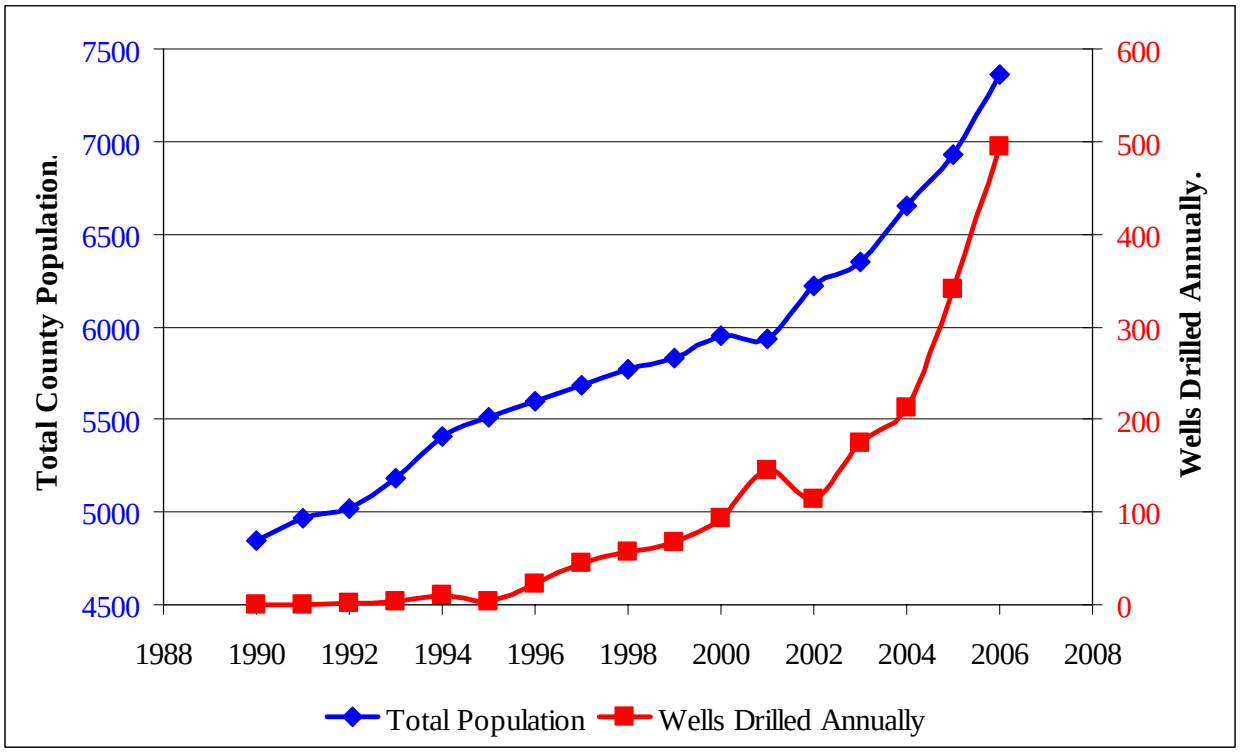

Figure 3.1-1 Population change graphed with increased oil and gas development, 1990–2006 (United States Census Bureau 2007; Wyoming Oil and Gas Conservation Commission 2007)

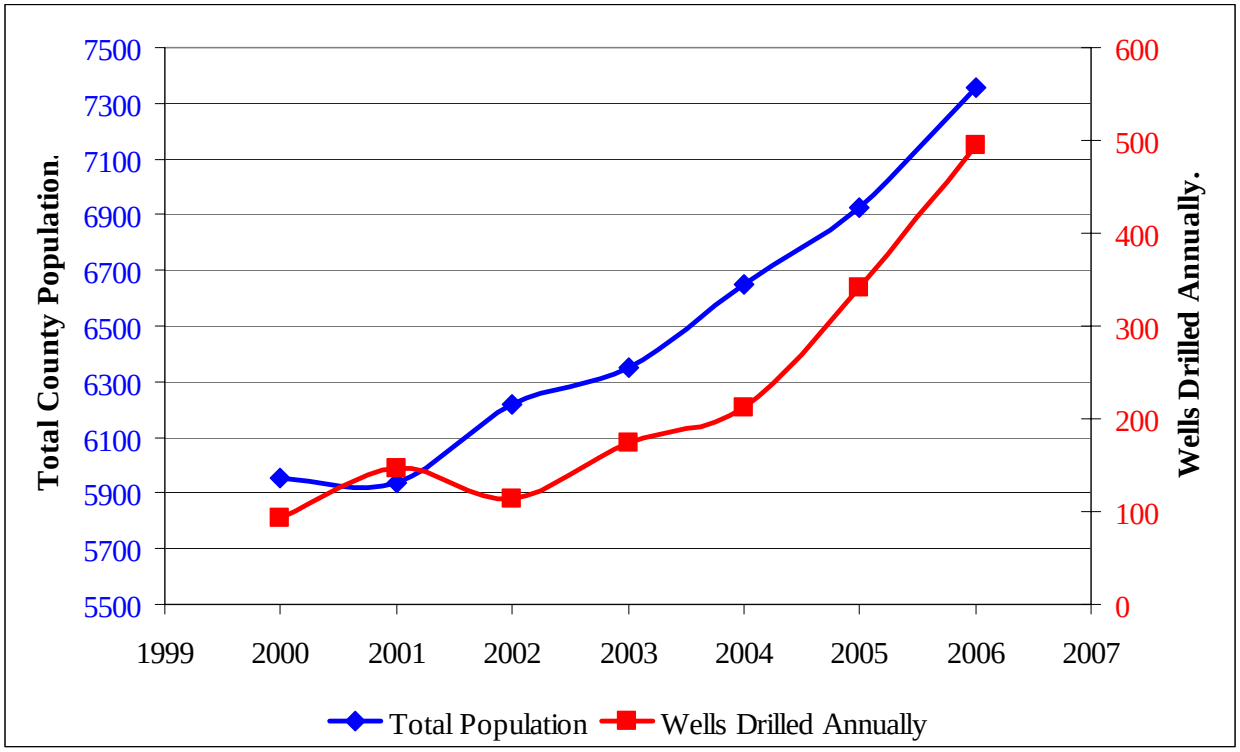

Figure 3.1-2 Population change graphed with increased oil and gas development, 2000–2006 (United States Census Bureau 2007; Wyoming Oil and Gas Conservation Commission 2007)

The magnitude of this population increase most likely is grossly underestimated given the transient population of oil and gas workers that are not counted as residents (Town of Marbleton 2007a; USDI 2006c).

3.1.2 Transient Workforce

Much of the oil and gas employment is made up of a transient workforce whose population numbers are difficult to estimate. The extent to which this population is captured and reported in the county census or represented by the BLS for Wyoming is unknown. At the industry's request through Margaret Spearman (of The Spearman Company representing Shell, Ultra, and Questar), data for employment numbers per well were supplied by the BLM. Our best estimate of the transient workforce comes from this data; however, these employment estimates per well do not correlate directly to the employment projections per well from the JIDP FEIS or the Pinedale Anticline SEIS. Therefore, they cannot be directly correlated to the projections in this report. According to the data supplied, during the development phase, 83 of the 156 local employees per well (53%) were estimated to be residing in man-camps or motels (Hiner 2007). As construction and development workers represent more than 59% of the worker-days for a typical well (USDI 2006d), it is likely that a large portion of the industry employment is made up of the transient population.

This transient workforce is hard to define for several reasons. Drilling and completion workers often are not directly employed by the operators that own the wells. Instead, they are employees of contractors hired to drill and complete the wells, many of whom are located outside the state of Wyoming. Employees are flown in for several weeks at a time and then are flown back out when they are not working. Additionally, many of the major operators who provide temporary housing in man-camps do not actually manage the facilities. They are operated by outfitters who are contracted by the drilling companies to run the temporary housing. The outfitter can provide usage numbers, but these numbers do not include the transient workforce housed in RVs in campgrounds, rental spaces, and motels across the county. The difficulties in measuring this workforce mean that it often becomes a fluid, unaccounted-for pressure on the county infrastructure. According to the town of Marbleton, transient workers living in man-camps or rental housing would easily increase the town's population by 20% or more if these workers were counted as residents (Town of Marbleton 2007a).

3.1.3 Demographics

Between 2000 and 2005, the number of individuals in different age classes is similar for Sublette County and the state of Wyoming, with the largest number of individuals being between 25 and 44 years of age. During this time period, Sublette County experienced an increase in population in all age classes except in the "under 14 years of age" category. The state of Wyoming also had a decrease in this age category, as well as the "25 to 44 years of age" category (Figure 3.1-3).

While the number of individuals in the 25 to 44 years age class has been declining across the state, the increase in the 25 to 44 years age category in Sublette County may be related to the demand for able-bodied workers in the oil and gas industry. In addition, the 15 to 24 age class has increased more than 45% in the last six years while the state of Wyoming has increased less than 5% in the same category. This change also may be attributed to oil and gas workers entering Sublette County.

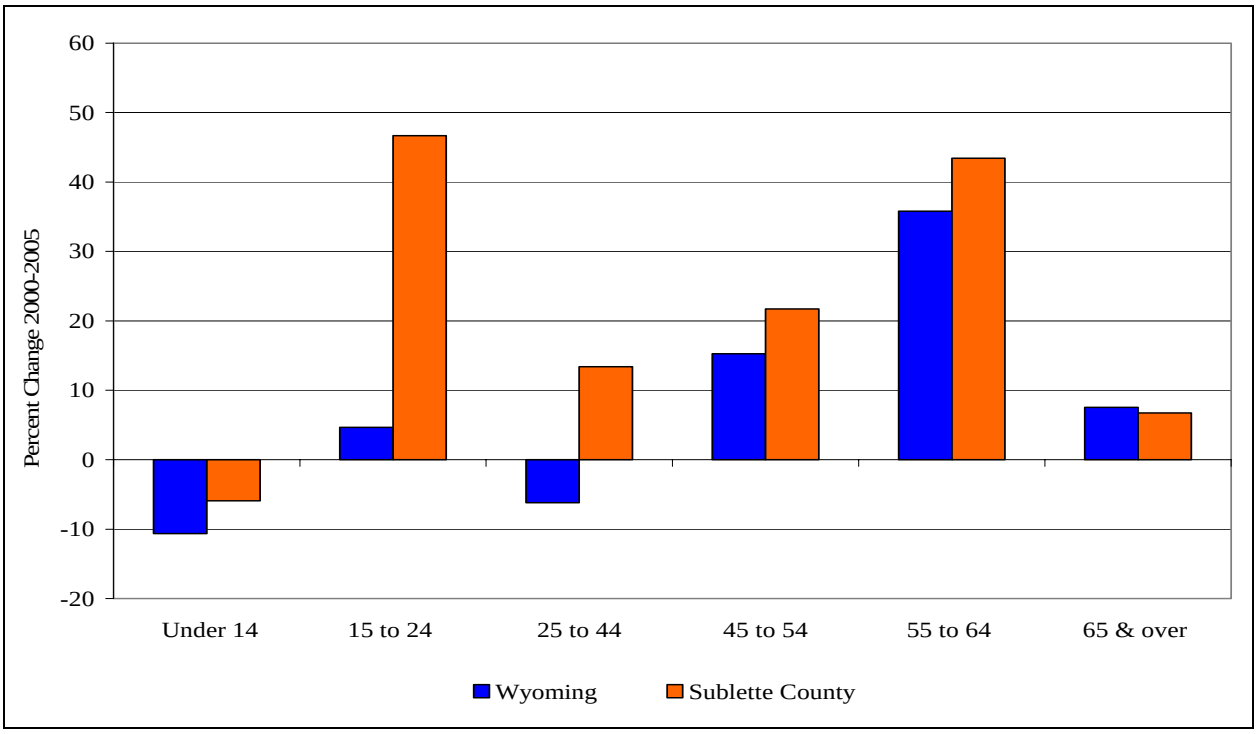

Figure 3.1-3 Sublette County and state of Wyoming population age classes, percent change 2000–2005 (United States Census Bureau 2007)

3.2 EMPLOYMENT AND INCOME

Mining, including oil and gas, was the largest employment sector in Sublette County in 2005 (United States Department of Labor 2007a). Average wages and earnings appear to be influenced by the influx of high-paying mining industry jobs. Significant wage variation exists between industry-related jobs and other employment sectors across the county. This is of concern to permanent Sublette County residents who work outside of the Mining Sector, as higher average wages for temporary and transient workers can drive up the cost of living, including housing and services, making it harder for permanent residents to experience the same quality of life on the same income. The following sections describe number of workers in the county's four major employment sectors (mining; construction and manufacturing; arts, food, and accommodation; and wholesale and retail trades); the county's unemployment rate compared to the state; and wages earned by workers in the four major sectors.

3.2.1 Employment by Sector

Employment in the oil and gas fields has increased significantly in the last few years. As Figure 3.2-1 shows, the percentage of employment in the Mining Sector, which includes oil and gas development, has risen from 18% of the overall private employment in Sublette County in 2001 to 26% in 2005. The

Mining Sector (NAICS 21) is made up of three subsections: NAICS 211, Oil and Gas Extraction; NAICS 212, All Mining Except Oil and Gas; and NAICS 213, Support Activities for Mining. Data was not available to describe the exact percentage of oil and gas employment in the Mining Sector; however, available data does show that a majority of the employment in the Mining Sector is related to oil and gas development. Within NAICS 213, the sub-sector NAICS 213112, Support for Oil and Gas, made up 100% of the employees (Table 3.2-1). From 2001 to 2003, NAICS 213 and NAICS 211—both oil and gas specific sectors—represented 100% employment in the Mining classification (NAICS 21). In 2004, 2005, and 2006, employment numbers were not disclosed for NAICS 211 or NAICS 212; however, sector NAICS 213 accounted for 75% of overall mining employment in 2004 and 2005 and 78% of overall mining employment in 2006.

Table 3.2-1 Number of Employees in Oil- and Gas-related Sectors (United States Department of Labor 2007a)

Employment Sector	2001	2002	2003	2004	2005	2006
NAICS 21: Mining	279	329	478	583	680	946
NAICS 211: Oil and Gas Extraction	119	118	131	ND	ND	ND
NAICS 212: All Mining Except Oil and Gas	ND	ND	ND	ND	ND	ND
NAICS 213: Support Activities for Mining	160	211	347	439	508	737
NAICS 213112: Support for Oil and Gas	160	211	347	439	508	737

*ND=non-disclosed (see Section 2.2.3).

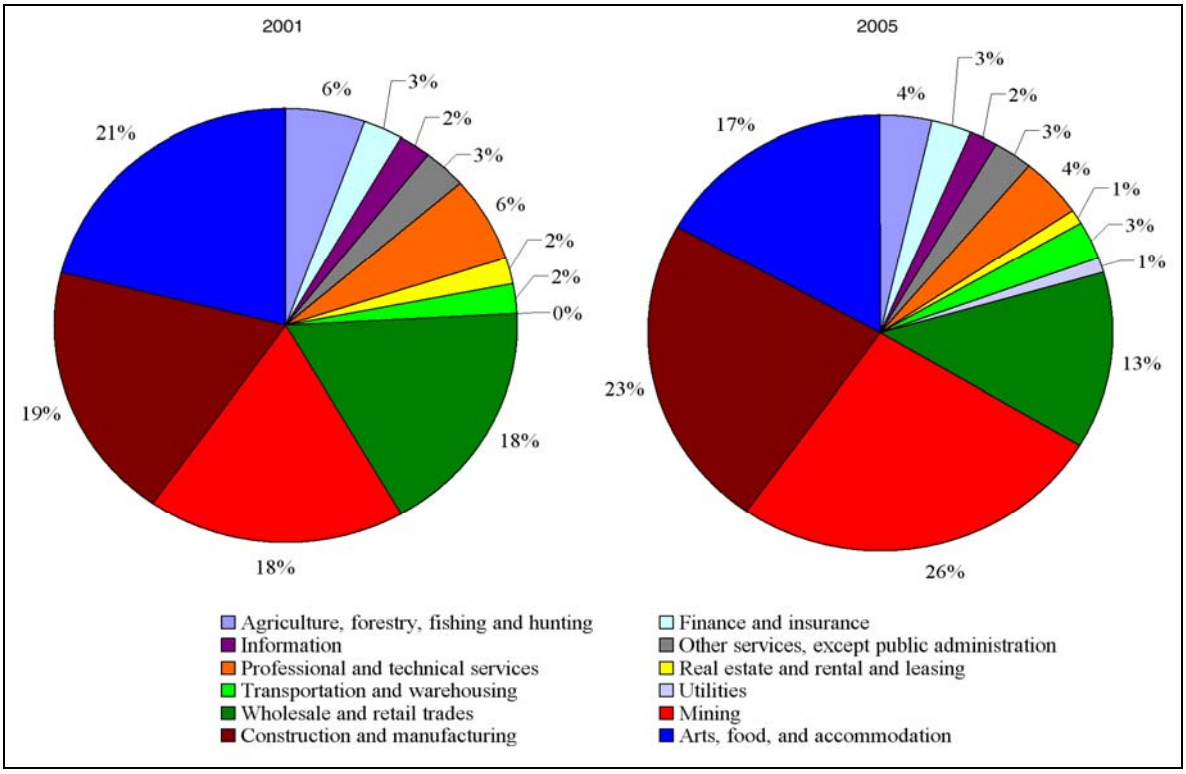

Figure 3.2-1 Employment by sector for Sublette County (United States Department of Labor 2007a)

Employment in the Construction and Manufacturing Sector also experienced considerable growth between 2001 and 2005. Construction and manufacturing represented 19% of the overall private employment in 2001, and grew to represent 23% overall private employment in 2005. Oil and Gas Pipeline Construction (NAICS 23712) is grouped in the Construction category (NAICS 23) and makes up approximately 41% of the reported construction workforce in Sublette County.

In recent years sectors with a small number of employees make up a smaller percent of total employment, though the actual employment numbers within those sectors are either staying relatively constant or increasing. Therefore, it appears that although some transition within the local workforce toward the Mining Sector has occurred, much of the employee population that participates in that sector originates outside the county. Figure 3.2-2 illustrates the number of workers employed per sector from 2001 to 2005.

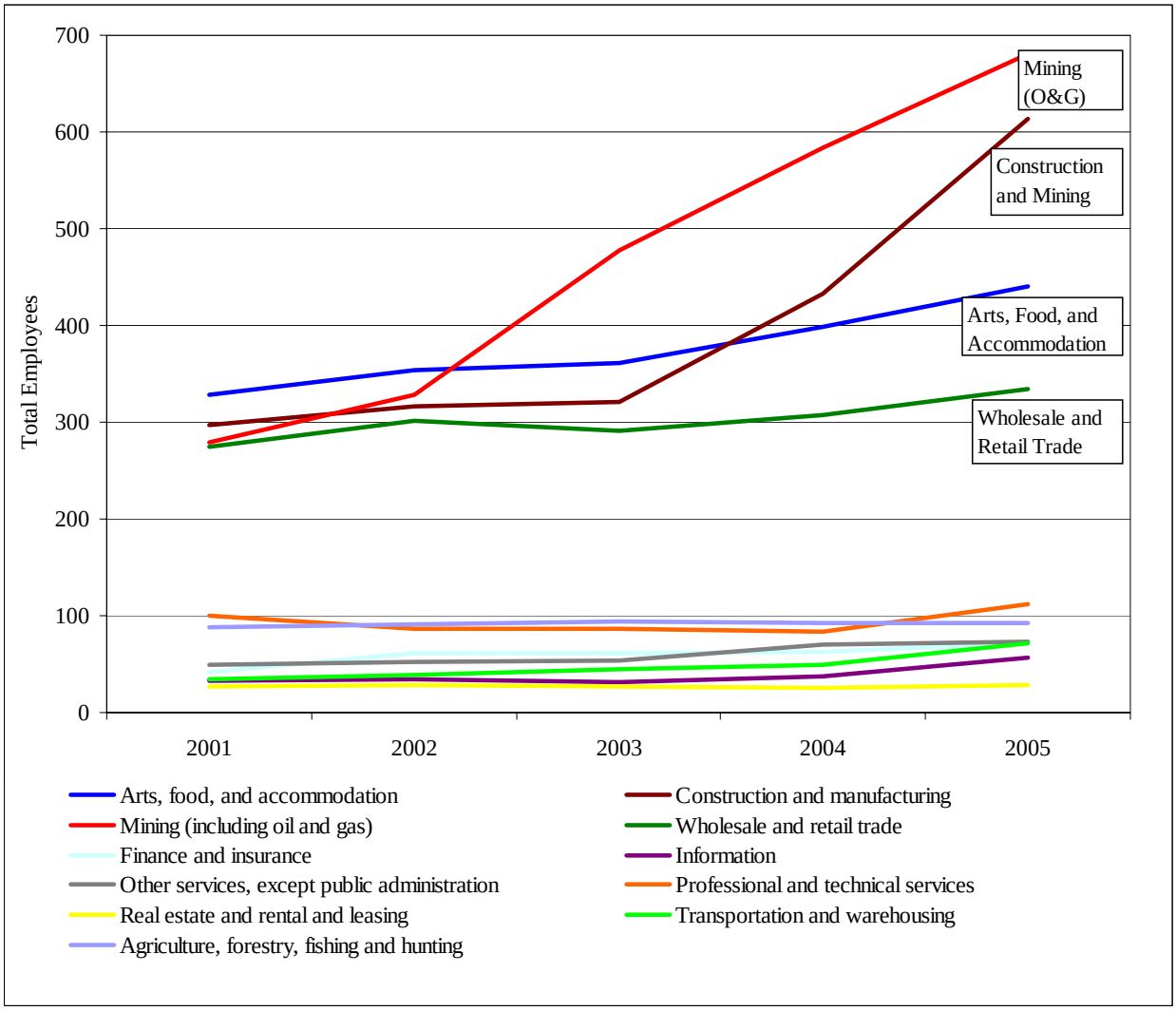

Figure 3.2-2 Total employees per sector (United States Department of Labor 2007a)

Notice that although the total number of employees in the Arts, Food, and Accommodations Sector is increasing (Figure 3.2-2), the percent of total employment in that sector has decreased by 4% (Figure 3.2-1). Small town workforces in Sublette County are stretched extremely thin, forcing businesses to pay more than $10 per hour for starting wages of unskilled workers and making it difficult for those businesses to turn a profit. This in turn hurts the overall town economy (Town of Big Piney 2007).

3.2.2 Unemployment

Unemployment in Sublette County has been declining since 2003. Although this trend parallels the trend statewide and nationally, the county's 1.8% unemployment rate is lower than Wyoming's 3.2% rate and much lower than that of the nation's 4.6% rate (see Figure 3.2-3). According to letters from the towns of

Marbleton and Big Piney, employers in Sublette County often struggle to find employees to fill vacancies because unemployment levels are so low (Town of Big Piney 2007a; Town of Marbleton 2007a).

Other businesses, such as the Sinclair Convenience Store in Pinedale, have been forced to limit hours due to employee shortages. Other employees, such as the criminal justice officials and personnel at the county attorney's office, have been forced to work through weekends and holidays to keep up with increasing crime in the area.

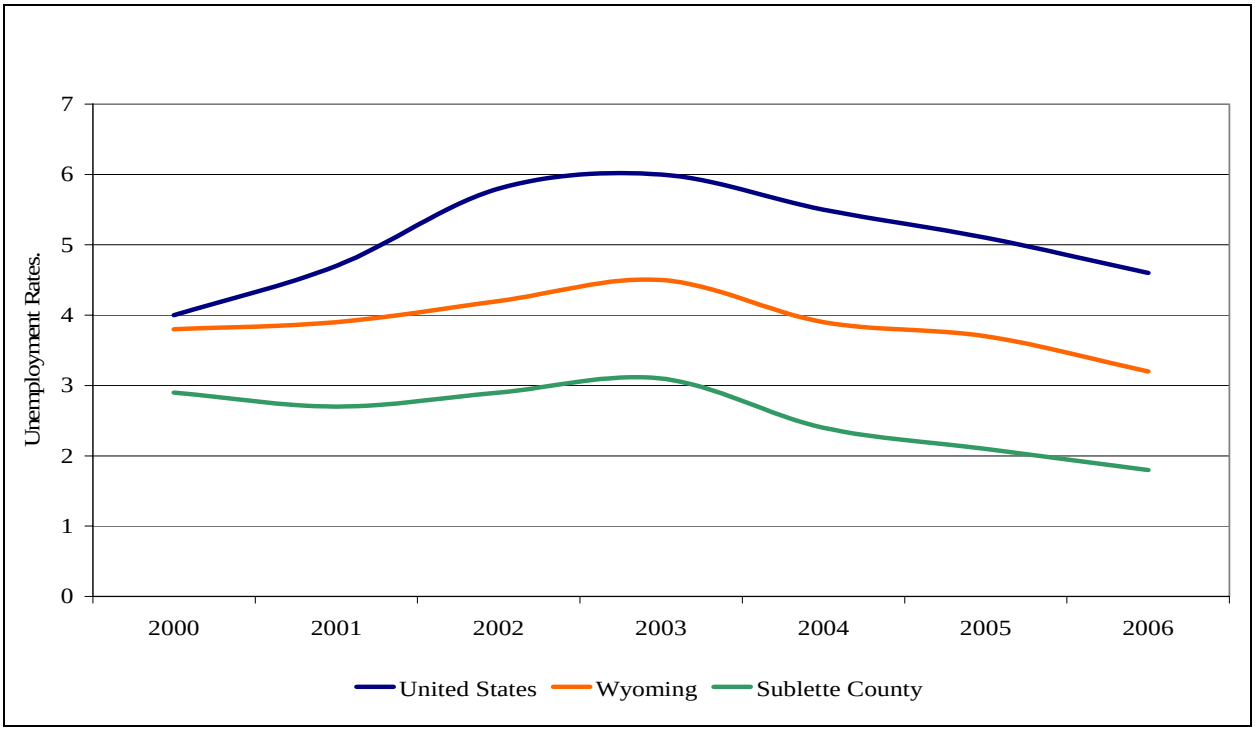

Figure 3.2-3 Unemployment rates for the United States, Wyoming, and Sublette County, 2000–2006 (United States Department of Labor 2007b)

3.2.3 Income and Wages

According to the BLS, the average wage in the Mining Sector is higher than any of the other major sectors in that geographic area. This is shown in Figure 3.2-4, which summarizes wages for the four major sectors (in terms of number employed) in the county. For more than one quarter of the Sublette County workers, the oil and gas industry provides a high income that is difficult to find outside of the industry in that geographic area. This disparity between incomes of the different sectors creates challenges for those that cannot afford to pay their employees comparable wages. As employers raise wages, they also must increase product costs to continue turning a profit. This factor, combined with the county's inability to facilitate production of enough housing for the growing population, has driven up the

average cost of living (Jacquet 2006). Sublette County has the second-highest cost of living index in Wyoming, with Teton County ranked the highest (State of Wyoming 2007b).

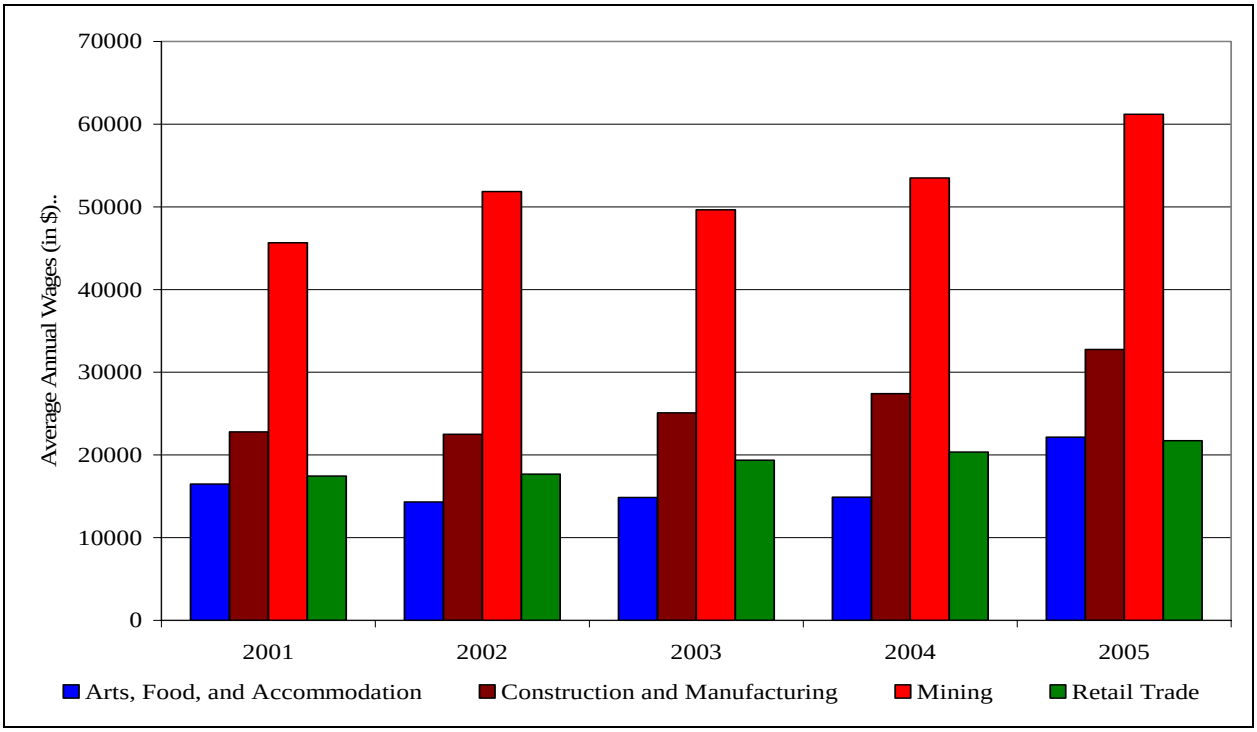

Figure 3.2-4 Average annual wages for Sublette County (United States Department of Labor 2007a)

Workers in sectors with lower average wages may find it difficult to keep up with the cost of living. This is apparent in the service industry, where starting wages, even though high for the rest of the state, are very low in Sublette County when compared to the cost of living. For other industries, lower average wages and high cost of living can discourage new employees from moving to the area. The attorney's office has been trying to hire two additional lawyers for nine months and cites low salary and lack of housing as the deterrents for potential candidates (Boynton et al. 2007).

Wage increase in the Mining Sector affects other businesses in Sublette County. Higher wages increase operating costs for businesses, forcing them to raise prices on their goods in order to make a profit. Higher wages also mean that employees have more disposable income, leading to higher demand for many products. The result often is higher prices on most goods, resulting in localized inflation. This trend also can influence the ability of the local government to maintain and develop the infrastructure needed to support the growing population. As the cost of supplies and labor increases, so does the cost of infrastructure projects such as road maintenance and water and sewer expansion. This can lead to increased and unforeseen county expenditures, potentially offsetting the benefit of energy taxes.

> Local businesses are and have had issues with hiring and keeping employees due to the wages being paid in the gas fields. They can't compete, and the lack of affordable housing is keeping new employees from moving here. Many local businesses have to pay a $10 an hour or more starting wage for even unskilled service industry workers. This in turn hurts the local economy as local businesses find it hard to make a profit. Despite growing population and traffic, restaurants and other businesses have shut down due to lack of employees. (Town of Marbleton 2007a)

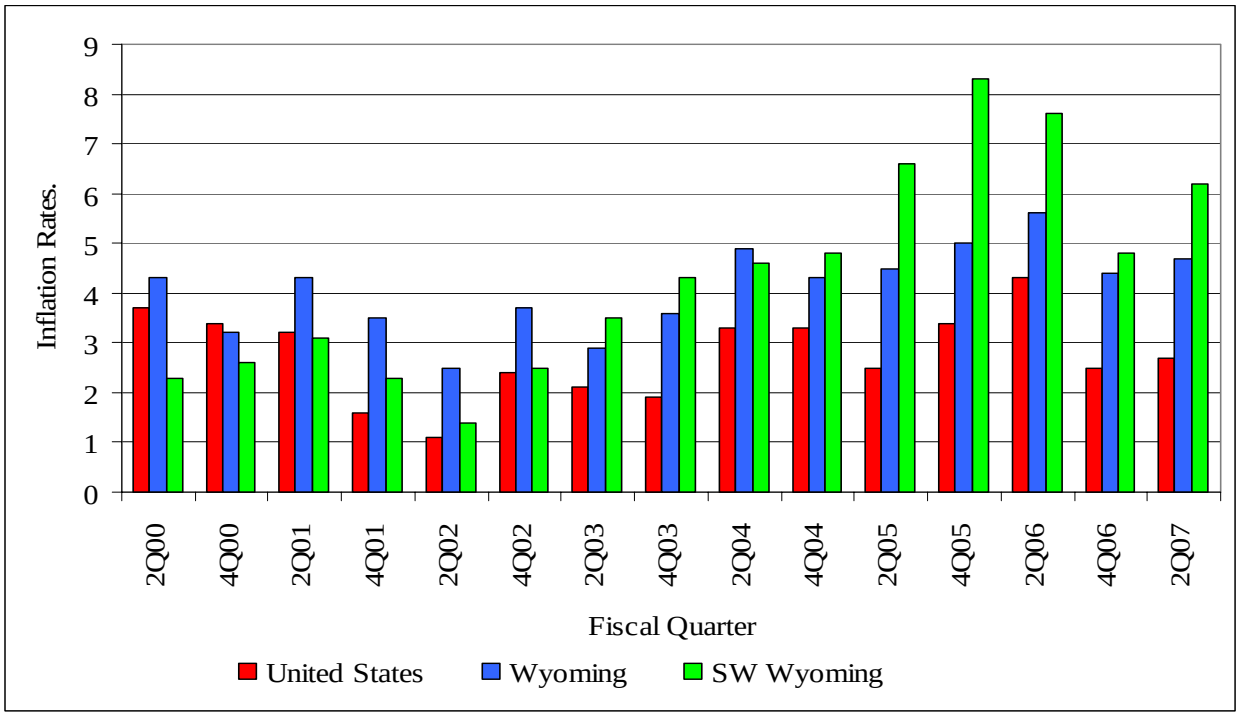

Figure 3.2-5 Inflation rates for the United States, Wyoming, and southwest Wyoming (State of Wyoming 2007b)

Inflation rates in southwest Wyoming have been higher than those experienced at the state and national levels over the last four years (Figure 3.2-5). Amy Bittner, economist for the Wyoming Department of Administration and Information Economic Analysis Division, calculated the cumulative rate of inflation from 2001 to 2005 for the southwest region of the state at 1.213. When 2001 wage data is projected using the cumulative rate of inflation, wage increases in the private employment sectors appear to be developing above inflation (Table 3.2-2). The only sectors that did not meet the projected income were NAICS 51 Information and NAICS 81 Other Services (Other Services includes repair and maintenance, personal and laundry services, membership associations and organizations, and private households).

Table 3.2-2 Average Annual Wage Increase 2001–2005 Compared to Rate of Inflation for Southwest Wyoming Region (United States Department of Labor 2007a)

NAICS Code	Industry	2001 ($)	Rate of Inflation**	Projected 2005 ($)	Actual 2005 ($)	Difference
11	Agriculture, Forestry, Fishing, and Hunting	20,099	1.213	24,380	31,386	7,006
21	Mining	45,668	1.213	55,395	61,196	5,801
23	Construction	27,545	1.213	33,412	38,796	5,384
31–33	Manufacturing	18,050	1.213	21,895	26,701	4,806
42	Wholesale Trades	ND*	1.213	NA	41,501	NA
44–45	Retail Trade	17,443	1.213	21,158	21,727	569
48–49	Transportation and Warehousing	25,207	1.213	30,576	40,353	9,777
22	Utilities	ND*	1.213	NA	57,528	NA
51	Information	25,729	1.213	31,209	25,855	-5,354
52	Finance and Insurance	29,212	1.213	35,434	39,356	3,922
53	Real Estate and Rental and Leasing	25,101	1.213	30,448	41,279	10,831
54	Professional and Technical Services	29,781	1.213	36,124	49,423	13,299
71	Arts, Entertainment, and Recreation	21,166	1.213	25,674	27,914	2,240
72	Accommodation and Food Services	11,817	1.213	14,334	16,399	2,065
81	Other Services, Except Public Administration	17,696	1.213	21,465	19,264	-2,201

*ND=non-disclosed (see Section 2.2.3)
** 2001 wages times the rate of inflation equals the 2005 projected wages.

3.3 ECONOMY AND REVENUES

This section discusses tax structures, revenues, and expenditures for Sublette County in recent years.

3.3.1 Wyoming State and County Tax Structures

The oil and gas industry has long been a fixture in the state of Wyoming. Since oil and gas exploration began in the late 1800s, Wyoming's petroleum industry has been an important, and often vital, economic component affecting state, county, town, and individual finances.

With a state population of 515,000 and almost 98,000 square miles of land, the ratio of five residents per square mile suggests that activities such as creating and maintaining infrastructure and providing social services to rural residents would place a heavy burden on taxpayers. However, mineral revenues (including oil and gas production) contribute significantly to an array of infrastructure elements such as

building roads, constructing schools, providing social services, developing water systems, funding local and state government operations, and the like. Taxpayers in Sublette County have the lowest average mill levy in the state (averaging 59.359 mills, approximately 4.7 mills lower than the state average mill levy) and enjoy well-funded state and local governments.

Mineral revenues fall into three main categories:

- State severance taxes – apply to all mineral production in the state and include crude oil, natural gas, and all other minerals and metals
- State/Federal mineral royalties (including coal lease bonuses)–apply to all mineral production on state or federal land
- County gross products taxes–based on the value of all minerals produced during the previous calendar year

Of these, local governments benefit modestly from severance taxes and mineral royalties and benefit substantially from the county gross products tax as described in Tables 3.3-1 through 3.3-6 and Figures 3.3-1 and 3.3-2.

3.3.1.1 *State Severance Tax*

The state severance tax is administered through the Wyoming Department of Revenue and is assessed on the current year's production. Taxpayers submit reports and remittance monthly based on the taxable value of the current month's production. Minerals are taxed at 100% of their actual value (referred to as the assessed valuation) at the point where production is complete but before the extract is processed or transported. The actual value of the product varies and is dependent on the current market price of the extract. Figure 3.3-1 depicts actual and projected state severance tax assessed valuations from 1980 through 2012.

The state severance tax was introduced in 1969 and has fluctuated over the years, ranging from a low of a 1% assessment to the current rate of 6% of the taxable value. The majority of this revenue stream is retained by the state for distribution as follows:

- 2.5% to the Permanent Wyoming Mineral Trust Fund
- $155 million to nine different accounts/entities, including counties, cities, and towns; state highway and water departments; state general fund; and county road departments
- 1/3 of the remaining funds to the state General Fund
- 2/3 of the remaining funds to the state Budget Reserve Account.

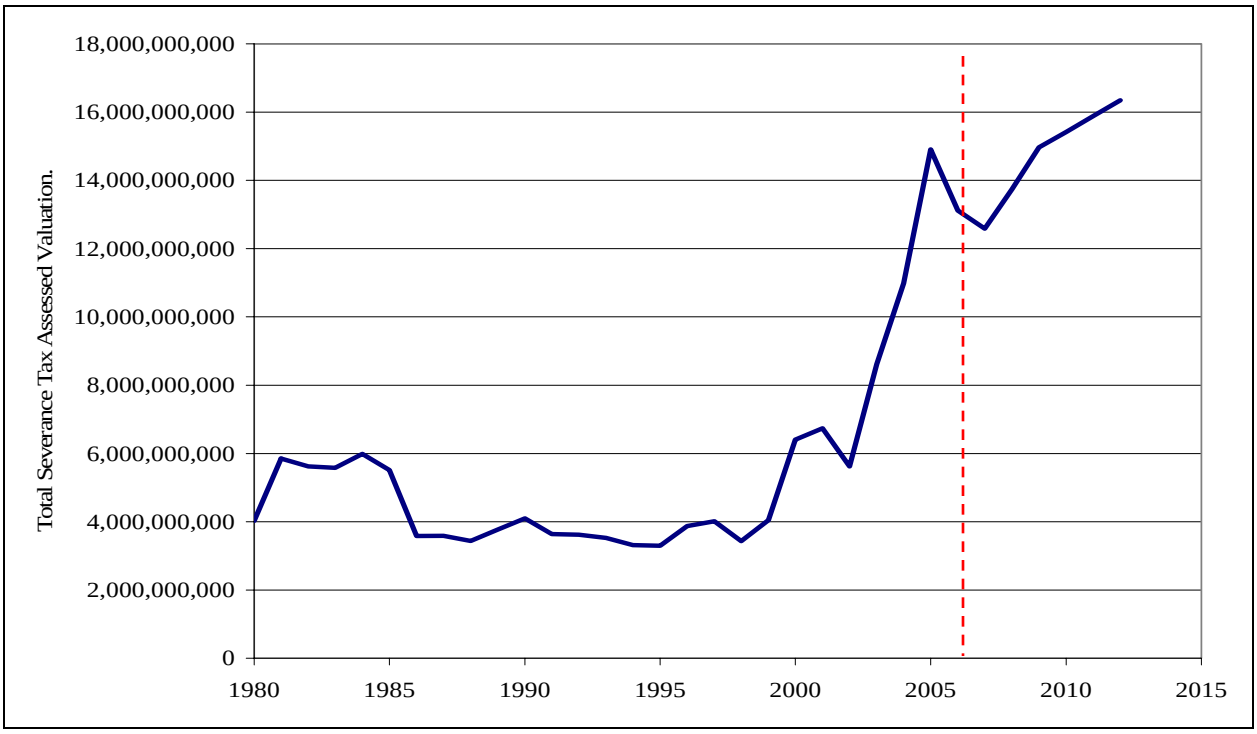

Figure 3.3-1 Statewide severance tax assessed valuations. Dashed line delineates actual and projected values. (Wyoming Department of Revenue 2007)

Between 1980 and 2006, annual severance collections increased from $105 million to $1 billion. Distributions to Sublette County and its municipalities amounted to less than 1% of the statewide revenue over the past seven years. Table 3.3-1 depicts state severance tax revenues and Sublette County/Municipality distributions from 2000 through 2006.

Table 3.3-1 Tax Distributions to Sublette County and Municipalities (Wyoming Department of Revenue 2007)

Year	Statewide Severance Tax Revenues	Sublette County Distribution	Big Piney Distribution	Marbleton Distribution	Pinedale Distribution	Total Distribution	Percent of Total Assessment
2000	$275,122,976	$60,952	$25,161	$35,136	$65,451	$186,700	.06%
2001	$447,973,278	$154,042	$47,812	$71,604	$135,662	$409,120	.09%
2002	$299,433,961	$97,554	$21,790	$38,453	$75,412	$233,209	.08%
2003	$429,126,222	$67,414	$18,377	$32,430	$63,599	$181,820	.04%
2004	$563,566,928	$74,857	$17,788	$31,390	$61,559	$185,594	.03%
2005	$726,656,854	$71,902	$18,227	$32,165	$63,079	$185,373	.02%
2006	$1,001,076,918	$72,776	$19,039	$33,599	$65,891	$191,305	.02%

3.3.1.2 *Federal Mineral Royalties*

The state of Wyoming and its counties benefit a second way from extraction operations conducted on state and federal lands. In the federal arena the typical royalty rate is approximately 12.5%, of which the state receives half of the proceeds. Federal mineral royalties are distributed as follows:

- The first $200 million is distributed among several entities/accounts, with 1% allocated to the state General Fund
- 1/3 of the remaining funds are distributed to the School Foundation Program
- 2/3 of the remaining funds are distributed to the state Budget Reserve Account.

Legislation introduced in 2005 further specified funding to the School Foundation Program. Table 3.3-2 and Figure 3.3-2 show the revenue and distribution of federal mineral royalties.

Table 3.3-2 Federal Mineral Royalty Distributions to Sublette County Municipalities (Wyoming Department of Revenue 2007)

Year	Statewide Federal Mineral Royalty Revenue	Big Piney Distribution	Marbleton Distribution	Pinedale Distribution	Total Sublette Distribution	Percent of Statewide Revenue
2000	$309,902,848	$65,833	$85,987	$147,232	$299,052	.09%
2001	$448,120,027	$62,245	$85,104	$147,324	$294,684	.06%
2002	$348,649,073	$57,118	$89,326	$160,761	$307,205	.08%
2003	$476,269,633	$51,180	$82,376	$147,132	$280,688	.06%
2004	$554,366,613	$53,257	$82,512	$147,399	$283,168	.05%
2005	$845,774,343	$54,101	$84,001	$150,319	$288,421	.03%
2006	$1,067,957,946	$55,198	$85,938	$154,118	$295,254	.002%

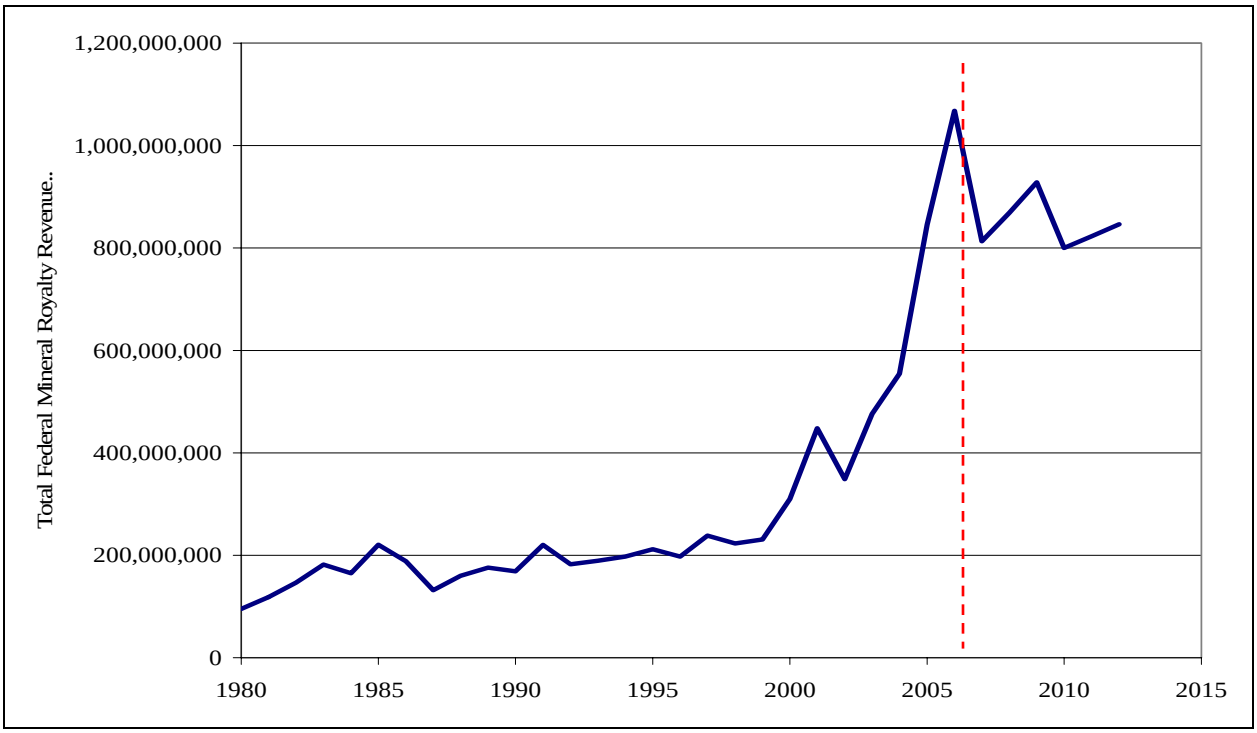

Figure 3.3-2 Statewide Federal Mineral Royalty Revenue. Dashed line delineates actual and projected values. (Wyoming Department of Revenue 2007)

An additional source of federal funding is derived from coal lease bonuses through coal producers who have been awarded federal coal leases. Leases are awarded through public auction via competitive bidding starting from the lease's fair market value. Approximately 50% of the bonuses are returned to the state from the federal government. The major beneficiary of this revenue stream is the School Capital Construction Account, a reserve account created for K through 12 building projects.

Coal lease bonuses are distributed as follows:

- 40% of funds are deposited to the School Capital Construction Account
- 10% of the remaining funds are divided among community colleges ($1.6 million) and the School Capital Construction Account (remainder)
- 50% of the remaining funds are divided among cities, towns, and counties ($5.625 million), the state highway fund ($1.875 million), and the School Capital Construction Account (remainder).

Approximately 3% of lease bonus income is distributed directly to cities, towns, and counties. Table 3.3-3 shows recent and projected state income from coal lease bonuses.

Table 3.3-3 Recent and Projected Coal Lease Bonus Revenue (Wyoming Department of Revenue 2007)

Year	Total Coal Lease Bonus Revenue
2002	$76,897,236
2003	$73,634,327
2004	$47,268,047
2005	$216,875,806
2006	$207,753,794
2007	$169,800,000
2008	$169,800,000
2009	$169,800,000

Mineral production on state land is charged approximately 16.66%. Revenue is shared between the state and local governments as well as several loan and grant programs.

3.3.1.3 *County Gross Products Tax*

The Wyoming Department of Revenue also administers the county gross products tax. This revenue stream is based on the taxable value of minerals produced during the previous calendar year (as determined by the Department of Revenue) and the applicable tax district mill levy (as set by the county and each tax district). The gross products tax is billed and collected annually by each county, and is often reported as a component of property tax. In Sublette County, the gross products tax from oil and gas entities is the most financially significant component assessed for taxation. Table 3.3-4 shows the annual percentage of oil and gas contribution to Sublette County's property tax base, Table 3.3-5 displays recent gross tax revenues for Sublette County, Big Piney, Marbleton, and Pinedale, and Table 3.3-6 illustrates the percent composition of annual gross products tax revenue and the county/municipality general fund budget.

Table 3.3-4 Gross Products Tax—Oil and Gas Percentage of Total County Taxable Value (Wyoming Department of Revenue 2007)

Year	Total County Taxable Value	Oil and Gas Percentage of Total County Taxable Value
2000	$736,914,219	86.60%
2001	$972,005,640	88.59%
2002	$796,110,005	85.17%
2003	$1,880,388,470	92.22%
2004	$2,734,982,302	93.54%
2005	$4,166,708,785	94.66%

Table 3.3-5 Gross Tax Revenue Distributions (Wyoming Department of Revenue 2007)

Fiscal Year	Sublette County	Big Piney	Marbleton	Pinedale
2001	$15,520,968	$1,454,066	$2,032,412	$3,786,115
2002	$21,059,374	$1,448,297	$2,560,398	$5,071,448
2003	$21,082,473	$1,445,615	$2,554,701	$5,077,219
2004	$28,291,190	$1,941,589	$6,799,122	$3,434,875
2005	$37,580,227	$2,576,703	$4,556,046	$9,018,487
2006	$52,568,766	$3,606,255	$6,371,439	$12,635,114

Table 3.3-6 Sublette County and Municipalities Oil and Gas Tax Revenue from All Sources

Fiscal Year	Sublette County	Big Piney	Marbleton	Pinedale
2001	$15,675,010	$1,564,123	$2,189,120	$2,253,178
2002	$21,156,928	$1,527,205	$2,688,177	$2,725,136
2003	$21,149,887	$1,515,172	$2,669,507	$2,700,676
2004	$28,366,047	$2,012,634	$6,913,024	$6,943,193
2005	$37,652,129	$2,649,031	$4,672,212	$4,703,126
2006	$52,641,542	$3,680,492	$6,490,976	$6,523,268

Table 3.3-7 All Oil and Gas Tax Revenue as a Percentage of Sublette County/Municipality General Fund Budgets (Wyoming Department of Revenue 2007)

Year	Percentage of Annual Budget, Sublette County	Percentage of Annual Budget, Big Piney	Percentage of Annual Budget, Marbleton	Percentage of Annual Budget, Pinedale
2001	No Data	253%	246%	60%
2002	75%	183%	306%	58%
2003	65%	178%	289%	40%
2004	84%	214%	660%	94%
2005	73%	317%	345%	47%
2006	72%	244%	143%	41%

These data indicate that the smaller municipalities in Sublette County, Big Piney and Marbleton, are currently receiving oil and gas revenues over and above their general fund budgets, while the more densely populated and larger areas of Pinedale and all of Sublette County receive a substantial portion of their annual funding from the oil and gas industry.

3.3.2 Expenditures

Sublette County and its three main population centers of Big Piney, Marbleton, and Pinedale have seen significant growth in their general fund budgets. Increases occurred in all budget areas with notable increases in capital improvement projects such as street construction/repair/paving, construction of and upgrades to water and sewer systems, land acquisition, and increases to solid waste facilities. In the following tables, funding for capital projects is broken out when clearly identifiable.

3.3.2.1 *Sublette County*

For the period of 2002 through 2007, Sublette County's annual general fund budget increased over 300%. Table 3.3-8 below summarizes Sublette County's annual general fund budget from 2002 to 2007.

Table 3.3-8 Sublette County Annual General Fund Budget, 2002–2007 (Sublette County 2007)

Year	Annual Budget	Annual Percent Change in Budget
2002	$28,269,960	NA
2003	$32,760,442	15.88%
2004	$33,605,182	2.58%
2005	$51,368,067	52.86%
2006	$73,533,676	43.15%
2007	$116,914,863	58.99%

3.3.2.2 *Big Piney*

Big Piney, with a population of 461 in 2006, is the smallest municipality in Sublette County and accordingly has the lowest budget figures. Even so, total general fund budgeted expenditures (general fund, water fund, and sewer fund) have increased more than 350% between the fiscal years ending in 2000 and 2007. As Table 3.3-9 illustrates, capital expenditures comprise an increasing proportion of Big Piney's annual budget, most recently accounting for approximately 60%. Recent projects include street repair and paving, county building maintenance, and land acquisition for housing.

Table 3.3-9 Big Piney Annual General Fund Budget, 2000–2007 (Town of Big Piney 2007b)

Year	Annual Budget	Capital Improvement Budget	Capital Improvement as a Percentage of Budget	Annual Percent Change in Budget
2000	$343,100	$29,000	8.45%	NA
2001	$617,602	$266,000	43.07%	80.01%
2002	$834,329	$391,000	46.86%	35.09%
2003	$852,248	$420,000	49.28%	2.15%
2004	$938,800	$484,000	51.56%	10.16%
2005	$834,828	$301,000	53.97%	-40.59%
2006	$1,508,081	$434,000	28.78%	170.39%
2007	$1,553,835	$943,000	60.69%	3.03%

3.3.2.3 *Marbleton*

Marbleton, with a population of 862 in 2006, has seen an astonishing increase in annual general fund budgeted expenditures (general fund, water fund, and sewer fund) since the fiscal year ending in 2000 (Table 3.3-10). Starting from a budgeted amount of approximately $500,000, outflow has increased more

than 1,400% to a current value of $8.7 million. Recent capital projects addressed town streets and a recreation center.

Table 3.3-10 Marbleton Annual General Fund Budget, 2000–2007 (Town of Marbleton 2007b)

Year	Annual Budget	Capital Improvement Budget	Capital Improvement as a Percentage of Budget	Annual Percent Change in Budget
2000	$571,400	$161,000	28%	NA
2001	$888,850	$370,950	42%	56%
2002	$879,100	$307,000	35%	-1%
2003	$923,500	$401,000	43%	5%
2004	$1,048,000	$653,000	62%	13%
2005	$1,355,880	$874,000	64%	29%
2006	$4,532,810	$3,939,000	87%	234%
2007	$8,723,000	$8,151,500	93%	92%

3.3.2.4 *Pinedale*

The county seat of Pinedale follows the trend of Big Piney, Marbleton, and Sublette County with a triple-digit general fund budget increase, more than 600% between 2001 and 2007 (Table 3.3-11). In Fiscal Year (FY) 2007 alone, approximately 67% of the annual general fund budget was earmarked for sewer, water, streets, and parks projects. Pinedale supplied budget figures encompassing the general fund, enterprise fund (water and sewer), and debt service fund for the fiscal years ending from 2001 to 2007.

Table 3.3-11 Pinedale Annual General Fund Budget, 2001–2007 (Town of Pinedale 2007b)

Year	Annual Budget	Capital Improvement Budget	Capital Improvement as a Percentage of Budget	Annual Percent Change in Budget
2001	$3,733,466	$460,024	12%	NA
2002	$4,681,657	$1,152,024	25%	25%
2003	$6,688,246	$2,402,274	36%	43%
2004	$7,411,528	$3,324,076	45%	11%
2005	$9,968,689	$5,712,260	57%	35%
2006	$15,722,728	$11,967,792	76%	58%
2007	$27,525,500	$19,428,244	71%	75%

A final approach to examination of annual budgets is seen in Table 3.3-12, which calculates the per capita expenditures as provided by the county and each municipality. In each case, the general trend is an increase in per capita spending.

Table 3.3-12 Annual Budget Per Capita for Sublette County and Municipalities

Year	Annual Budget Per Capita Big Piney	Annual Budget Per Capita Marbleton	Annual Budget Per Capita Pinedale	Annual Budget Per Capita Sublette County
2000	No Data	$475	$403	No Data
2001	No Data	$861	$633	$629
2002	$66,361	$1,109	$601	$753
2003	$75,485	$1,111	$615	$1,053
2004	$75,687	$1,190	$665	$1,115
2005	$11,2897	$1,029	$818	$1,439
2006	$16,3046	$1,750	$2,455	$2,137

Phase II of this report will further examine annual budgets and expenditures.

3.4 PUBLIC SERVICES/QUALITY OF LIVING

3.4.1 Housing

This section discusses the changing cost of living, home costs, and rental costs in Sublette County.

3.4.1.1 *Cost of Living*

The cost of living in Sublette County is the second-highest in the state of Wyoming behind only Teton County, one of the most expensive counties in the United States (State of Wyoming 2007b). High cost of living, combined with a large migrant worker population saturating the motels and rental housing, makes recruiting new employees difficult for the multitude of support services needed for a growing community (Jacquet 2007). A 24% population increase from 2000 to 2006 (see Table 3.1-1) appears to strain the housing industry's ability to produce houses to meet the demand in Sublette County; as with most industries, increased demand results in increased costs.

The Department of Housing and Urban Development estimated median family income in the county at $59,400 (Wyoming Community Development Authority 2006), allowing for the purchase of a $225,000 house. Forty two percent of the houses sold in 2006 were under $225,000; however, only 16% of homes listed for sale on Jan. 1, 2007 were under $225,000 (Jacquet 2007). Although wages are increasing, as described in Section 3.2.3, employees at the lower end of the wage spectrum can experience difficulties in keeping up with the cost of living, especially housing costs.

The data used by the State of Wyoming Department of Administration and Information Economic Analysis Division to determine the Cost of Living Index is classified into six categories. These six

categories are weighted by the overall importance of each category in the average consumer's budget. The categories and their respective weight components include housing (48.3%), transportation (17.2%), food (13.9%), recreation and personal care (9.4%), medical (6.3%), and apparel (4.9%).

> The Housing category, due to its relative importance in the average consumer's budget, carries the largest weight factor and is the most influential category in both the comparative index and the inflation rates. (Wyoming Department of Administration and Information Economic Analysis Division 2006).

This makes finding affordable housing difficult for service employees, such as those working in the Arts, Food, and Accommodations Sector, who make on average $22,000 per year as of 2005 (Figure 3.2-4). Within that sector, food service and accommodations workers make only $16,000 on average (United States Department of Labor 2007a).

3.4.1.2 *Home Prices*

Housing costs in Sublette County have increased substantially in the last few years. Table 3.4.1-1 depicts the increase in the cost of various forms of housing. The percent increase in cost of housing was similar to the rest of the state of Wyoming from 2000 to 2003; however, beginning in 2003, the increase has been much steeper in Sublette than the rest of the state (Figure 3.4.1-1). This change in housing price correlates with the number of wells drilled, as is shown in Figure 3.4.1-3.

Table 3.4.1-1 Average Annual Sale Price (Wyoming Community Development Authority 2006)

	2000	2001	2002	2003	2004	2005	2006
Sublette	$125,922	$149,179	$163,473	$173,116	$218,343	$249,029	$269,795
Wyoming	$111,437	$116,469	$121,140	$132,708	$142,501	$160,497	$187,869

Not only is the percent change in housing cost higher in Sublette County than in the rest of Wyoming, the average cost of housing is also higher. As illustrated by Figure 3.4.1-2, the average house price increased by about $24,000 per year in Sublette County over the period of 2000 to 2006, while it increased about $12,000 per year across the state over the same period. Similarly, Table 3.4.1-1 shows the increase in average annual home sale price reported by assessors for Sublette County compared to the state of Wyoming. The average annual sale price for the county is more than 30% higher than that of the state.

Building costs also have risen steadily in Sublette County (Jacquet 2007). Even with the increase in price, the demand for new housing continues to rise. Sublette County saw an increase from 77 building permits issued in 2004 to 214 in 2006 (Figure 3.4.1-4). This influx of new housing temporarily dropped the single-family unit construction price, the cost required to build a stand alone dwelling, in 2005; however, preliminary data for 2006 showed the unit price was back up to $179,000 (Jacquet 2007).

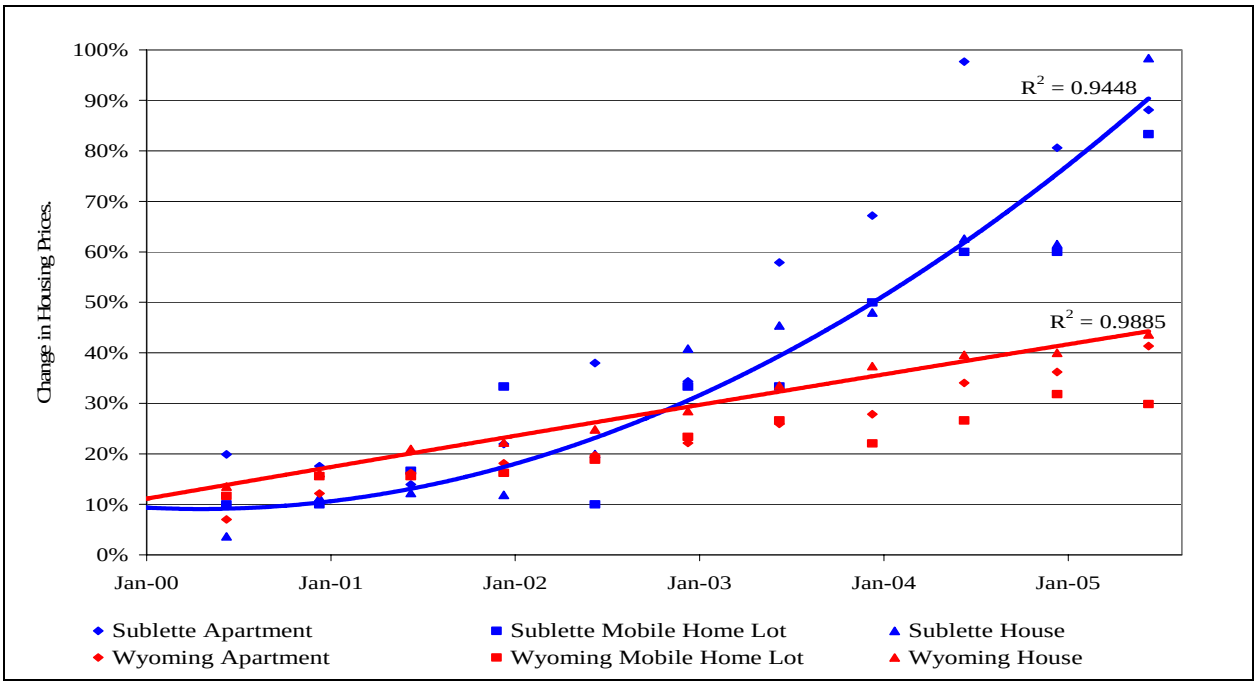

Figure 3.4.1-1 Percent change in housing cost for Wyoming and Sublette County (trend line fit to housing data) (Wyoming Department of Administration and Information Economic Analysis Division 2006)

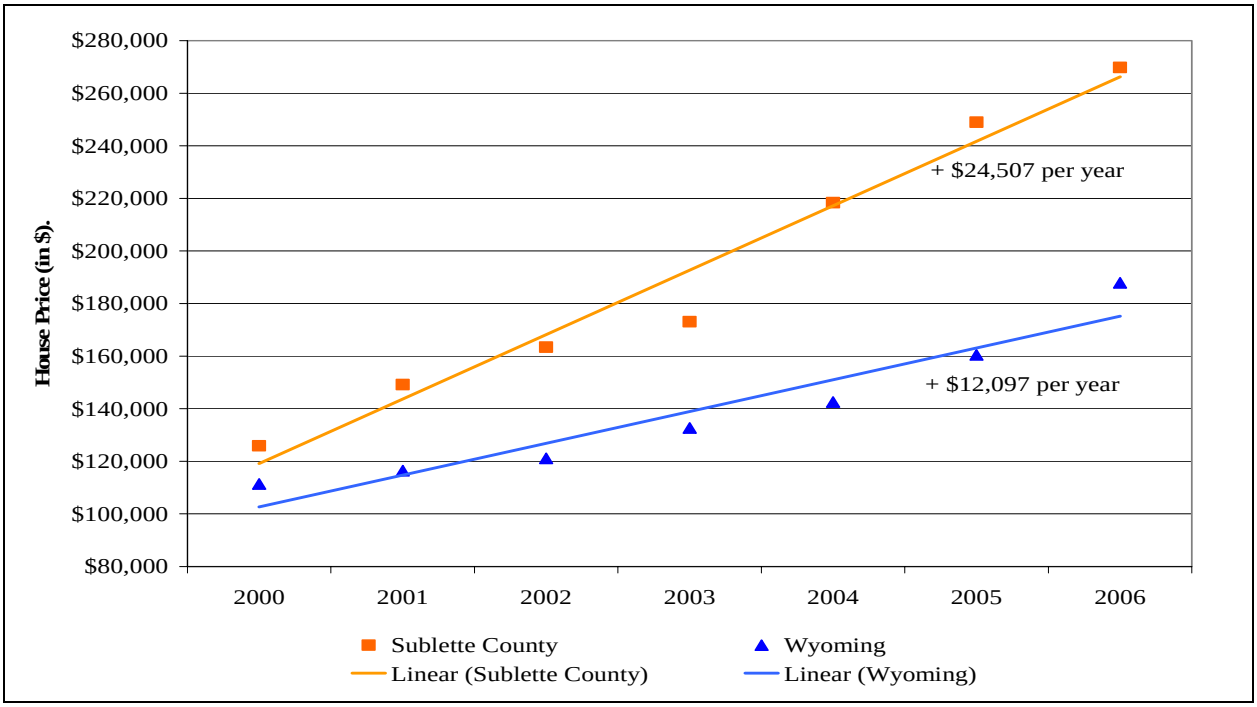

Figure 3.4.1-2 Housing price increase for Sublette County and the state of Wyoming, 2000–2006 (Wyoming Community Development Authority 2007)

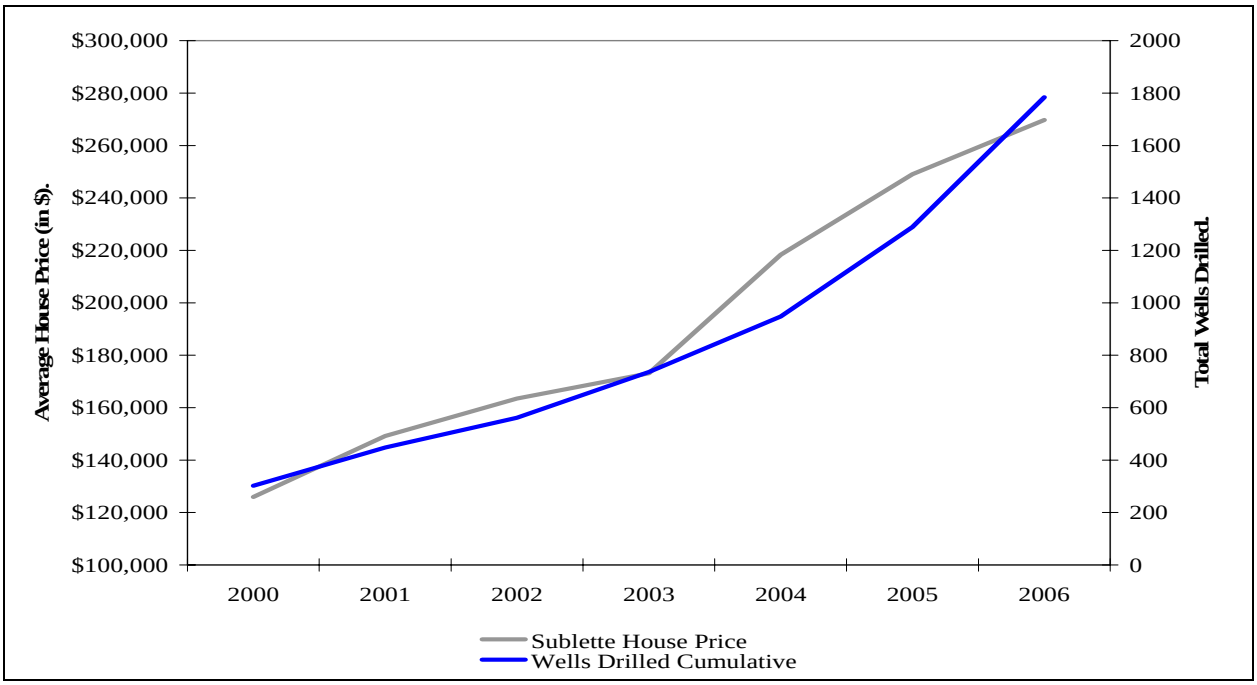

Figure 3.4.1-3 Sublette County average house price correlated with number of wells drilled (Wyoming Community Development Authority 2007)

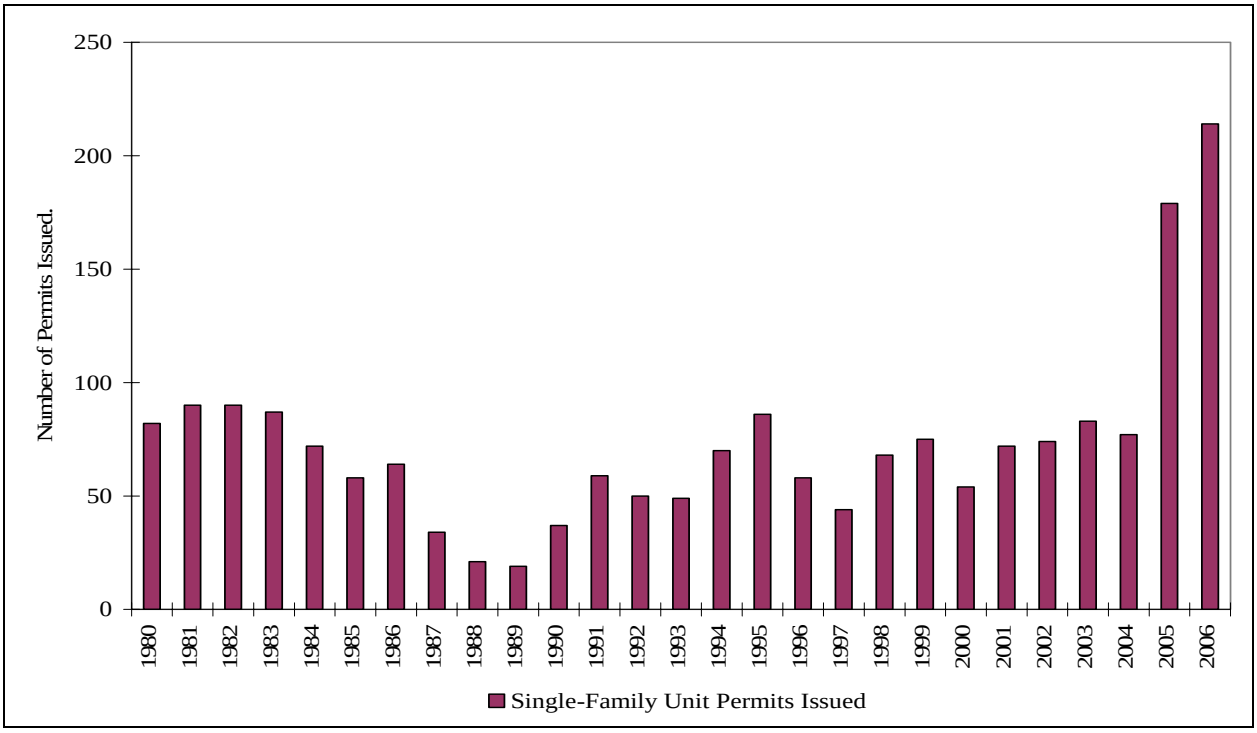

Figure 3.4.1-4 Number of single-family unit construction permits issued (Jacquet 2006)

3.4.1.3 *Rental Costs*

With above-average wages for some sectors like mining (including oil and gas) but low wages for others (i.e. the service industry), service employees struggle to afford the higher cost of living, leaving the service industry short of employees (Town of Big Piney 2007a; Town of Marbleton 2007a). According to the town of Big Piney (2007), "The vacancy rate for rentals is essentially 0%. It is difficult for the high-paid gas industry workers to relocate here, making it nearly impossible for lower-paid service industry workers to move here and afford a place to live." Similarly, the town of Marbleton (2007) states, "The increases in both the permanent and 'transient' workforce have strongly affected the lack of affordable housing and the lack of rentals available. The lack of housing has driven the market to an all time high with prices out of reach for most."

As Table 3.4.1-2 describes, the average cost per month for a detached, single-family rental house in Sublette County has risen more than 90% since 2000. The average cost for a detached, single-family house in 2006 was 60% higher than the average rental price for a similar home in Wyoming.

Table 3.4.1-2 Average Monthly Rental Costs 2000–2006 for Sublette County and Wyoming (Wyoming Department of Administration and Information Economic Analysis Division 2006)

Rental Unit	Place	Q2—2000	Q2—2006	Change ($)	% Change
Apartment	Sublette	433	781	348	80.4%
	Wyoming	386	549	163	42.2%
Mobile Home Lot	Sublette	175	265	90	51.4%
	Wyoming	170	210	40	23.5%
House	Sublette	624	1,195	571	91.5%
	Wyoming	553	748	195	35.3%
Mobile Home on a Lot	Sublette	435	643	208	47.8%
	Wyoming	403	547	144	35.7%

Lodging tax was implemented in Wyoming in 1986. In communities that adopted the lodging tax, establishments that provide sleeping accommodations to guests that stay less than 30 days tax range from 1% to 4%. The tax can either be county-wide or in individual cities. As of 2006, 21 of the 23 counties in Wyoming had either county-wide or city-based lodging tax (WTIC 2006). A steep increase in the lodging tax collected in Sublette County is evident from FY 2001 ($9,000) to FY 2006 ($235,000) (Wyoming Department of Revenue 2007). Hotels and motels in the area are usually booked to capacity throughout the heavy drilling seasons.

3.4.2 Education/Schools/Childcare

K–12 education in Sublette County has been directly affected by gas extraction in the area. Between 2000 and 2006, schools saw increased enrollment and staffing needs as well as decreased facilities capacity.

The number of transient students has increased considerably, as have the number of students whose primary language is not English. Until recently, Sublette schools received additional funding through county gas production taxes, which helped address the impact of these changes. However, passage of a constitutional amendment in 2006 closed this revenue stream, changing district long-term planning due to change in budgets. Amendment B captures additional gas production revenue and re-allocates these funds to other school districts in the state.

Sublette County is served by two school districts: Sublette No. 1, located in Pinedale and Bondurant, and Sublette No. 9, located in Big Piney and La Barge. Both districts have four schools (high school, middle school, and two elementary schools) with one of the elementary schools located outside of major population centers and the other schools located within the major population centers.

Table 3.4.2-1 shows that student enrollment has steadily increased over the past decade in District No. 1, with a sharp increase between 2000 and 2006. District 9 enrollment was decreasing between 1991 and 1999 but also experienced a large increase in enrollment between 2000 and 2006 (Wyoming Department of Education 2007).

Table 3.4.2-1 School District Enrollment History (Wyoming Department of Education 2007)

Year	District No. 1 Population	% Change by Year	District No. 9 Population	% Change by Year
1991	592	NA	640	NA
1992	602	1.69%	638	-0.31%
1993	651	8.14%	652	2.19%
1994	676	3.84%	702	7.67%
1995	676	0.00%	682	-2.85%
1996	641	-5.18%	655	-3.96%
1997	642	0.16%	669	2.14%
1998	637	-0.78%	655	-2.09%
1999	627	-1.57%	604	-7.79%
2000	639	1.91%	569	-5.79%
2001	630	-1.41%	587	3.16%
2002	671	6.51%	571	-2.73%
2003	689	2.68%	592	3.68%
2004	701	1.74%	592	0.00%
2005	767	9.42%	617	4.22%
2006	847	10.43%	646	4.70%
Change 1991–1999	35	5.91%	-36	-5.63%
Change 2000–2006	208	32.55%	42	13.53%

The increase in student population has resulted in the need for additional teachers and instructional staff, as seen in Table 3.4.2-2.

Table 3.4.2-2 Instructional Staff by District (FTE) (Wyoming Department of Education 2007)

Year	District No. 1	District No. 9	Statewide
2000	63.40	70.5	9,803.60
2001	73.00	70.3	9,829.60
2002	70.00	75.0	9,979.60
2003	70.50	71.3	10,055.70
2004	68.80	74.2	9,985.20
2005	73.60	73.4	10,087.30
2006	80.20	86.1	10,300.30
Percent Change 2000–2006	26%	22%	5%

Between 2000 and 2006, Districts No. 1 and No. 9 increased their instructional staff by 22% and 26% respectively, while statewide instructional staff increased by only 5%.

Student enrollment counts discussed earlier reflect total numbers of students in the district, but they do not account for turnover of individual students. Nor do they report the precipitous increase in non-English-speaking students. In Pinedale, 168 of 841 students (20%) either entered or exited the district in 2005–2006. The Big Piney district has seen an increase of 300% in this cohort and has hired three full-time English-language literacy positions to address this need (Anschutz 2007).

As part of the recruitment process in Sublette County, teacher salaries run approximately 11%–12% higher in Sublette compared to the state average (Table 3.4.2-3).

Table 3.4.2-3 Teacher Salary (Wyoming Department of Education 2007)

Year	District No. 1	District No. 9	State Average
2003	$36,275	$38,935	$34,854
2004	$40,667	$40,752	$35,856
2005	$44,088	$41,117	$37,876
2006	$48,911	$50,762	$44,088

Per-pupil spending is significantly higher in Sublette County than it is statewide, with District No. 9 expending more per pupil than District No. 1 (Table 3.4.2-4). From 2000 to 2006, District No. 1 spent an average of 24% more per pupil than the state average, while District No. 9 averaged 55% more.

Table 3.4.2-4 Per-Pupil Spending (Wyoming Department of Education 2007)

Year	State Average	District No. 1	District No. 1 Increase Over State	District No. 9	District No. 9 Increase Over State
2000	$7,356	$9,836	$2,480 (34%)	$11,070	$3,714 (50%)
2001	$7,928	$9,984	$2,056 (26%)	$11,264	$3,336 (42%)
2002	$8,203	$11,197	$2,994 (36%)	$14,538	$6,335 (77%)
2003	$9,030	$11,401	$2,371 (26%)	$15,791	$6,761 (75%)
2004	$10,206	$11,867	$1,661 (16%)	$13,478	$3,272 (32%)
2005	$10,190	$11,014	$824 (8%)	$15,132	$4,942 (48%)
2006	$11,971	$14,150	$2,179 (18%)	$19,453	$7,482 (63%)
Average	NA	NA	$2,081 (24%)	NA	$5,120 (55%)

Increased enrollment and increased teaching staff has resulted in some overcrowding in both districts. While a 20% increase in instructional FTEs does not necessarily correlate to a 20% increase in required classroom space, all district facilities have been put to use to accommodate additional student populations. Bondurant Elementary School is the exception, with a current student population of five. The district in Pinedale recently completed a facilities expansion for students in grades 5 and 6 and is currently building a new aquatic center (at a cost of approximately $17 million) in conjunction with local government.

Construction of a new elementary school and a new high school are being discussed. Fortunately for all Wyoming public school students, the state has created a $1 billion fund to fully cover the cost of new construction and renovation projects. However, each district has the option of funding building projects at the local level, which gives the district much more flexibility in design.

In many ways, the presence of the oil and gas industry has positively affected Sublette County's school districts. Increased enrollment creates more jobs and job security, utilizes facilities more fully, and can create a more diverse population. Of financial interest, natural gas production has hugely increased the tax base in Sublette County, especially in District No. 1 which contains the Jonah and Pinedale Anticline fields. Wyoming as a whole saw a 166% increase in total district assessed valuation (the value assigned to property for use in tax calculations), but this increase is substantially overwhelmed by the more than 1,100% increase seen in Sublette District No. 1 (Table 3.4.2-5). This larger tax base is directly reflected in district general fund revenues from local, county, state, and federal sources, as seen in Table 3.4.2-6.

Table 3.4.2-5 Assessed Valuation—Sublette County by School District (Wyoming Department of Education 2007)

Year	District No. 1	District No. 9	Statewide
1995	$154,289,846	$162,659,154	$6,231,800,000
1996	$140,778,407	$112,594,535	$6,423,400,000
1997	$165,691,195	$158,929,276	$7,145,900,000

Year	District No. 1	District No. 9	Statewide
1998	$235,102,441	$209,452,411	$7,441,500,000
1999	$246,445,300	$194,884,240	$7,025,500,000
2000	$303,349,383	$240,483,089	$7,896,900,000
2001	$547,481,173	$411,597,321	$10,542,100,000
2002	$741,509,427	$449,236,435	$11,169,300,000
2003	$709,120,432	$277,780,164	$10,340,000,000
2004	$1,655,510,817	$487,860,020	$13,679,500,000
2005	$2,390,969,127	$676,213,100	$16,445,000,000
2006	$3,788,604,732	$800,720,001	$20,978,700,000
% Increase 1995–2000	97%	48%	27%
% Increase 2000–2006	1,149%	233%	166%

Table 3.4.2-6 General Fund Revenues Total from Local/County/State/Federal—Sublette County by School District (Wyoming Department of Education 2007)

Year	District No. 1	District No. 9	Statewide
2000	$7,971,133	$6,466,289	$660,610,023
2001	$3,193,583	$4,329,430	$664,657,985
2002	$10,656,932	$7,188,453	$717,117,801
2003	$11,406,847	$7,959,120	$768,273,957
2004	$10,889,071	$6,349,572	$759,619,270
2005	$20,608,469	$11,872,933	$840,452,300
2006	$29,550,743	$15,434,603	$898,107,584
% Increase 2000–2006	271%	139%	36%

Of most interest to Sublette County government is the increase in general fund expenditures for both districts. Compared to a statewide increase of only 37%, school district expenses in Sublette County experienced triple-digit increases from 2000–2006 (Table 3.4.2-7).

Table 3.4.2-7 General Fund Expenditures--Sublette County by School District (Wyoming Department of Education 2007)

Year	District No. 1	District No. 9	Statewide
2000	$5,701,686	$5,369,907	$661,500,425
2001	$5,581,358	$5,918,867	$673,591,640
2002	$8,355,265	$7,591,107	$724,206,123
2003	$13,721,364	$8,213,946	$750,746,628
2004	$11,292,016	$7,149,790	$756,193,461
2005	$16,968,439	$8,548,722	$803,732,619
2006	$31,136,408	$12,048,771	$907,392,493
% Increase 2000–2006	446%	124%	37%

Until November 2006, both districts in Sublette County were extremely well-funded. Wyoming law permitted districts to keep 25% of excess special school-district property tax revenues each year while

returning 75% to the state. In 2005, Pinedale retained $14.2 million, and Big Piney retained $4.1 million. Pinedale put this money directly into technology purchases (Gruver 2006). Each fifth-grade student received a new laptop, and all classroom teachers now have a SmartBoard and projector in their rooms. In 2006, Pinedale retained approximately $22 million, which was earmarked for a new aquatic center and a middle school expansion project (Gruver 2006).

The general election in November 2006 brought about a tremendous funding change for districts rich in natural gas production. Amendment B to the constitution essentially required that all excess funding be returned to the state for redistribution to other districts. Both Sublette County school districts are part of a lawsuit against the Wyoming Department of Education over repayment/usage of the 2006 monies. In the future, the districts will have to rely on local levies to increase budgets above the currently legislated six mills per county. With continued natural gas production expected for the foreseeable future, losing the excess revenues may leave Sublette County districts in a poor position to deal with expected increases in the transient student population.

3.4.3 Roads/Transportation

Increasing traffic is a statewide matter in Wyoming, but the increases in Sublette County far surpass the statewide average. From 2000 to 2006, traffic increased 16.2% across Wyoming, but in Sublette County the increase was 79% (Wyoming Department of Transportation 2007). This section investigates the impacts of natural gas development on transportation volume, road safety, and road conditions in Sublette County.

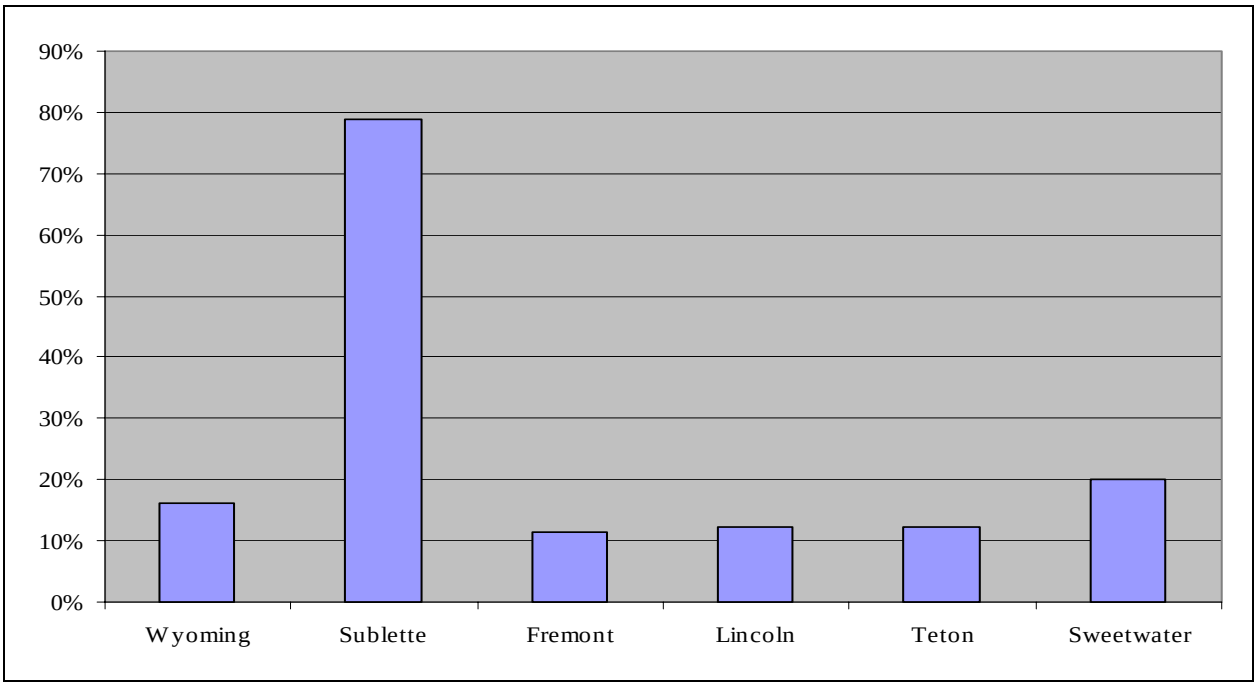

Figure 3.4.3-1 Percent increase in traffic counts from 2000–2006 (Wyoming Department of Transportation 2007)

The disparity between the statewide traffic increase and Sublette County is evident when comparing Sublette to surrounding counties. Figure 3.4.3-1 compares traffic increases from 2000 to 2006 for select Wyoming counties. WYDOT data from 50 traffic counters across Sublette County shows traffic increasing by 993 vehicles per day overall during the past five years (Wyoming Department of Transportation 2007). Figure 3.4.3-2 presents percent changes in traffic counts, from 2000 to 2006, at specific locations across Sublette and into adjacent counties. Vehicle traffic increases noticeably toward the central and southern portion of the county. The concentration of traffic occurs within the same proximity as the concentrations of wells.

With an increase in traffic has come an increase in accidents in Sublette County. Figure 3.4.3-3 describes the number of accidents and the percent change in accidents for the county. Between 1995 and 2005, traffic accidents have more than doubled. Of the accidents in 2005, 2% resulted in death and 31% resulted in injury (Wyoming Department of Transportation 2007).

In addition to increased number of accidents, increased traffic also causes more long-term impacts in the form of maintenance of roads, primarily from the increased heavy-truck traffic. The WYDOT Vehicle Miles Book database was queried for selected points in Sublette County, and the data was analyzed using the year 2000 as a baseline. Selected Sublette County results are presented in Figures 3.4.3-4 through 3.4.3-6 below.

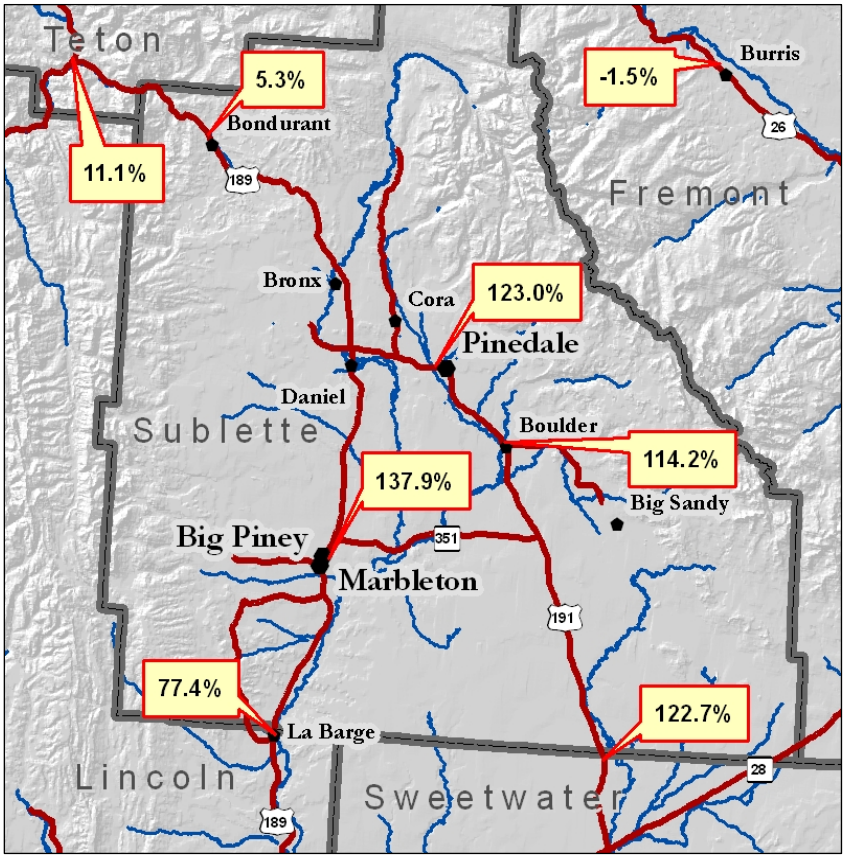

Figure 3.4.3-2 Percent increase in traffic, 2000–2006 (Wyoming Department of Transportation 2007)

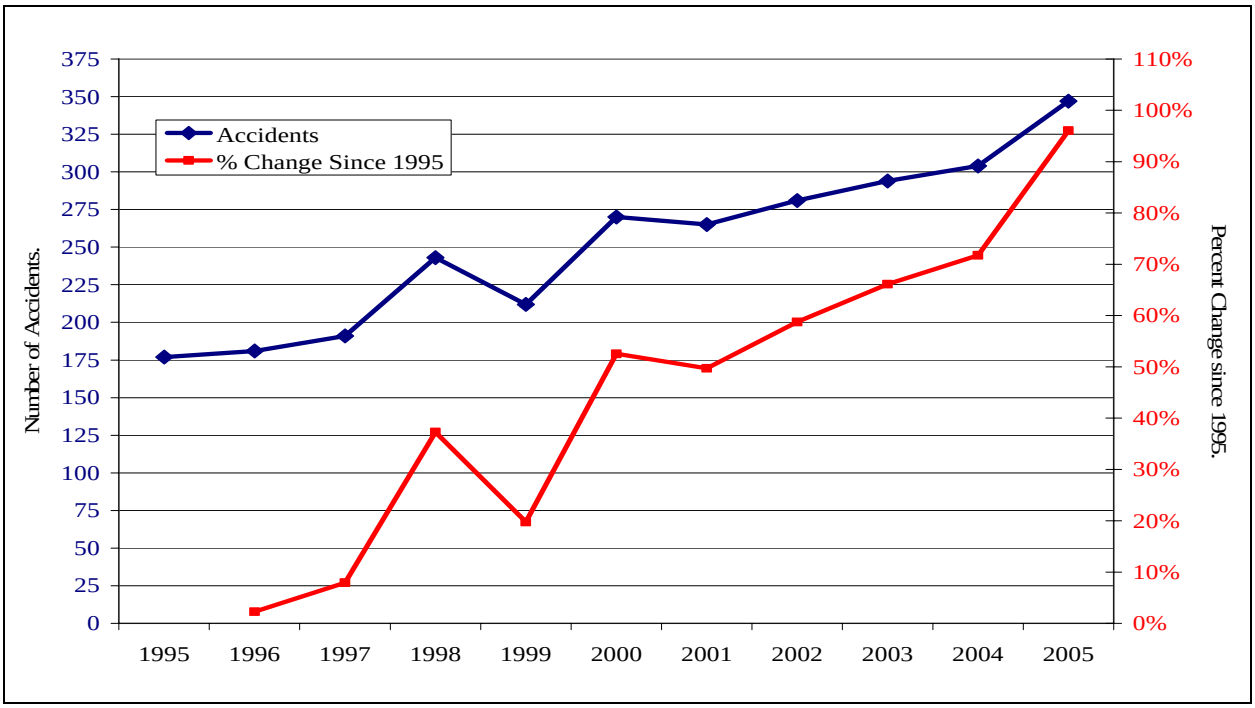

Figure 3.4.3-3 Vehicle-related accidents in Sublette County, 1995–2005 (Wyoming Department of Transportation 2007)

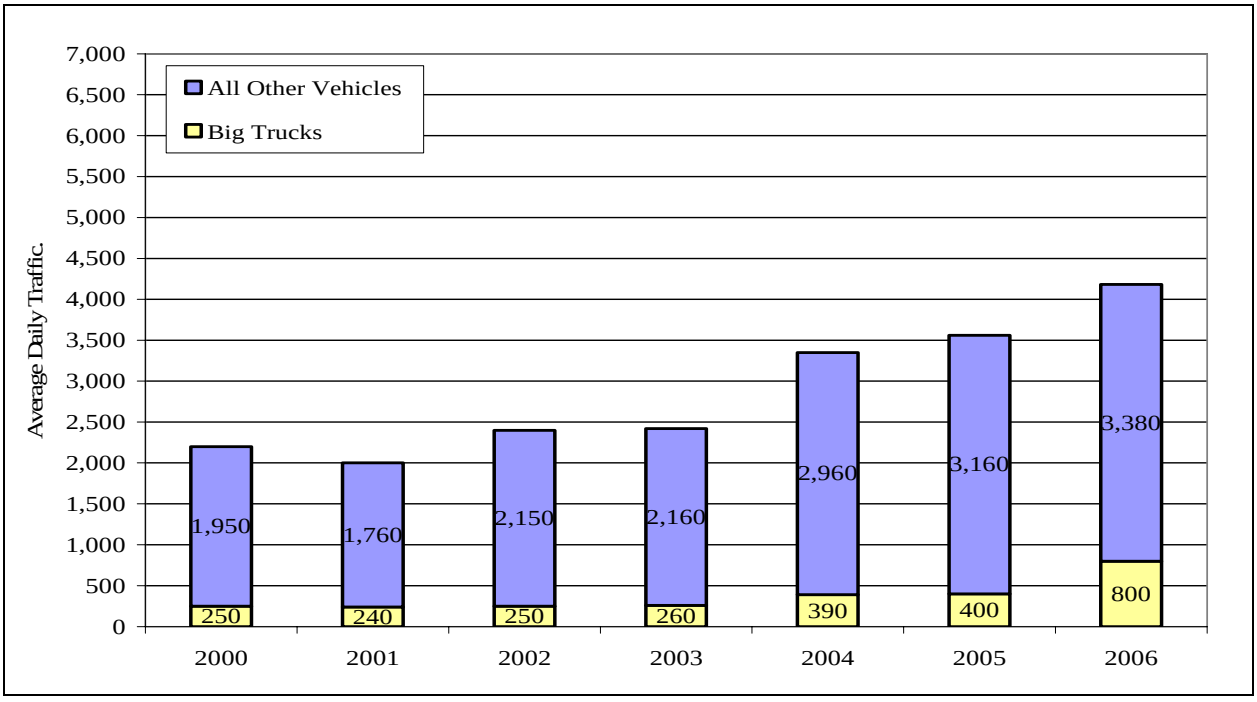

Figure 3.4.3-4 Average daily traffic–southern Big Piney Town Limits–Highway 189 (Wyoming Department of Transportation 2007)

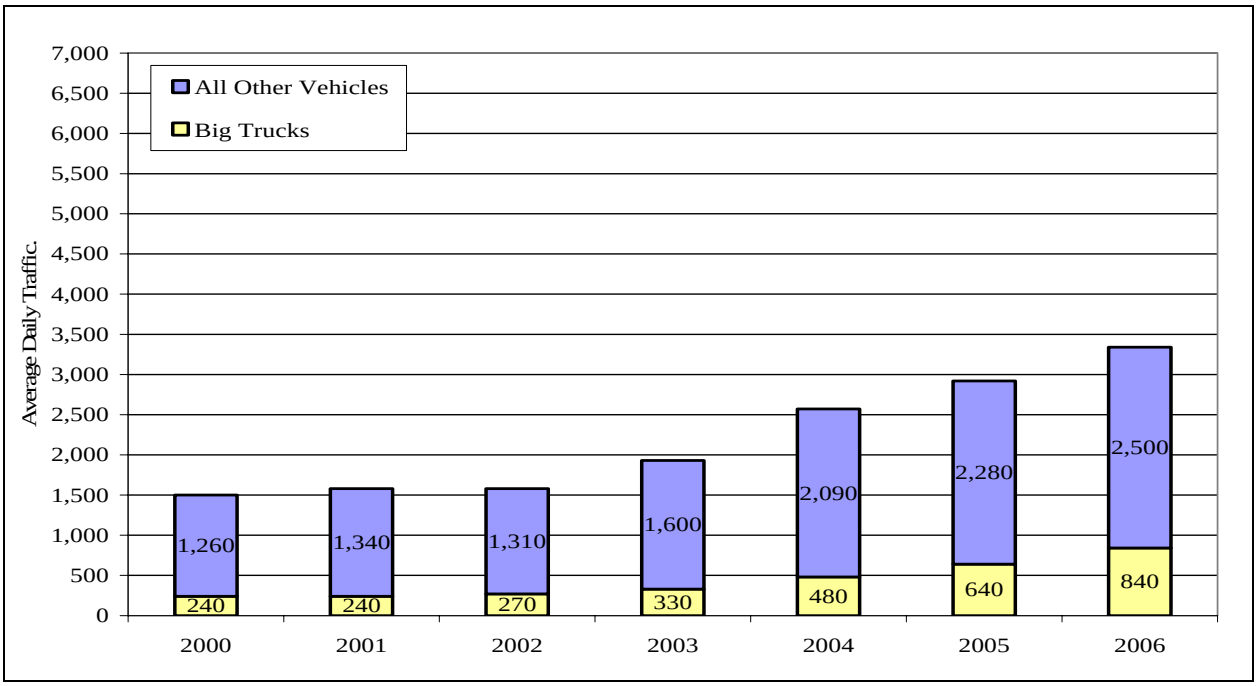

Figure 3.4.3-5 Average daily traffic–Sublette/Sweetwater County Line–Highway 191 (Wyoming Department of Transportation 2007)

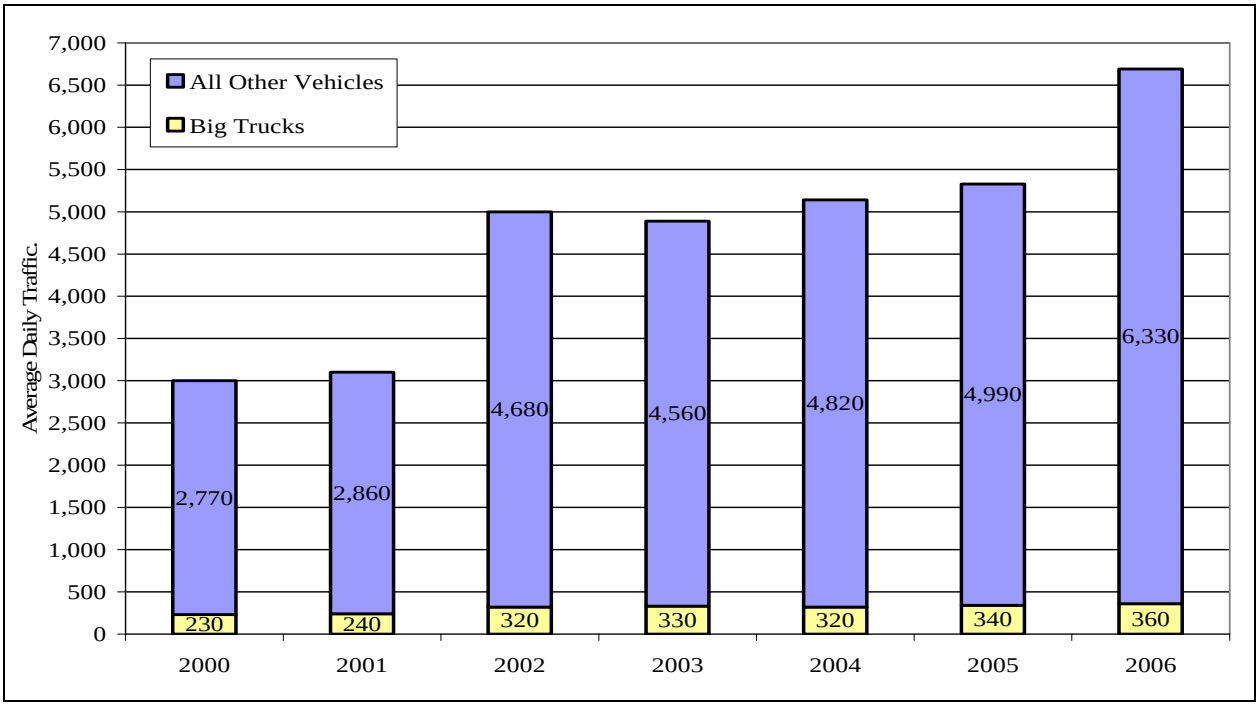

Figure 3.4.3-6 Average Daily Traffic NW Pinedale Town Limits–Highway 191 (Wyoming Department of Transportation 2007)

Truck traffic has more than tripled at Big Piney and at the Sweetwater County line on Highway 189 from 2000 to 2006 (Wyoming Department of Transportation 2007). Pinedale has not experienced such an increase in truck traffic, but it has seen total vehicle counts increase by 123% over those seven years (Wyoming Department of Transportation 2007). As a result of the increased traffic, road improvement needs have increased. According to the Draft Highway Needs Analysis Report from July 2007 (Wyoming Department of Transportation 2007), 71 construction projects are presently identified to have immediate needs for completion, amounting to more than 312 miles of road. One project involves a new rest area, but most projects include resurfacing, widening of roads, or the addition of extra lanes to accommodate increasing traffic. These projects alone amount to more than $317 million.

In 2000, the Sublette County Road and Bridge Department was applying magnesium chloride to only one road in the county. Magnesium chloride is used on unpaved roads to keep dust levels down and for better surface maintenance. In the last two years, an average of 200 miles of roads required magnesium chloride treatments. In addition to the treatment solution, which costs $2,500 per mile, the application of the solution required the purchase of trucks and equipment costing more than $286,000 and the hiring of a new full-time employee for the sole purpose of "mag-ing" the county roads. In 1997, the Sublette County Road and Bridge Department had 11 workers. The magnesium chloride application technician was one of 17 new employees hired in the department over the last ten years (a 61% increase).

A Liquids Gathering System was installed in the Pinedale Anticline field, with one intended result to be the reduction of industry traffic on the roads. Although there was an increase in the traffic counts between 2000 and 2006, the Liquid Gathering System is estimated to reduce truck traffic by 28,000 trucks over two years. This number has not been confirmed, but steps such as this will likely have a minimizing effect on the overall truck traffic in Sublette County.

3.4.4 Police/Crime

Compared to the rest of the nation, Sublette County has historically not been riddled with crime. In the last few years, however, troublesome trends have appeared in the crime data. Index crimes are used to determine the crime rate for an area. According to the 2006 Unified Crime Report statistics for Sublette County, index crimes have increased by 30% since 2000. As described in the Unified Crime Report, "The offenses which comprise the Crime Index are all serious, either by their nature or by the frequency with which they occur, and each presents a common law enforcement problem" (U.S. Department of Justice 2006). Crimes within the Index are categorized as violent crimes (murder, forcible rape, robbery, and aggravated assault) or as Property Crimes (burglary, larceny-theft, and motor vehicle theft). For Uniform Crime Reporting purposes, an Index offense is cleared when (1) a law enforcement agency has identified the offender, (2) sufficient evidence exists to charge the offender, and (3) the offender is taken into custody.

Between 2000 and 2005, violent crimes increased by 106%, and property crimes increased by 56%. Fortunately, between 2005 and 2006, these numbers fell significantly: from 39 violent crimes to 31 and from 302 property crimes to 233. However, murder and rape made up 10.5% of the violent crimes in 2006, whereas in 2005 no murder or rape was reported for violent crimes. Table 3.4.4-1 below compares the number of offenses for 2000 versus 2006 for crimes committed by adult and juveniles.

Table 3.4.4-1 Adult and Juvenile Offenses, 2000 vs. 2006 (U.S. Department of Justice 2006)

Classification of Offenses	Sex	2006 Adult	2006 Juv.	2000 Adult	2000 Juv.	% Change Adults	% Change Juv.
Murder and Non-Negligent Manslaughter	M	0	0	0	0	0	0
	F	1	0	0	0	100%	0
Forcible Rape	M	1	0	0	0	100%	0
	F	0	0	0	0	0	0
Robbery	M	1	0	0	0	100%	0
	F	0	0	0	0	0	0
Aggravated Assault	M	14	1	1	1	1300%	0
	F	0	1	0	0	0	100%
Burglary	M	3	0	5	3	-40%	-100%
	F	0	0	1	0	-100%	0
Larceny-Theft	M	6	5	8	4	-25%	25%
	F	0	0	1	0	-100%	0
Motor Vehicle Theft	M	2	0	3	0	-33%	0
	F	0	0	0	0	0	0
Total Index Offense Arrests	**M**	**27**	**6**	**17**	**8**	**59%**	**-25%**
	F	**1**	**1**	**2**	**0**	**-50%**	**100%**
Manslaughter by Negligence	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Arson	M	0	0	1	0	-100%	0
	F	0	0	0	0	0	0
Other Assaults	M	46	6	23	0	100%	600%
	F	4	0	10	0	-60%	0
Forgery and Counterfeiting	M	1	0	0	0	100%	0
	F	0	0	0	0	0	0
Fraud	M	3	0	7	0	-57%	0
	F	0	0	2	0	-100%	0
Embezzlement	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Stolen Property; Buy, Receive, Possess	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Vandalism	M	5	1	5	0	0	100%
	F	1	0	0	0	100%	0

Classification of Offenses	Sex	2006 Adult	2006 Juv.	2000 Adult	2000 Juv.	% Change Adults	% Change Juv.
Weapons; Carry, Possess, etc.	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Prostitution and Commercialized Vice	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Sex Offenses (Except Rape and Prostitution)	M	3	0	2	0	50%	0
	F	0	0	0	0	0	0
Drug Abuse Violations	M	34	5	11	1	209%	400%
	F	5	1	3	0	67%	100%
(1) Sale/Manufacture Subtotal	M	4	4	0	0	400%	400%
	F	0	0	0	0	0	0
(2) Possession Subtotal	M	30	1	11	1	173%	0
	F	5	1	3	0	67%	100%
Gambling Offenses	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Offenses Against Family and Children	M	7	3	1	0	600%	300%
	F	1	2	0	0	100%	200%
Driving Under the Influence	M	65	0	50	0	30%	0
	F	4	0	13	0	-69%	0
Liquor Laws	M	32	8	24	1	33%	700%
	F	6	1	4	1	50%	0
Drunkenness	M	3	0	2	0	50%	0
	F	0	0	1	0	-100%	0
Disorderly Conduct	M	2	0	0	0	200%	0
	F	0	0	0	0	0	0
Vagrancy	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
All Other Offenses (Except Traffic)	M	153	5	40	1	283%	400%
	F	25	1	12	0	108%	100%
Suspicion	M	0	0	0	0	0	0
	F	0	0	0	0	0	0
Curfew and Loitering Law Violations	M	N/A	0	N/A	0	0	0
	F	N/A	0	N/A	0	0	0
Run-aways	M	N/A	0	N/A	0	0	0
	F	N/A	0	N/A	0	0	0
Total	M	381	34	183	11	108%	209%
	F	47	6	47	1	0	500%
Total Arrests		428	40	230	12	86%	233%
			468		242		93%

The number of juvenile offenses rose 233% between 2000 and 2006. Furthermore, according to Dayle Read-Hudson of Pine Creek Family Counseling in Pinedale, the last few years have produced more accounts of children bearing witness to violent crimes. In terms of arrests, even though the county added 15 law enforcement officers to the county sheriff's department between 2000 and 2006, the number of major arrests per officer has stayed consistent at around 13 meaning that the number of arrests has grown substantially.

The Circuit Court case data tells a similar story but in a different way (see Tables 3.4.4-2 and 3.4.4-3). The court groups its cases in two categories, citations and non-citations. Citations involve "tickets" given by an officer, while non-citations are actual charges brought by the county prosecutor. Therefore, the non-citation cases are more serious. Data for 2007 represents citations and non-citations only through June 30; however, total non-citations for 2007 are already 89% of the non-citation totals for 2006. DUI non-citations for 2007 already have surpassed the DUI non-citations for 2006. For circuit court citations, traffic citations have seen the greatest increase, from 28 in 2000 to 3,787 in 2006.

Table 3.4.4-2 Circuit Court Citation Totals (Boynton et al. 2007)

Year	DUI	Felony	Game & Fish	Other	Traffic	Total
2000	16	1	2	11	28	58
2001	24	9	3	30	49	115
2002	49	5	57	115	760	986
2003	20	9	82	114	2,883	3,108
2004	17	6	100	104	2,726	2,953
2005	20	0	122	98	3,055	3,295
2006	50	3	131	231	3,815	4,230
2007*	3	3	26	65	1,982	2,079
Total Change 2000–2006	34 (312%)	2 (300%)	129 (6,550%)	220 (2,100%)	3,787 (13,625%)	4,172 (7,293%)

* 2007 numbers through June 30th, 2007

Table 3.4.4-3 Circuit Court Non-citation Totals (Boynton et al. 2007)

Year	DUI	Felony	Game & Fish	Other	Traffic	Total
2000	2	3	3	30	11	49
2001	0	7	1	38	24	70
2002	8	23	0	84	58	173
2003	72	58	0	180	101	411
2004	104	47	18	170	99	438
2005	111	63	1	260	126	561
2006	59	51	8	207	72	397

Year	DUI	Felony	Game & Fish	Other	Traffic	Total
2007*	60	30	0	130	132	352
Total Change 2000–2006	57 (2,950%)	48 (1,700%)	5 (266%)	177 (690%)	61 (654%)	348 (810%)

* 2007 numbers through June 30th, 2007

According to Curt Haws, Circuit Court judge, the Circuit Court of the Ninth Judicial District in Sublette County had 107 court events in April 2007 (a "court event" includes any formal appearance or activity in the courtroom). Of those 107 events, 65 (61%) involved people who work in the gas and oil fields. "This number does not include people that are working in jobs that support the energy industry—food, lodging, etc.—but only those that are working for one of the energy companies" (Haws 2007a).

Currently the Sublette County jail holds a population of 52: 40 males, 6 females, and 4 juveniles, with an additional 2 beds in the isolation cells. In 2000, the average inmate population was 7.9. In 2005, the average daily inmate population was 24.2 people. In 2006, these numbers reduced to an average of 19.6; however, in April 2006, typically a slow time for incarcerations, the inmate population at the jail reached 40 people, more than 75% of its capacity. As the jail is not accredited for juveniles, this number does not include juveniles who cannot be held overnight (Johnston 2007). If the inmate population reaches its capacity of 52, the county will likely house inmates out-of-county (incurring subsequent costs to the housing agency and for transportation of prisoners) or build an additional detention complex to house more prisoners.

Change in drilling is closely related to index crime activity, as is population, although to a lesser degree (Jacquet 2005). As an example, Figure 3.4.4-1 shows the relationship between oil and gas drilling (depicted by drilling rig counts) and traffic citations.

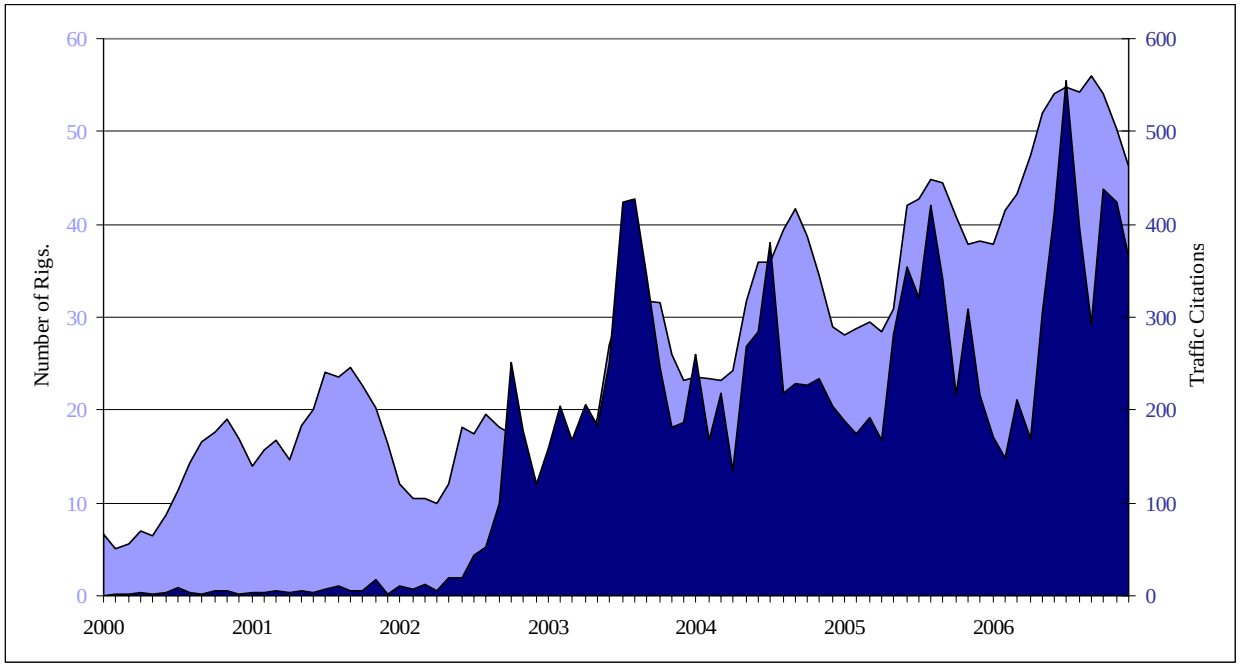

Figure 3.4.4-1 Rig counts correlated with traffic citations (Boynton et al. 2007; Divestco Inc. 2007)

3.4.5 Medical Services and Facilities

With a population of approximately 7,350 living within 4,950 square miles, Sublette County cannot reasonably support a hospital to serve such a low density of county residents. The majority of county residents travel approximately 80 miles to St. John's Medical Center, a 52-bed hospital located in Jackson, Wyoming. For critical injuries, patients can be transported to larger hospitals in Utah, Idaho, Colorado, and Montana.

Sublette County is served by two publicly funded medical clinics located in Pinedale and Marbleton-Big Piney, as well as a private-practice clinic in Big Piney. Both of the public clinics are undergoing renovations to handle an increasing stream of patients and to update facilities. The Pinedale facility is nearing completion, and the Marbleton-Big Piney clinic is scheduled for completion in November 2008. Surprisingly, the number of office visits per month in both facilities from July 2001 to December 2005 has declined slightly, with a net decrease of 11% (see Figure 3.4.5-1).

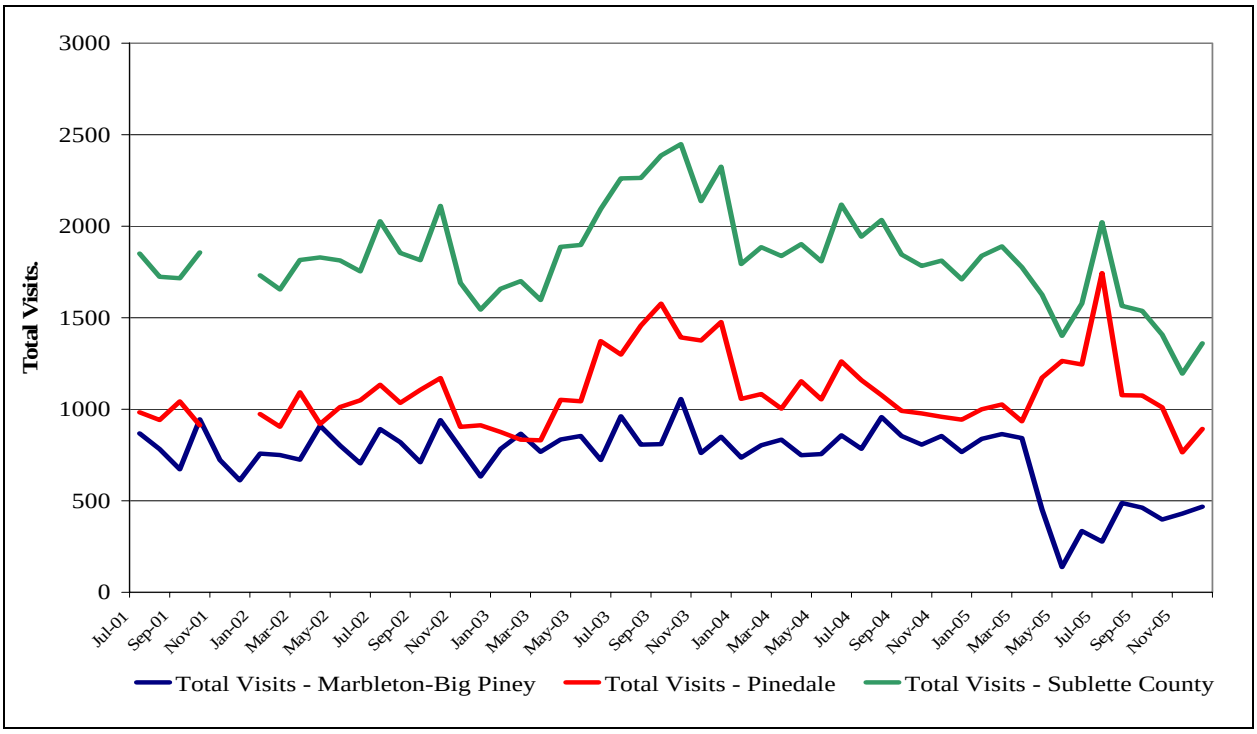

Figure 3.4.5-1 Medical clinic office visits (Sublette County Rural Health Care District 2007)

Physicians staffing these clinics generally specialize in family practice, internal medicine, or emergency medicine. Again, due to the county's low population, specialists such as orthopedists, obstetricians/gynecologists, oncologists, and cardiologists find it cost-prohibitive to establish a practice in Sublette County.

As shown in Table 3.4.5-1, as of December 2006, the following medical personnel were employed in the county:

Table 3.4.5-1 Practicing Medical Professionals in Sublette County (Wyoming Healthcare Commission and Center 2006)

	Physicians	Physicians Assistants	Advanced Practice Nurses	Dentists	Pharmacists
Full Time	4	2	2	3	3
Part Time	2	0	0	1	0
Locum Tenens	1	0	0	0	0

Demographics play an important part in assessing available medical services. While clinic visits and ambulance responses apply to the population as a whole, residents aged 60 or older introduce the need for nursing homes or retirement communities as well as financial effects of Medicare or other subsidized

health programs. Pinedale has one facility for older residents, the 50-bed Sublette Center, which serves all of Sublette County.

In addition to medical clinics and nursing homes, Sublette County provides emergency medical service (EMS), calling primarily upon Eastern Idaho Regional Medical Center LifeFlight, based out of Idaho Falls, ID, for air ambulance transport. Table 3.4.5-2 and Figure 3.4.5-2 show historical data on EMS responses from 2000–2006.

Table 3.4.5-2 EMS Runs by Town and County (Sublette County Rural Health Care District 2007)

Year	Pinedale		Big Piney-Marbleton		Sublette County Total	
	Total	% Increase	Total	% Increase	Total	% Increase
2000	255	NA	181	NA	436	NA
2001	392	53.73%	199	9.94%	591	35.55%
2002	416	6.12%	221	11.06%	637	7.78%
2003	508	22.12%	228	3.17%	736	15.54%
2004	576	13.39%	280	22.81%	856	16.30%
2005	717	24.48%	333	18.93%	1050	22.66%
2006	805	12.27%	364	9.31%	1169	11.33%
2000–2006 Increase	550	215.69%	183	101.10%	733	168.12%
Average Annual Increase	91.67	22.02%	30.50	12.54%	122.17	18.20%

As the data illustrate, Sublette County EMS runs increased by 168% between 2000 and 2006. The development phase of gas recovery has a high risk of injury, especially when placing rigs (Ring 2007). In 2006, EMS runs to the oilfields accounted for 25% of all requests for medical aid. A recent addition to the available emergency response services in Sublette County is the Sand Draw Rescue Center located at the junction of Highways 191 and 351. This rescue center was funded by both industry and government and was created and constructed specifically to account for the need for rapid response to emergencies involving natural gas development in the area.

In additional to straining existing services, the introduction of oilfield workers to the community has affected local drug use and distribution. The high pay that workers receive gives them great incentive to work as many hours as they can. It is a common practice for workers to use methamphetamine to increase the length of time they work each day (U.S. Department of Justice 2006; Urbigkit 2003). Unfortunately, methamphetamine use has spread to other parts of the community and has emerged in the general population as well as on school grounds (Urbigkit 2003). As shown earlier in Table 3.4.4-1, drug abuse violations are up 209% for adult males and 400% for juvenile males from 2000 to 2006. Responding to this issue has increased the workload of law enforcement and will likely require the addition of another officer to address the issue.

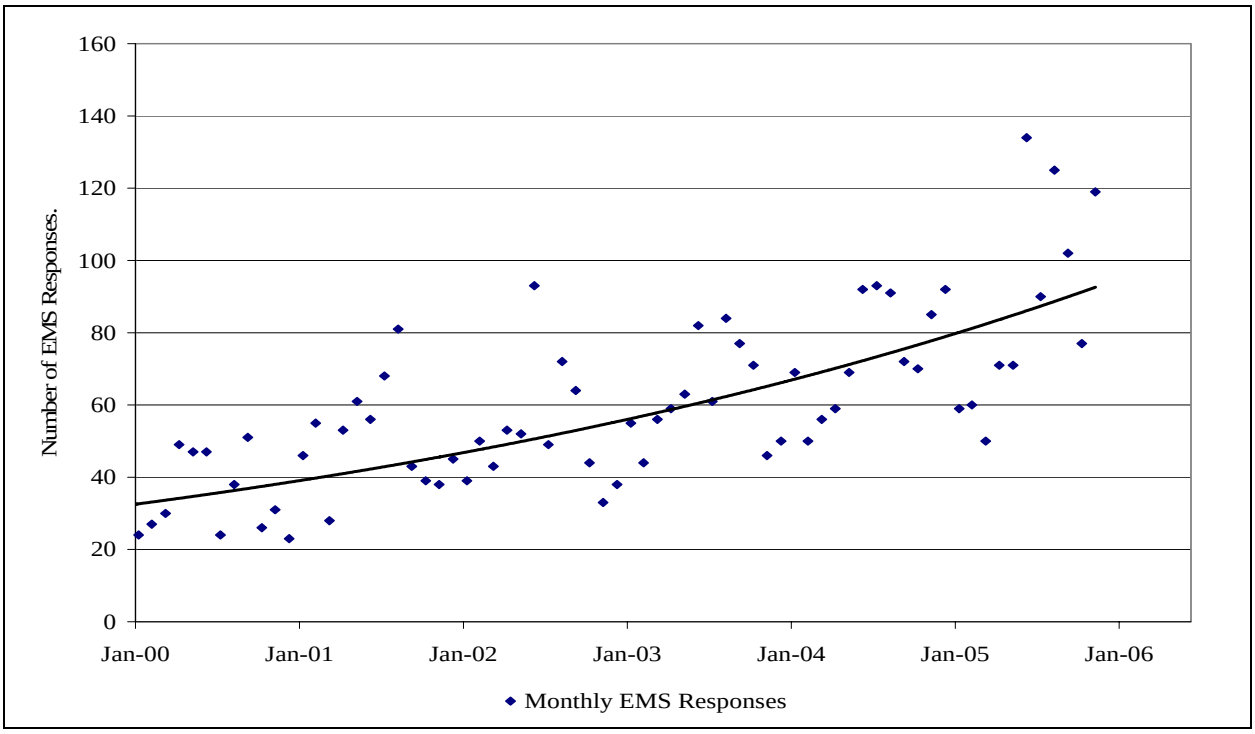

Figure 3.4.5-2 Number of EMS responses (Sublette County Rural Health Care District 2007)

As population increases, medical staffing needs also increase. Across the nation, rural areas often have a long recruiting period for highly skilled individuals. Wyoming has an additional complication in medical recruiting—the issue of malpractice insurance. The Wyoming Hospital Association lists Wyoming as a "crisis state" regarding high hospital and physician malpractice rates (Wyoming Health Resources Network Inc. 2004). These rates are high because the state does not limit the amount awarded to plaintiffs regarding non-economic damages (i.e., pain and suffering). Without a cap on non-economic damages, malpractice insurers charge Wyoming physicians and hospitals a higher premium than other states that do limit awards for non-economic damages.

Another obstacle in retaining physicians is the percentage of patients relying on Medicaid or Medicare. Generally, reimbursement for Medicaid/Medicare patients is low compared to patients with traditional health insurance. High numbers of Medicaid/Medicare patients, coupled with high liability premiums can be difficult for physicians where net income is relatively low. A popular solution to this problem has physicians moving to other states with more reasonable insurance premiums and an economically diverse population (Wyoming Health Resources Network Inc. 2004).

An increased population in Sublette County, whether permanent or transient, will strain all medical resources in the community. By one estimate, more than 11,000 transient workers passed through

Sublette County in 2006 (Bouser 2006). The county is addressing one aspect of this increase with expansion projects at both of its medical clinics.

Overall, it appears that medical services are stretched thin due to the presence of the oil and gas industry, both from population growth causing a growing number of patients and from the inherently dangerous nature of drilling gas wells. Sublette County will likely need to add equipment, facilities, and personnel to accommodate the population increase. Of course, funding can take care of many issues, but complicating the process of increasing medical personnel in the County are relatively high premiums for malpractice insurance and relatively high numbers of Medicaid/Medicare patients. These factors result in lower incomes for Wyoming physicians, which have a negative effect on recruitment and retention.

3.4.6 Water, Sanitary Waste, and Solid Waste Services and Facilities

With the recent and planned addition of new housing developments, and with motels, RV parks, and rental housing regularly reaching capacity, the towns of Pinedale, Marbleton, and Big Piney have been forced to reevaluate their water and sewer infrastructures. Although necessary to accommodate the new growth, construction of new housing in the communities strains the sewer and water systems. System upgrades, if not already implemented, are planned for all three communities.

In addition, more solid waste is being produced in Sublette County. The Sublette County Landfill near Marbleton (also called the Marbleton Landfill) is the only Type 1 municipal landfill for all of Sublette County. Other facilities are located in Sublette County, many of which have been established for the disposal of industrial waste; however, data on these facilities was unavailable. The majority of the solid waste accepted at the landfill comes from the Pinedale Transfer Station, but all other waste generated by Marbleton, Big Piney, Bondurant, and the surrounding areas is also brought to the Sublette County landfill. The landfill also accepts waste collected by Teton County.

3.4.6.1 *Water and Sanitary Waste*

Since 2000, building permits have increased 152% as shown in Table 3.4.6-1. To accommodate new housing developments and businesses, the towns already are taking steps toward updating their systems to handle larger capacities. The town of Big Piney is currently working on a three-phase plan to upgrade and replace the existing sewer and water lines from the 1960s infrastructure (Town of Big Piney 2007a).

Table 3.4.6-1 Building Permits in Sublette County (Sublette County Planning and Zoning 2007)

Year	Single-Family Units	Duplex	Triplex and Fourplex	Multi-Family Units	Total Units
2000	54	0	0	0	54
2001	72	4	0	0	76
2002	74	6	8	0	88
2003	83	4	8	0	95
2004	77	12	4	0	93
2005	179	0	0	6	185
2006	214	0	0	0	214

To account for new water customers, both Big Piney and Marbleton are currently drilling new water wells. They also installed a water transmission line between the towns. This is Big Piney's second water well to be added since 2000, bringing the total number of wells from four to six. The new well was constructed to support the increase in water hook-ups. The town has seen an increase in new water hook-ups of approximately 25% since 2005. Billing records indicate that Big Piney also has experienced an increase of approximately 27% in its sewer usage (Arthur 2007).

The new well in Marbleton is intended to support new hook-ups as well as account for the declining water supply of the other wells. Since 2000, the active water accounts in Marbleton increased from 238 to 382 (a 65% increase). Although the town's new water well produces 120–125 gallons per minute (almost twice as much as the other wells), estimating how much more growth this new well will support is difficult, given that water production of the other wells is declining (Forsgren Associates 2007). Between 2000 and 2006, the active sewer accounts increased from 242 to 384 (a 59% increase); however, the sewer in Marbleton has already reached capacity, and the town is currently researching possibilities for upgrades to the current sewer system (Armstrong 2007).

3.4.6.2 *Solid Waste*

Three waste services serve Sublette County. One service is new to the area this year, and the other two did not keep customer records before 2005. Colleen Grandsen, who owns and operates the BNC Trash Service in Pinedale with her husband, mentioned, "Before now, there wasn't the need" (Grandsen 2007). However, since 1999 when they bought the business, the Grandsens have seen their customer base more than double. BNC Trash Service is now to the point where it cannot accommodate any additional customers. The company has added three new disposal trucks to its fleet since July 2006 to allow for faster automated service. However, the Grandsens find hiring affordable workers to operate these trucks nearly impossible (refer to Section 3.2.3).

Before September 2004, complete records were not kept at the Sublette County (Marbleton) Landfill. As described in Table 3.4.6-2, tonnage of waste measured from the Pinedale Transfer Station and from the

surrounding areas ("all others") has risen considerably, even between yearly totals from August 2006 and August 2007. The Pinedale Transfer Station, which accepts primarily household waste from disposal services, saw an increase of 759 tons of waste (15%). The "all others" category (which includes all other waste collected from other areas besides Teton County and through the Pinedale Transfer Station, often including haulers from the Pinedale and Jonah fields), increased by 2,986 tons, an increase of 35%.

Table 3.4.6-2 Sublette County Landfill Tonnage per Year (Hoffman 2007a)

Year	Jackson	Pinedale	All Others
Sept 2004–Aug 2005	30,973	4,385	7,991
Sept 2005–Aug 2006	33,543	5,224	8,603
Sept 2006–Aug 2007	28,860	5,983	11,589

In February 2005, Nelson Engineering completed an annual cost analysis for the Sublette County (Marbleton) Landfill. The purpose of this analysis was to aid the landfill in future planning. The report projected total volume for the landfill in 2005 at 36,463 tons. According to the County Materials Analysis Reports, the total tonnage from January 2005 through December 2005 exceeded the projection by 8,132 tons, 22% more than anticipated. The daily tonnage forecast in the Nelson Analysis, based on six days a week, eight hours a day, was 114 tons. According to Rick Hoffman, Sublette County Waste Management Supervisor, the 2006 average daily tonnage was 147 (Hoffman 2007b).

In 2004, 2005, and 2006 combined, Sublette County recycled 941 tons of material, increasing by approximately 5% per year. In addition, Sublette Citizens for Recycling representative Marti Seipp estimates that approximately 200 tons worth of material could be recycled from oil and gas developments alone each year (Seipp 2007).

It appears that the county will need new facilities in the near future. According to Rick Hoffman, Sublette County Waste Management Supervisor, "There needs to be an increased effort in recycling and a major renovation of the Pinedale Transfer Station" (Hoffman 2007b). Similarly, Seipp projected that future tonnage cannot be handled by the current facilities. Seipp states, "We can't do that in our current facility with our current budget so we're looking at a new facility with adequate equipment. That's included in our budget for 2007-08 because we need to get started now" (Seipp 2007).

3.4.7 Cultural and Social Impacts

The social and cultural impacts from the recent natural gas development in Sublette County are more pronounced in and around the town of Pinedale and the more northern areas of the county. Pinedale and the surrounding area have lacked prior experience with the influx of activity associated with current nearby energy development, while Big Piney and Marbleton have been accustomed to the changes in

population and culture associated with energy extraction from prior development (Blevins et al. 2005; Wilkinson 2005).

Sociologists from the University of Wyoming performed a series of interviews with local residents in 2005 and found that a majority of social impacts in the Pinedale area derive from the large numbers of newcomers settling or temporarily staying in the area (Blevins et al. 2005). Before the increase of gas activity, it was commonplace to be acquainted with the majority of people that one may cross paths with during a day, while today it is increasingly commonplace not to recognize someone while going to the bank, buying groceries, etc. (Blevins et al. 2005). This is also true in the towns of Big Piney and Marbleton; however, Pinedale has seen a much faster rate of growth, and Pinedale community members have lacked the prior experience of accommodating waves of newcomers. The social impact of newcomers in rural and isolated communities that are growing as a result of energy extraction is well documented (Freudenburg 1986; Gilmore 1976; Massey 1977). A unique series of studies on the mining town of Delta, Utah, surveyed community satisfaction before, during, and after a 1970s boom and found that the lowest levels of community satisfaction were found during the boom years (Brown et al. 2005). Many of Sublette County's newcomers are from the Gulf Coast areas of the United States that harbor the majority of the oil and gas industry's infrastructure, and these newcomers bring their customs with them to Pinedale. A new Cajun and Southern-themed restaurant has opened in Pinedale to cater to this audience.

Another University of Wyoming study from 1998 mailed questionnaires to every property owner in Sublette County, asking, "Why do you reside in Sublette County?" In Pinedale, the three most important factors listed by respondents were scenery, lifestyle, and low population, while in Big Piney/Marbleton, the most important factors were similarly lifestyle, safety, and low population. However, job or business was fourth among Big Piney/Marbleton residents, whereas it ranked much lower among Pinedale residents. The survey then asked the residents how their quality of life would be impacted by an increase in population. Fifty-seven percent of Pinedale residents said their quality of life would decrease, 28% said it would improve, and 14% said it would not change. By comparison, 37% of Big Piney/Marbleton residents said their quality of life would decrease, 36% said it would improve, and 28% said it would stay the same (McLeod et al. 1998).

Wyoming Rural Development Council's Sublette County Community Assessment was comprised of a series of interviews and listening sessions in May 2003. The assessment found that the county's slow pace, open spaces/agriculture, quiet, scenery, recreation, schools, and people were identified by local residents as the most important assets of the community (Porter et al. 2004). The report found that a change in the philosophy of the county due to newcomers was a concern among a number of residents.

Pinedale has historically experienced large decreases in economic activity during winter months. Many businesses were seasonal in nature as industries catering to tourists, ranching, and recreation (Forest

Service, etc.) experienced an "on" season during summer months and an "off" season during winter months. Many residents were accustomed to the town "shutting down" during the off season, and some residents moved to southern climes for work or recreation during these months (Wilkinson 2005). Traffic on Hwy 191 slowed considerably during the winter months, lines at the convenience store were rare, and the demand for private and government services was small. Today the fluctuations in unemployment have effectively stopped, and when compared to a few years ago, residents feel as though the town is busy all year round (Wilkinson 2005).

Related is the impact of the county (and especially the town of Pinedale) becoming much more "blue collar." In a community that was once filled with retirees, tourists, and cowboys, workers in greasy coveralls eating at restaurants are now commonplace (Ring 2005). Pinedale residents also are concerned that the local identity of the community is shifting rapidly from a "cow town" to an "oil town" (Blevins et al. 2005). The shift from a ranching- and recreation-based culture to a mining-based culture also has been well documented in the national media (Clarren 2007; Kenworthy 2006; Ring 2005; Wilkinson 2005). Only a small minority of residents in Pinedale were employees of the mining industry before the recent increase in development, while now a huge percentage is employed there. Pickup trucks with gas industry logos (perhaps the most obvious sign) are commonplace throughout the town and can be seen along the highway and parked in residential driveways, grocery store parking lots, in front of restaurants, etc.

Many residents are aware of the reputation that Pinedale has garnered throughout the country in the media as a "boom town" (Clarren 2007), and residents have noted that anxiety and conflict over how to handle growth in the community is affecting social relations (Blevins et al. 2005). Town residents are becoming accustomed to a barrage of large subdivision proposals, planning meetings, and numerous socioeconomic and planning studies. This social conflict over planning for sudden growth in small communities other than Pinedale has been previously documented (Gilmore 1976). Residents are worried about issues of affordability, infrastructure capacity, zoning regulations, and other growth issues (Blevins et al. 2005).

4. PROJECTIONS

4.1 INDUSTRY GROWTH

Currently, 1,026,790 acres are available for oil and gas leasing in the Pinedale Planning Area of Sublette and Lincoln counties (USDI 2007). The RMP DEIS Preferred Alternative would make available 1,024,880 acres for oil and gas leasing and development, developing approximately 7,136 new wells.

Operators in the Pinedale Anticline SEIS have proposed a long-term development plan for 4,399 wells that is "substantially different from the approach that was approved in the [2000 Pinedale Anticline] ROD" (USDI 2006a) in terms of magnitude of development and associated effects. The recently-approved JIDP FEIS slated 3,100 more wells to be drilled in that field (USDI 2006b). Figure 4.1-1 shows the completed and projected drilling for the Jonah and Pinedale Anticline fields. Projections for the Pinedale Anticline were from the Pinedale SEIS (USDI 2006a); projections from the Jonah field were taken from the JIDP FEIS (USDI 2006b). Data for completed drilling comes from GIS files downloaded from the Wyoming Oil and Gas Conservation Commission website (Wyoming Oil and Gas Conservation Commission 2007). Numbers represent all wells for which drilling operations began in that year (referred to as spud date in the database); where spud date was not provided, completion year was used instead. Figure 4.1-2 depicts the cumulative completed and projected drilling for both fields, demonstrating the intensity of the rise and fall of well drilling. The accumulated development of these two fields predicts that the majority of labor-intensive development will occur between 2007 and 2018, with additional development occurring and slowing by 2025.

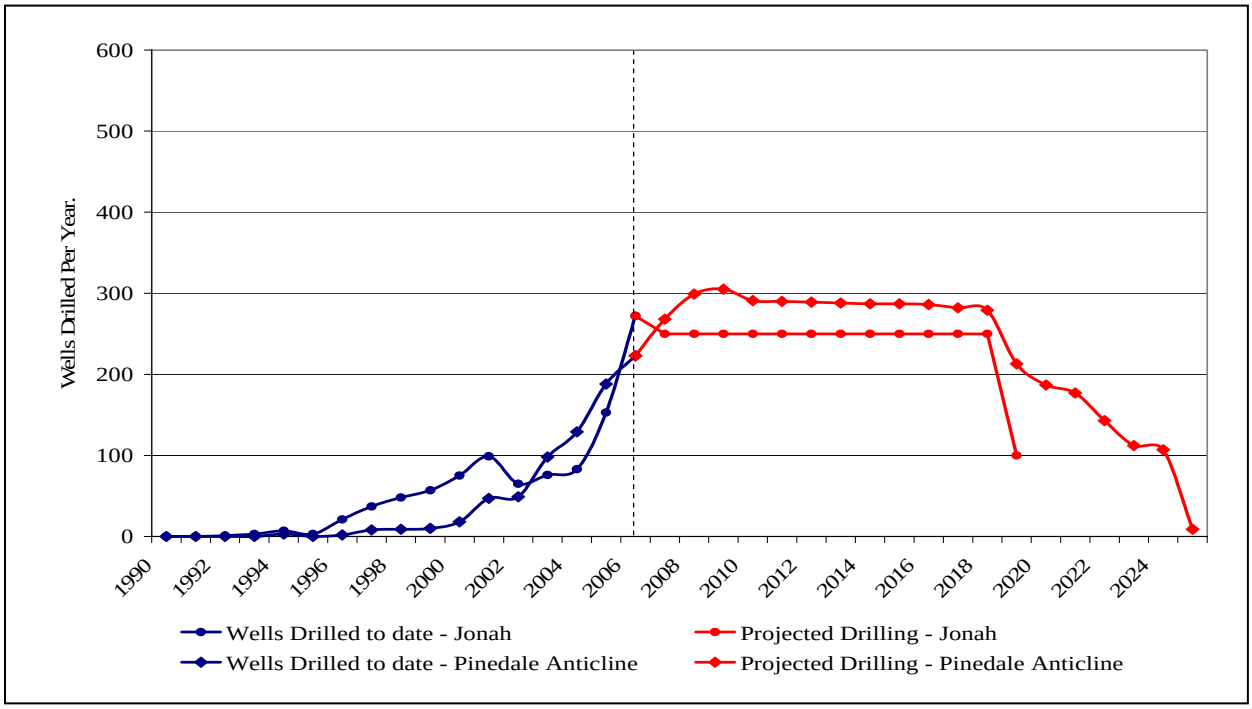

Figure 4.1-1 Annual completed and projected drilling for Jonah and Pinedale Anticline fields individually (USDI 2006a, 2006b)

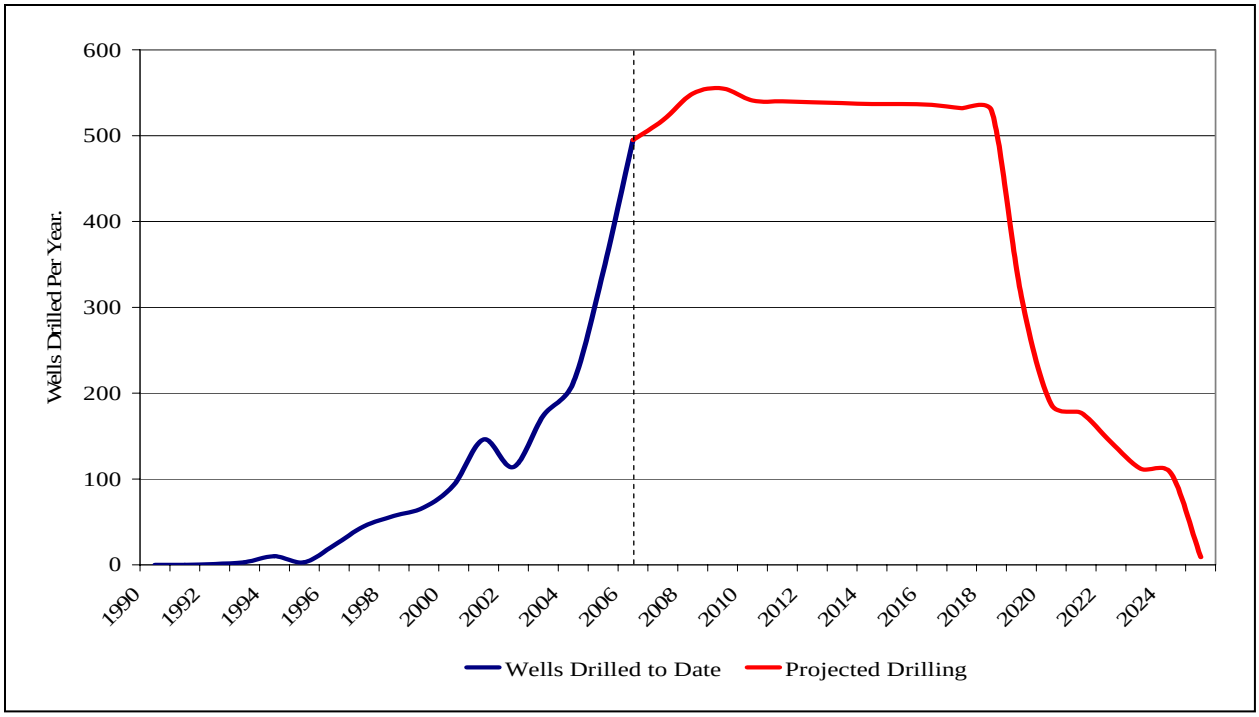

Figure 4.1-2 Annual completed and projected drilling for Jonah and Pinedale Anticline fields combined (USDI 2006a, 2006b)

4.2 COUNTY ECONOMIC GROWTH

The following is an overview of recent economic growth and activity in Sublette County. All indicators suggest rapid economic development, particularly as a result of drilling between 2004 and 2006. Such growth, while creating economic prosperity and wealth, also results in pressure on infrastructure and social services. The baseline analysis conducted by the BLM is sound and indicates similar findings to those of ERG, yet the BLM's analysis of the affected environment as presented in Chapter 4 of the RMP DEIS fails to identify the full extent of socioeconomic effects, particularly those that are adverse.

Economic development in Sublette County between 2003 and 2006 has been substantial with employment rising 41% in three years. More remarkable are growth rates in household income at 128% and total personal income at 81%. Alternatively, there is evidence of a housing shortage in the county given an increase in population of 19% and a decrease in households of 20%. Note that household is defined as a group of people (not necessarily related) living at the same address with common housekeeping, sharing either a living room or sitting room, or at least one meal a day.

Table 4.2-1 Sublette County Overview 2003, 2004, 2006 (data from IMPLAN)

Growth Category	2003	2004	2006	Percent Change (2003–2006)
Population	6,191	6,654	7,359	19%
Employment	4,551	5,251	6,405	41%
Households*	3,678	2,666	2,925	-20%
Number of Industries	115	120	127	10%
Income per Household	$58,664	$90,659	$133,599	128%
Total Personal Income**	$215.8M	$241.7M	$390.8M	81%

*a group of people (not necessarily related) living at the same address with common housekeeping, sharing either a living room or sitting room, or at least one meal a day.
**income accruing to one person (income from job, investments, etc.).

Growth in output (change in domestic production from one year to the next, usually measured by gross domestic product [GDP]), value added (through processing along the supply chain), and employment has been significant with growth rates greater than 1000%. Three industries related to oil and gas development are listed in Table 4.2-2. The three IMPLAN sectors are bridged with the NAICS code classifications as follows:

- IMPLAN Sector 19, Oil and Gas Extraction = NAICS Code 211, Oil and Gas Extraction
- IMPLAN Sector 27, Drilling Oil and Gas Wells = NAICS Code 213111, Drilling Oil and Gas Wells
- IMPLAN Sector 28, Support for Oil and Gas = NAICS Code 213112, Support for Oil and Gas

Although the NAICS codes are bridged with the IMPLAN sectors for reference, IMPLAN employment data was derived from several sources, and provides estimates for non-disclosed data, therefore the numbers will not directly correlate with employment data from Section 3.2 (MIG Inc. 2004). These data were derived from IMPLAN and are reflected in nominal dollars.

Table 4.2-2 Output, Value Added, and Employment by IMPLAN Sector 2003, 2004, 2006 (data from IMPLAN)

Industry Sector	2003	2004	2006	Percent Change (2003–2006)
Sector 19 Oil and Gas Extraction				
Industry Output*	81.97	85.53	129.47	58%
Employment	147.00	159.00	240.00	63%
Employee Compensation*	14.60	17.05	28.90	98%
Proprietor Income*	0.24	0.87	3.77	1,456%
Other Property Income*	23.13	25.15	41.73	80%
Indirect Business Tax*	4.83	4.94	7.92	64%
Total Value Added*	42.80	48.00	82.32	92%
Sector 27 Drilling Oil and Gas Wells				
Industry Output*	0.98	0.52	20.18	1,961%
Employment	13.00	2.00	30.00	131%
Employee Compensation*	0.24	0.05	2.06	751%
Proprietor Income*	0.04	0.01	0.51	1,239%
Other Property Income*	0.22	0.17	3.75	1,573%
Indirect Business Tax*	0.05	0.02	0.82	1,455%
Total Value Added*	0.56	0.25	7.18	1,186%
Sector 28 Support for Oil and Gas				
Industry Output*	47.862	80.37	171.13	258%
Employment	470	572	853.00	81%
Employee Compensation*	20.242	24.532	50.69	150%
Proprietor Income*	2.833	3.428	7.82	176%
Other Property Income*	15.121	34.557	96.62	539%
Indirect Business Tax*	2.698	3.546	7.05	161%
Total Value Added*	40.894	66.062	162.183	297%

* indicates millions of dollars.

There is strong growth in all three sectors—drilling, production, and oil and gas support. Note a tremendous increase in economic activity between 2004 and 2006 in Sector 27 resulting in growth rates in income, taxes, and value added in excess of 1,000%. It should be noted that as development of both the Jonah and Pinedale Anticline fields continues, Sector 19 will likely see growth rates in excess of 1,000%.

4.3 EMPLOYMENT PROJECTIONS

The effects of the RMP DEIS Preferred Alternative were estimated for development occurring in 2007 and beyond. Numbers presented in this section do not reflect existing employment numbers, but represent the number of employees needed to accomplish projected development beginning in 2007. Certainly some of the 2006 workforce would roll over into the 2007 workforce needed to accomplish the proposed development, and additional employees would be needed to accommodate the industry growth.

Direct FTE employment numbers were projected based on information provided in the RMP DEIS, JIDP FEIS, and the Pinedale Anticline SEIS. After direct employment was estimated, IMPLAN was used to estimate indirect and induced employment figures for three scenarios. The first scenario projected employment based on information in the RMP DEIS Preferred Alternative Table 4-13, which stated an average of 372 wells would be drilled per year for the life of the plan, approximately 20 years. This scenario did not account for the intensity of drilling that is likely to occur in the next few years, so based on Figure 4.1-2 in this document, two other scenarios were run, one for 2007 (the current year) and one for 2009 (the peak drilling year).

4.3.1 Projection of Direct Employment

As described in Section 4.1, a schedule for well drilling was derived from the JIDP FEIS and Pinedale Anticline SEIS Preferred Alternative. Information from the same documents was used to project number of employees needed to complete drilling, production, and reclamation phases.

4.3.1.1 *Development (Drilling) Phase*

The development phase consists of well pad and access road construction, rig transportation and setup, drilling, completion testing, and pipeline construction. Based on the JIDP FEIS, 830 worker days are needed to complete a well over a 54 day period, averaging 15.4 workers per day per well, or annualized to 2.3 FTE workers per well per year for development. Based on the Pinedale Anticline SEIS, 1,640 worker days are needed per well over a 72 day period, averaging 22.8 workers per day per well, or annualized to 4.5 FTE workers per well per year. The difference in estimates between fields may be due to the distance between wells and pads (for moving rigs and building roads), depth to gas underground, and use of vertical versus directional drilling. We estimated that Jonah field development makes up 41% (3,100) of the wells to be drilled, while the Pinedale Anticline makes up 59% (4,399) of the wells based on those two proposals (USDI 2006a, 2006b). Using the estimates presented in Figure 4.1-2, the number of wells to be drilled in each field and the number of workers needed to complete the wells was calculated for each year. Figure 4.3-1 shows the annual number of employees needed to complete the development phase for the Jonah and Pinedale Anticline fields.

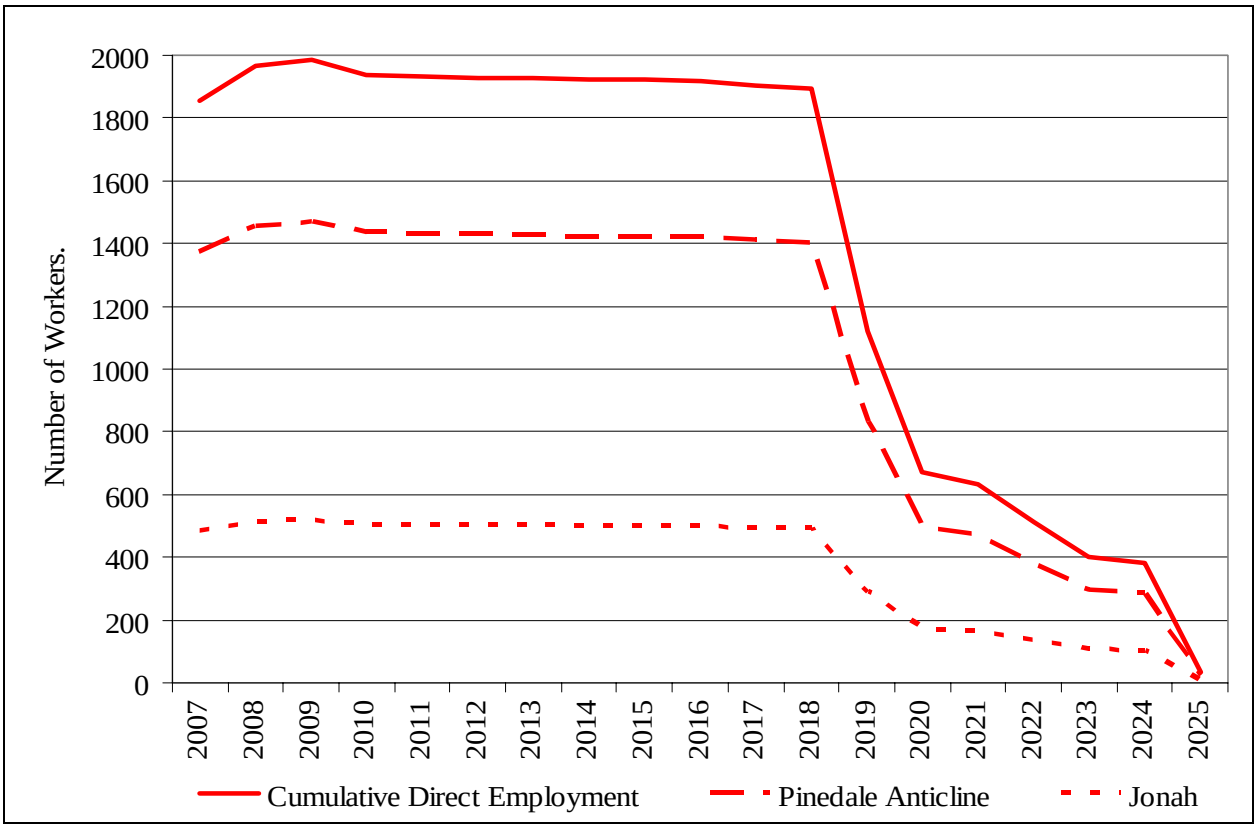

Figure 4.3-1 Annual number of FTE employees needed to complete the development phase

4.3.1.2 *Production Phase*

Estimates for number of workers needed during the production phase were provided only in the JIPD FEIS, and were assumed to be similar for both fields because data specific to the Pinedale Anticline was not available to ERG. According to the JIDP FEIS, 515 worker days are needed for production and maintenance over the 40 year life of a well, which annualizes to 0.035 FTE workers per year per well for 40 years. Figure 4.3-2 shows the estimated number of workers needed per year to complete the production phase.

4.3.1.3 *Post-production/Reclamation Phase*

Reclamation estimates were provided only in the JIDF FEIS and were assumed to be similar for both fields because data specific to the Pinedale Anticline was not available to ERG. According to the document, 50 workers (ten people for five days) are needed to complete reclamation, which is equivalent to 0.14 FTE workers per well per year. Figure 4.3-3 shows the estimated number of workers needed per year to complete the reclamation phase.

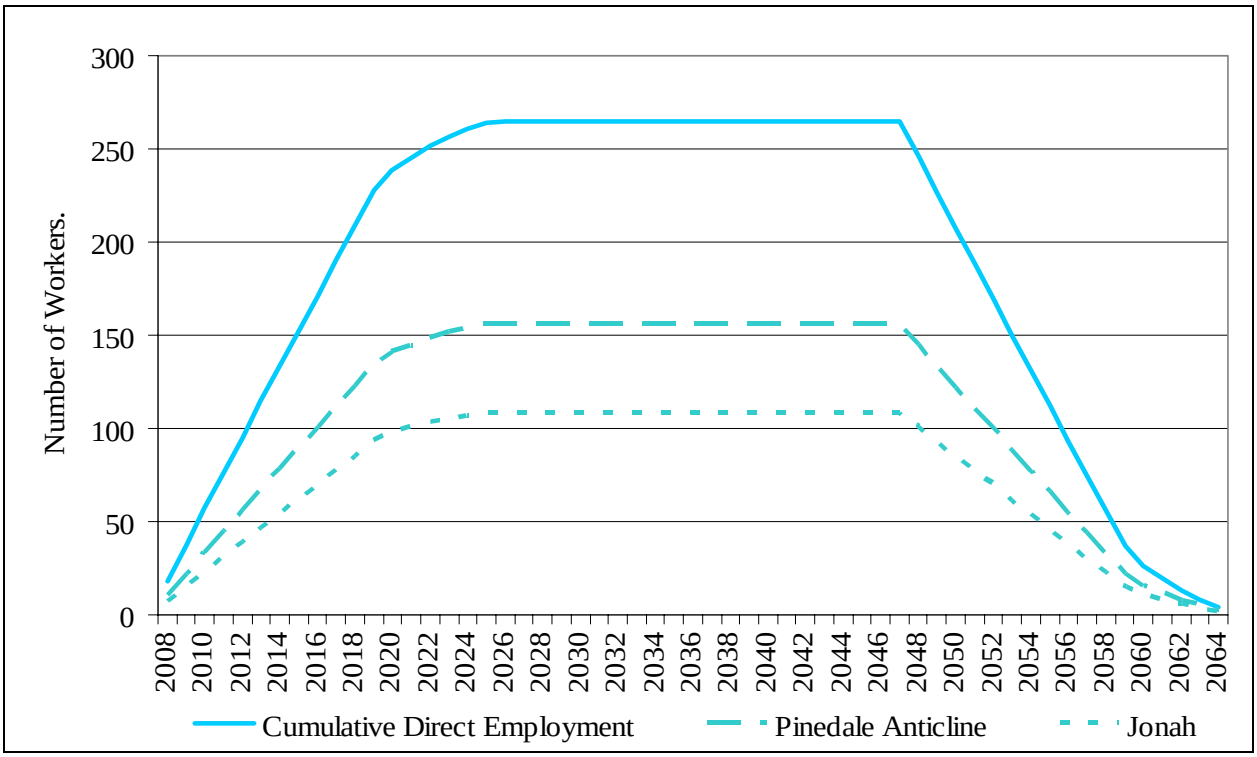

Figure 4.3-2 Annual number of FTE employees needed to complete the production phase

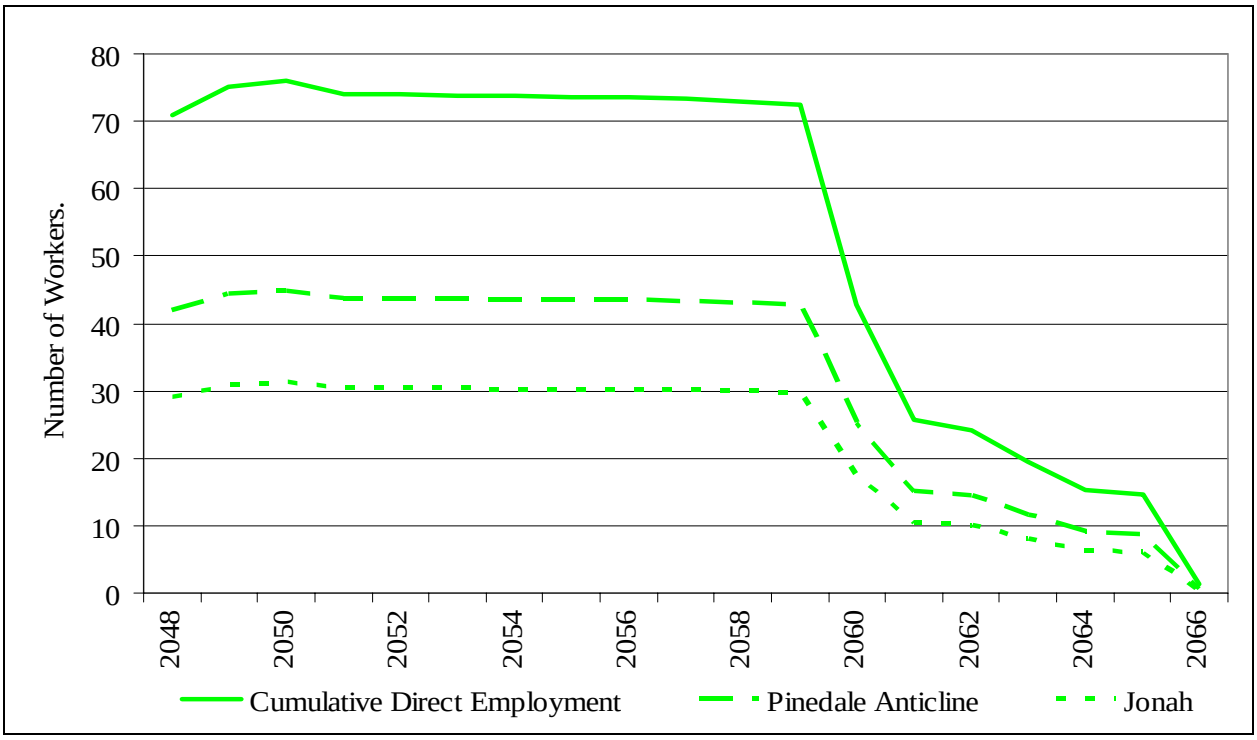

Figure 4.3-3 Annual number of FTE employees needed to complete the post-production/reclamation phase

4.3.1.4 *Life of Plan*

Total FTE employment over the life of the plan (RMP DEIS Preferred Alternative) begins with an estimate of 1,854 employees in 2007. Estimated employment peaks in 2018 with approximately 1,894 FTE development workers and 209 FTE production workers totaling 2,103 workers for that year. Employment drops quickly after 2018 as drilling comes to an end. The expected largest decrease in employment would occur around 2019 when approximately 750 FTE workers from the previous year will no longer be needed. This, of course, ripples throughout the community in the form of indirect and induced employment and income effects, which are described in the next section. Figure 4.3-4 depicts the estimated number of FTE employees needed annually to complete all three phases of field development. Viewed another way, Figure 4.3-5 illustrates the contribution to total employment for each phase, with employment peaking in 2018 with approximately 2,103 workers.

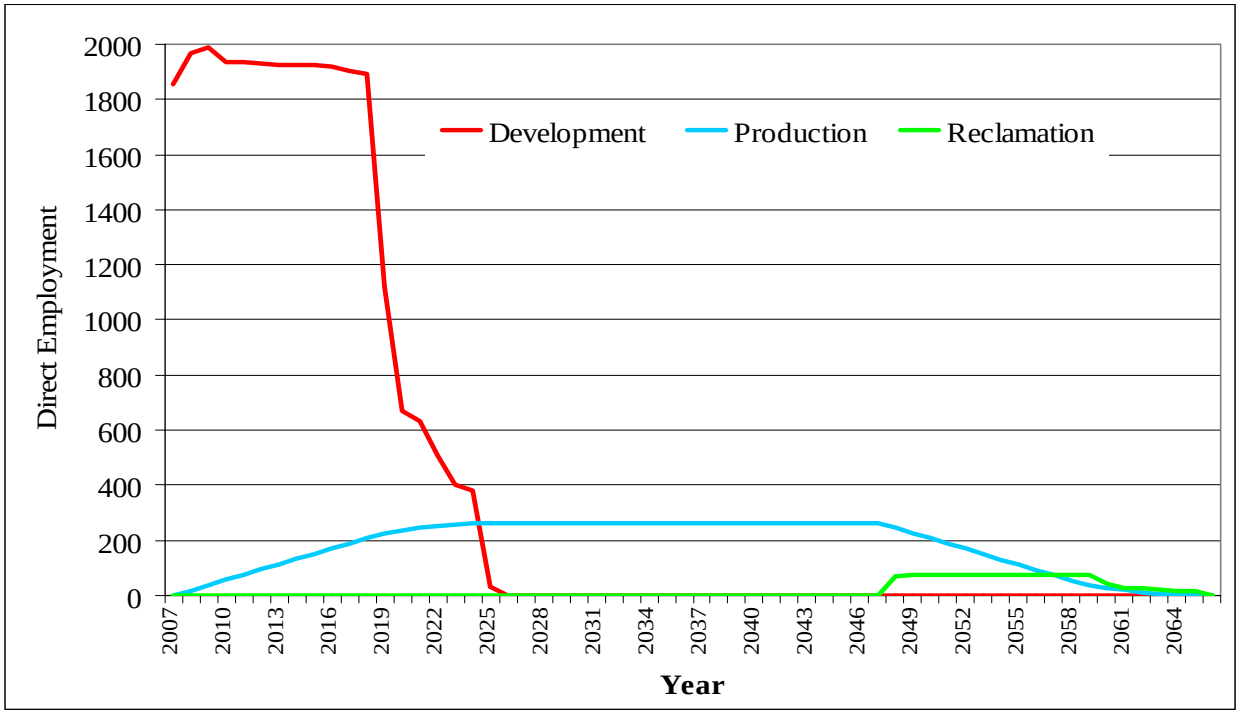

Figure 4.3-4 Annual number of FTE employees needed to complete development, production, and post-production/reclamation phases

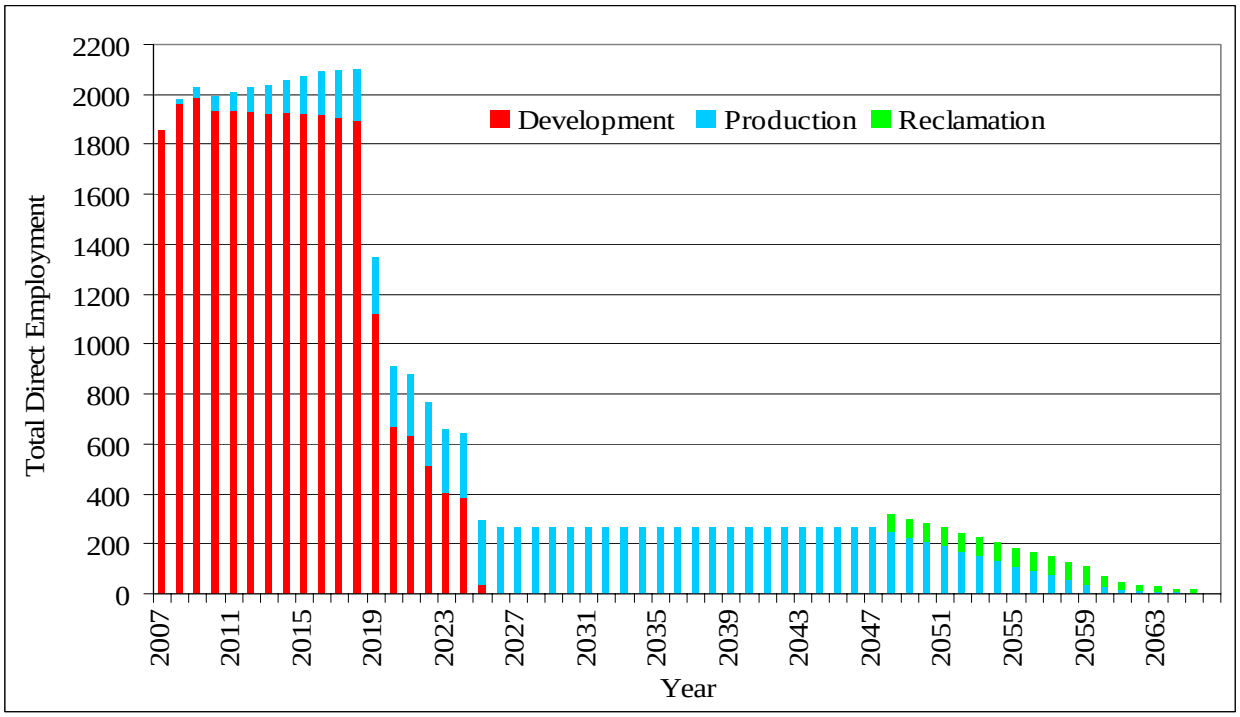

Figure 4.3-5 Projected total annual FTE employment over the life of the plan

4.3.2 Projection of Indirect and Induced Employment

To determine the effects on Sublette County's economy, we used IMPLAN and modeled employment changes for Sublette County. Using Sublette County data we estimated the economic effects of RMP DEIS Alternative 4 by modeling increased employment of 1,186 FTE jobs in Sector 27 (Drilling Oil and Gas Wells), and 744 FTE jobs in Sector 19 (Oil and Gas Extraction). Note that the number of jobs described in the text does not correlate with the number of jobs in the table under Direct employment due to discounting to the equivalent of 2006 values.

Additionally, we estimated the employment effects for 2007 and 2009 (a peak production year) using drilling schedule information presented in the JIDP FEIS and Pinedale Anticline SEIS (refer to Figure 4.1-2). The total number of wells drilled in 2007 is estimated at 518, and 555 for 2009. These figures translate to 1,854 FTE jobs in 2007 and 2,024 FTE jobs in 2009. All financial data are presented in 2006 dollars. The following Table 4.3-1 provides total annual employment results using the same average number of wells drilled and labor per well. The total effects appear to decline given that the model adjusts for inflation and converts employment figures to 2006 constant dollar equivalents.

Table 4.3-1 Employment (FTE) IMPLAN Results—372 Wells per Year

Year	Direct	Indirect	Induced	Total
2007	1,888.9	1,250.0	960	4,099
2008	1,849.2	1,228.9	938	4,016
2009	1,811.0	1,208.5	916	3,936
2010	1,774.1	1,188.7	895	3,858
2011	1,738.5	1,169.6	875	3,783

Total effects using BLM estimates for each year show an average of about 4,000 employees per year. These estimates are based on new well drilling each year and do not take into account cumulative effects. However, the annual number of jobs supported provides evidence for population growth, which in turn increases the demand for housing. Given the 2006 population of 7,359 and the existing housing shortage, the increasing labor force will put significant pressure on the county to expand infrastructure to accommodate this growth.

Value added and output are presented in Table 4.3-2. These estimates are based on an average of 372 new wells drilled annually.

Table 4.3-2 IMPLAN Results (372 Wells per Year) Sublette County ($2006)

Year	Valuation	Direct	Indirect	Induced	Total
2006	Value added*	$538.9	$160.1	$64.3	$763.4
	Output*	$1,199.1	$281.2	$101.6	$1,581.9
2007	Value added*	$525.7	$156.3	$62.8	$744.9
	Output*	$1,175.7	$274.9	$99.2	$1,549.8
2008	Value added*	$513.0	$152.8	$61.3	$727.1
	Output*	$1,153.1	$268.8	$96.9	$1,518.8
2009	Value added*	$500.7	$149.4	$59.9	$710.0
	Output*	$1,131.4	$262.9	$94.6	$1,488.9
2010	Value added*	$489.0	$146.0	$58.6	$693.6
	Output*	$1,110.3	$257.3	$92.4	$1,460.1
2011	Value added*	$477.6	$142.8	$57.2	$677.7
	Output*	$1,090.0	$251.8	$90.3	$1,432.2

* indicates millions of dollars.

Employment estimates for 2007 and peak drilling in 2009 (Figure 4.1-2) increase total employment as indicated in Table 4.3-3. The difference in total employment for 2007 under the BLM estimate and ERG's estimate is 100 workers. The difference is greater for 2009 (472 workers) given that the BLM estimates are averaged and are the same every year. This difference in analysis indicates the importance of understanding the drilling schedule and the expected effects in the early years of production. Housing for 472 more employees will impact communities significantly when evaluated by household size.

Table 4.3-3 Employment IMPLAN results—Preferred Alternative Estimates vs. ERG Estimates based on JIDP FEIS and Pinedale Anticline SEIS Drilling Schedules

Year	Number Estimated	BLM Estimates	ERG Estimates	Difference
2007	Wells Drilled	372	518	+146
	Employment (FTE)	4,099.5	4,109.7	+100.2
2009	Wells Drilled	372	555	+183
	Employment (FTE)	3,936.0	4,408.8	+472.8

Continuing to underscore the importance of accurate drilling estimates, we provide three tables indicating the employment effects in all Sublette County industries based on oil and gas labor force estimates as follows: Table 4.3-4 using the 2007 BLM estimate of 372 wells, Table 4.3-5 using the 2007 ERG estimate of 518 wells, and Table 4.3-6 using ERG's peak production estimate of 555 wells in 2009. In each of the three tables, the first column indicates the industry by sector. The direct effects estimate the number of jobs created in the two relevant sectors—Drilling Oil and Gas Wells, and Oil and Gas Extraction. Indirect effects are employment effects arising from inter-industry effects. Induced effects result from household expenditures in the input/output analysis.

It is critical to note the increase needed in the service sector jobs, for example: Sector 470—Social Assistance, Sector 493—Civic Social and Professionals, and Sector 468—Nursing and Residential Care Facilities. These sectors are important because there is currently not the infrastructure to support the increase in the population. The current housing shortage, as recognized in Chapter 3 of the RMP DEIS, makes it difficult to house transient labor and to attract permanent residents to fill positions in these sectors. Also noteworthy is the fact that Table 4.3-4 provides the employment estimate for only one year of a 20-year project period. Cumulative effects are not estimated over the total production period given the lack of production and employment information available by year.

Table 4.3-4 FTE Employment Impact based on 372 wells, Sublette County 2007

Sector	Industry	Direct*	Indirect*	Induced*	Total*
27	Drilling Oil and Gas Wells	1,177.3	0.1	0.0	1,177.4
19	Oil and Gas Extraction	711.6	237.2	7.4	956.1
437	Legal Services	0.0	141.3	12.3	153.6
481	Food Services and Drinking Places	0.0	6.9	140.5	147.5
394	Truck Transportation	0.0	65.5	13.2	78.7
470	Social Assistance—Except Child Day Care Services	0.0	0.0	77.0	77.0
451	Management of Companies and Enterprises	0.0	74.1	0.9	75.0
431	Real Estate	0.0	33.9	34.2	68.1
426	Securities, Commodity Contracts, Investments	0.0	55.0	11.8	66.8
430	Monetary Authorities and Depository Credit Intermediation	0.0	36.9	19.5	56.5
28	Support Activities for Oil and Gas Operations	0.0	55.4	0.4	55.8
473	Independent Artists, Writers, and Performers	0.0	52.6	0.1	52.7

Sector	Industry	Direct*	Indirect*	Induced*	Total*
390	Wholesale Trade	0.0	34.6	13.3	47.9
493	Civic, Social, Professional, and Similar Organizations	0.0	26.5	19.5	46.0
438	Accounting and Bookkeeping Services	0.0	38.6	6.8	45.4
465	Offices of Physicians, Dentists, and Other Health	0.0	0.0	44.3	44.3
487	Personal Care Services	0.0	0.0	37.4	37.4
411	Miscellaneous Store Retailers	0.0	5.5	30.9	36.5
413	Newspaper Publishers	0.0	29.2	4.0	33.2
410	General Merchandise Stores	0.0	5.0	27.6	32.6
401	Motor Vehicle and Parts Dealers	0.0	4.9	27.6	32.5
447	Advertising and Related Services	0.0	28.6	3.3	31.9
494	Private Households	0.0	0.0	31.1	31.1
468	Nursing and Residential Care Facilities	0.0	0.0	30.9	30.9
483	Automotive Repair and Maintenance	0.0	7.3	22.4	29.7
407	Gasoline Stations	0.0	4.9	23.5	28.4
399	Couriers and Messengers	0.0	24.9	2.9	27.8
458	Services to Buildings and Dwellings	0.0	16.8	9.1	25.9
479	Hotels and Motels—Including Casino Hotels	0.0	9.0	16.5	25.5
409	Sporting Goods, Hobby, Book, and Music Stores	0.0	4.0	21.1	25.2
404	Building Material and Garden Supply Stores	0.0	4.3	20.3	24.7
469	Child Day Care Services	0.0	0.0	23.5	23.5
412	Non-Store Retailers	0.0	3.8	18.1	21.8
406	Health and Personal Care Stores	0.0	3.7	17.1	20.8
30	Power Generation and Supply	0.0	10.8	9.5	20.3
478	Other Amusement, Gambling, and Recreation Industry	0.0	10.9	9.1	19.9
499	Other State and Local Government Enterprises	0.0	9.7	10.1	19.9
408	Clothing and Clothing Accessories Stores	0.0	2.8	17.0	19.8
439	Architectural and Engineering Services	0.0	15.5	2.1	17.6
398	Postal Service	0.0	12.5	4.3	16.8
441	Custom Computer Programming Services	0.0	15.5	0.4	15.9
427	Insurance Carriers	0.0	4.8	8.1	12.8
405	Food and Beverage Stores	0.0	1.9	10.8	12.7
449	Veterinary Services	0.0	0.3	11.0	11.3
400	Warehousing and Storage	0.0	10.9	0.3	11.3
434	Machinery and Equipment Rental and Leasing	0.0	10.8	0.2	11.0
422	Telecommunications	0.0	5.9	5.0	10.9
395	Transit and Ground Passenger Transportation	0.0	5.4	5.4	10.7
436	Lessors of Non-Financial Intangible Assets	0.0	10.3	0.1	10.4
435	General Consumer Goods Rental Except Video Tapes	0.0	9.1	1.2	10.3
107	Cut and Sew Apparel Manufacturing	0.0	0.0	10.2	10.3
446	Scientific Research and Development Services	0.0	9.2	0.3	9.6
444	Management Consulting Services	0.0	7.7	0.7	8.3
445	Environmental and Other Technical Consulting	0.0	7.6	0.6	8.2

Sector	Industry	Direct*	Indirect*	Induced*	Total*
43	Maintenance and Repair of Nonresidential Buildings	0.0	5.3	2.8	8.1
452	Office Administrative Services	0.0	5.8	2.1	7.9
243	Machine Shops	0.0	7.7	0.2	7.9
402	Furniture and Home Furnishings Stores	0.0	1.4	6.2	7.6
454	Employment Services	0.0	5.6	1.5	7.1
462	Colleges, Universities, and Junior Colleges	0.0	0.4	6.4	6.8
455	Business Support Services	0.0	4.9	1.1	6.0
31	Natural Gas Distribution	0.0	4.1	1.9	6.0
492	Grantmaking and Giving and Social Advocacy	0.0	0.0	5.9	5.9
418	Motion Picture and Video Industries	0.0	2.0	3.9	5.8
450	All Other Miscellaneous Professional and Technical	0.0	5.4	0.4	5.7
460	Waste Management and Remediation Services	0.0	4.6	1.0	5.6
18	Agriculture and Forestry Support Activities	0.0	0.7	4.7	5.4
490	Other Personal Services	0.0	0.3	4.8	5.2
403	Electronics and Appliance Stores	0.0	1.0	4.0	5.0
482	Car Washes	0.0	0.7	4.2	4.9
11	Cattle Ranching and Farming	0.0	1.2	3.6	4.8
480	Other Accommodations	0.0	1.0	3.9	4.8
425	Non-Depository Credit Intermediation and Related	0.0	3.5	1.0	4.5
397	Scenic and Sightseeing Transportation and Support	0.0	2.9	1.5	4.4
45	Other Maintenance and Repair Construction	0.0	2.2	2.2	4.4
13	Animal Production—Except Cattle and Poultry	0.0	0.1	3.8	3.9
459	Other Support Services	0.0	2.9	0.4	3.3
32	Water, Sewage, and Other Systems	0.0	2.2	1.1	3.3
391	Air Transportation	0.0	1.0	1.4	2.4
466	Other Ambulatory Health Care Services	0.0	0.0	2.2	2.2
428	Insurance Agencies, Brokerages, and Related	0.0	0.7	1.3	2.0
485	Commercial Machinery Repair and Maintenance	0.0	1.6	0.4	2.0
433	Video Tape and Disc Rental	0.0	0.1	1.7	1.8
484	Electronic Equipment Repair and Maintenance	0.0	1.5	0.2	1.7
112	Sawmills	0.0	1.4	0.1	1.5
419	Sound Recording Industries	0.0	1.1	0.4	1.5
457	Investigation and Security Services	0.0	1.3	0.2	1.5
42	Maintenance and Repair of Farm and Nonfarm	0.0	0.3	1.2	1.5
67	Animal (Except Poultry) Slaughtering	0.0	0.0	1.4	1.4
456	Travel Arrangement and Reservation Services	0.0	0.3	1.0	1.3
453	Facilities Support Services	0.0	0.8	0.2	1.0
414	Periodical Publishers	0.0	0.6	0.3	1.0
497	State and Local Government Passenger Transit	0.0	0.5	0.5	0.9
17	Hunting and Trapping	0.0	0.0	0.8	0.8
498	State and Local Government Electric Utilities	0.0	0.4	0.4	0.8
10	All Other Crop Farming	0.0	0.1	0.5	0.7

Sector	Industry	Direct*	Indirect*	Induced*	Total*
429	Funds, Trusts, and Other Financial Vehicles	0.0	0.0	0.7	0.7
475	Museums, Historical Sites, Zoos, and Parks	0.0	0.0	0.6	0.6
68	Meat Processed from Carcasses	0.0	0.0	0.5	0.5
362	Wood Kitchen Cabinet and Countertop Manufacturing	0.0	0.2	0.3	0.4
174	Laminated Plastics Plate, Sheet, and Shapes	0.0	0.1	0.0	0.1
389	Buttons, Pins, and All Other Miscellaneous Manufacturing	0.0	0.0	0.1	0.1
	Total Jobs Generated	1,888.9	1,250.0	960.6	4,099.5

*Measured in number of jobs

Table 4.3-5 FTE Employment Impact based on 518 wells, Sublette County 2007

Sector	Industry	Direct*	Indirect*	Induced*	Total*
27	Drilling Oil and Gas Wells	1,840.4	0.0	0.0	1,840.4
437	Legal Services	0.0	205.8	10.6	216.5
19	Oil and Gas Extraction	0.0	161.3	6.4	167.7
481	Food Services and Drinking Places	0.0	8.7	121.4	130.1
451	Management of Companies and Enterprises	0.0	107.4	0.8	108.2
394	Truck Transportation	0.0	93.7	11.4	105.1
426	Securities, Commodity Contracts, Investments	0.0	78.4	10.2	88.6
473	Independent Artists, Writers, and Performers	0.0	82.1	0.1	82.2
431	Real Estate	0.0	46.2	29.5	75.7
470	Social Assistance—Except Child Day Care Services	0.0	0.0	66.5	66.5
390	Wholesale Trade	0.0	49.1	11.5	60.6
438	Accounting and Bookkeeping Services	0.0	51.8	5.9	57.6
430	Monetary Authorities and Depository Credit Intermediation	0.0	39.7	16.9	56.6
413	Newspaper Publishers	0.0	43.8	3.4	47.2
447	Advertising and Related Services	0.0	42.7	2.9	45.6
493	Civic, Social, Professional, and Similar	0.0	25.5	16.9	42.4
465	Offices Of Physicians, Dentists, and Other Health	0.0	0.0	38.2	38.2
411	Miscellaneous Store Retailers	0.0	8.2	26.7	34.9
487	Personal Care Services	0.0	0.0	32.3	32.3
410	General Merchandise Stores	0.0	7.3	23.9	31.2
401	Motor Vehicle and Parts Dealers	0.0	7.3	23.8	31.1
483	Automotive Repair and Maintenance, Except Car Wash	0.0	10.8	19.4	30.1
407	Gasoline Stations	0.0	7.3	20.3	27.5
494	Private Households	0.0	0.0	26.9	26.9
468	Nursing and Residential Care Facilities	0.0	0.0	26.7	26.7
479	Hotels and Motels, Including Casino Hotels	0.0	12.2	14.3	26.5
458	Services to Buildings and Dwellings	0.0	17.0	7.8	24.8
478	Other Amusement, Gambling, and Recreation	0.0	16.9	7.8	24.8
409	Sporting Goods, Hobby, Book, and Music Stores	0.0	6.0	18.3	24.2
404	Building Material and Garden Supply Stores	0.0	6.4	17.6	24.0

Sector	Industry	Direct*	Indirect*	Induced*	Total*
499	Other State and Local Government Enterprises	0.0	13.7	8.8	22.4
398	Postal Service	0.0	18.6	3.7	22.3
399	Couriers and Messengers	0.0	18.8	2.5	21.4
412	Non-Store Retailers	0.0	5.6	15.6	21.2
406	Health and Personal Care Stores	0.0	5.5	14.7	20.3
469	Child Day Care Services	0.0	0.0	20.3	20.3
408	Clothing and Clothing Accessories Stores	0.0	4.2	14.7	18.9
439	Architectural and Engineering Services	0.0	15.3	1.8	17.1
400	Warehousing and Storage	0.0	15.8	0.3	16.1
30	Power Generation and Supply	0.0	7.6	8.2	15.8
435	General and Consumer Goods Rental Except Video Tapes	0.0	14.0	1.0	15.0
434	Machinery and Equipment Rental and Leasing	0.0	14.7	0.1	14.9
427	Insurance Carriers	0.0	6.8	7.0	13.8
395	Transit and Ground Passenger Transportation	0.0	8.2	4.6	12.8
422	Telecommunications	0.0	8.3	4.3	12.6
405	Food and Beverage Stores	0.0	2.9	9.3	12.2
446	Scientific Research and Development Services	0.0	11.1	0.3	11.4
445	Environmental and Other Technical Consulting	0.0	10.3	0.5	10.8
449	Veterinary Services	0.0	0.5	9.5	9.9
28	Support Activities For Oil and Gas Operations	0.0	9.4	0.4	9.8
43	Maintenance and Repair of Nonresidential Buildings	0.0	7.3	2.4	9.7
243	Machine Shops	0.0	9.5	0.2	9.7
452	Office Administrative Services	0.0	7.2	1.8	9.0
107	Cut and Sew Apparel Manufacturing	0.0	0.1	8.8	8.9
454	Employment Services	0.0	6.7	1.3	8.0
444	Management Consulting Services	0.0	7.4	0.6	8.0
31	Natural Gas Distribution	0.0	6.3	1.6	7.9
402	Furniture and Home Furnishings Stores	0.0	2.0	5.4	7.4
460	Waste Management and Remediation Services	0.0	6.2	0.9	7.0
418	Motion Picture and Video Industries	0.0	2.7	3.3	6.1
462	Colleges, Universities, and Junior Colleges	0.0	0.3	5.5	5.8
397	Scenic and Sightseeing Transportation and Support	0.0	4.1	1.3	5.4
455	Business Support Services	0.0	4.4	0.9	5.4
441	Custom Computer Programming Services	0.0	4.8	0.3	5.1
492	Grantmaking and Giving and Social Advocacy	0.0	0.0	5.1	5.1
18	Agriculture and Forestry Support Activities	0.0	1.0	4.0	5.1
11	Cattle Ranching and Farming	0.0	1.9	3.1	5.0
425	Non-Depository Credit Intermediation and Related	0.0	4.1	0.8	4.9
403	Electronics and Appliance Stores	0.0	1.5	3.4	4.9
459	Other Support Services	0.0	4.3	0.4	4.7
45	Other Maintenance and Repair Construction	0.0	2.8	1.9	4.7
490	Other Personal Services	0.0	0.5	4.2	4.7

Sector	Industry	Direct*	Indirect*	Induced*	Total*
482	Car Washes	0.0	1.0	3.6	4.6
480	Other Accommodations	0.0	1.3	3.3	4.6
32	Water, Sewage, and Other Systems	0.0	3.1	1.0	4.1
450	All Other Miscellaneous Professional and Technical	0.0	3.3	0.3	3.6
13	Animal Production, Except Cattle and Poultry	0.0	0.1	3.3	3.4
485	Commercial Machinery Repair and Maintenance	0.0	2.3	0.3	2.6
391	Air Transportation	0.0	1.4	1.2	2.6
484	Electronic Equipment Repair and Maintenance	0.0	2.2	0.2	2.4
112	Sawmills	0.0	2.2	0.1	2.3
428	Insurance Agencies, Brokerages, and Related	0.0	1.1	1.1	2.2
419	Sound Recording Industries	0.0	1.8	0.3	2.1
436	Lessors Of Nonfinancial Intangible Assets	0.0	1.9	0.1	2.0
466	Other Ambulatory Health Care Services	0.0	0.0	1.9	1.9
457	Investigation and Security Services	0.0	1.7	0.1	1.8
433	Video Tape and Disc Rental	0.0	0.1	1.5	1.6
42	Maintenance and Repair Of Farm and Nonfarm	0.0	0.4	1.0	1.4
67	Animal (Except Poultry) Slaughtering	0.0	0.0	1.2	1.3
414	Periodical Publishers	0.0	1.0	0.3	1.2
456	Travel Arrangement and Reservation Services	0.0	0.3	0.9	1.2
453	Facilities Support Services	0.0	1.0	0.2	1.2
497	State and Local Government Passenger Transit	0.0	0.7	0.4	1.1
17	Hunting and Trapping	0.0	0.0	0.7	0.7
10	All Other Crop Farming	0.0	0.2	0.5	0.7
429	Funds, Trusts, and Other Financial Vehicles	0.0	0.0	0.6	0.6
498	State and Local Government Electric Utilities	0.0	0.2	0.3	0.6
475	Museums, Historical Sites, Zoos, and Parks	0.0	0.0	0.5	0.5
68	Meat Processed From Carcasses	0.0	0.0	0.5	0.5
362	Wood Kitchen Cabinet and Countertop Manufacturing	0.0	0.2	0.2	0.4
6	Greenhouse and Nursery Production	0.0	0.1	0.3	0.3
174	Laminated Plastics Plate, Sheet, and Shapes	0.0	0.2	0.0	0.2
389	Buttons, Pins, and All Other Miscellaneous	0.0	0.0	0.1	0.1
14	Logging	0.0	0.1	0.0	0.1
	Total Jobs Generated	1,840.4	1,439.6	829.6	4,109.7

*Measured in number of jobs

Table 4.3-6 FTE Employment Impact based on 555 wells, Sublette County 2009

Sector	Industry	Direct*	Indirect*	Induced*	Total*
27	Drilling Oil and Gas Wells	1,943.6	0.0	0.0	1,943.6
437	Legal Services	0.0	217.8	11.5	229.3
19	Oil and Gas Extraction	33.2	176.6	6.9	216.7
481	Food Services and Drinking Places	0.0	9.3	131.1	140.4

Sector	Industry	Direct*	Indirect*	Induced*	Total*
451	Management of Companies and Enterprises	0.0	113.7	0.9	114.5
394	Truck Transportation	0.0	99.2	12.3	111.5
426	Securities, Commodity Contracts, Investments	0.0	83.0	11.0	94.1
473	Independent Artists, Writers, and Performers	0.0	86.7	0.1	86.9
431	Real Estate	0.0	48.9	31.9	80.9
470	Social Assistance, Except Child Day Care Services	0.0	0.0	71.8	71.8
390	Wholesale Trade	0.0	52.0	12.4	64.4
438	Accounting and Bookkeeping Services	0.0	54.9	6.3	61.2
430	Monetary Authorities and Depository Credit Intermediation	0.0	42.5	18.2	60.7
413	Newspaper Publishers	0.0	46.3	3.7	50.0
447	Advertising and Related Services	0.0	45.2	3.1	48.3
493	Civic, Social, Professional and Similar Organizations	0.0	27.4	18.2	45.7
465	Offices of Physicians, Dentists, and Other Health	0.0	0.0	41.3	41.3
411	Miscellaneous Store Retailers	0.0	8.7	28.8	37.5
487	Personal Care Services	0.0	0.0	34.9	34.9
410	General Merchandise Stores	0.0	7.8	25.8	33.5
401	Motor Vehicle and Parts Dealers	0.0	7.7	25.8	33.5
483	Automotive Repair and Maintenance, Except Car Wash	0.0	11.4	20.9	32.3
407	Gasoline Stations	0.0	7.7	21.9	29.6
494	Private Households	0.0	0.0	29.0	29.0
468	Nursing and Residential Care Facilities	0.0	0.0	28.8	28.8
479	Hotels and Motels, Including Casino Hotels	0.0	12.9	15.4	28.3
458	Services to Buildings and Dwellings	0.0	18.2	8.5	26.7
478	Other Amusement, Gambling, and Recreation Industries	0.0	17.9	8.5	26.4
409	Sporting Goods, Hobby, Book and Music Stores	0.0	6.3	19.7	26.0
404	Building Material and Garden Supply Stores	0.0	6.8	19.0	25.7
499	Other State and Local Government Enterprises	0.0	14.5	9.5	23.9
398	Postal Service	0.0	19.6	4.0	23.6
399	Couriers and Messengers	0.0	20.5	2.7	23.2
412	Non-Store Retailers	0.0	5.9	16.9	22.8
469	Child Day Care Services	0.0	0.0	21.9	21.9
406	Health and Personal Care Stores	0.0	5.9	15.9	21.8
408	Clothing and Clothing Accessories Stores	0.0	4.4	15.9	20.3
439	Architectural and Engineering Services	0.0	16.4	2.0	18.4
30	Power Generation and Supply	0.0	8.3	8.9	17.2
400	Warehousing and Storage	0.0	16.7	0.3	17.1
435	General and Consumer Goods Rental Except Video Tapes	0.0	14.8	1.1	15.9
434	Machinery and Equipment Rental and Leasing	0.0	15.6	0.2	15.8
427	Insurance Carriers	0.0	7.2	7.6	14.7
395	Transit and Ground Passenger Transportation	0.0	8.6	5.0	13.6
422	Telecommunications	0.0	8.8	4.7	13.5

Sector	Industry	Direct*	Indirect*	Induced*	Total*
405	Food and Beverage Stores	0.0	3.0	10.1	13.1
28	Support Activities For Oil and Gas Operations	0.0	12.2	0.4	12.7
446	Scientific Research and Development Services	0.0	11.8	0.3	12.1
445	Environmental and Other Technical Consulting Services	0.0	10.9	0.6	11.5
449	Veterinary Services	0.0	0.5	10.2	10.7
43	Maintenance and Repair of Nonresidential Buildings	0.0	7.8	2.6	10.4
243	Machine Shops	0.0	10.1	0.2	10.3
452	Office Administrative Services	0.0	7.7	2.0	9.6
107	Cut and Sew Apparel Manufacturing	0.0	0.1	9.5	9.6
454	Employment Services	0.0	7.2	1.4	8.6
444	Management Consulting Services	0.0	7.9	0.6	8.6
31	Natural Gas Distribution	0.0	6.6	1.8	8.4
402	Furniture and Home Furnishings Stores	0.0	2.1	5.8	7.9
460	Waste Management and Remediation Services	0.0	6.5	0.9	7.5
418	Motion Picture and Video Industries	0.0	2.9	3.6	6.5
462	Colleges, Universities, and Junior Colleges	0.0	0.3	6.0	6.3
441	Custom Computer Programming Services	0.0	5.6	0.4	6.0
455	Business Support Services	0.0	4.7	1.0	5.8
397	Scenic and Sightseeing Transportation and Support	0.0	4.3	1.4	5.7
492	Grantmaking and Giving and Social Advocacy	0.0	0.0	5.5	5.5
18	Agriculture and Forestry Support Activities	0.0	1.1	4.3	5.4
11	Cattle Ranching and Farming	0.0	2.0	3.4	5.4
403	Electronics and Appliance Stores	0.0	1.6	3.7	5.3
425	Non-Depository Credit Intermediation and Related	0.0	4.4	0.9	5.3
490	Other Personal Services	0.0	0.5	4.5	5.0
45	Other Maintenance and Repair Construction	0.0	3.0	2.0	5.0
482	Car Washes	0.0	1.1	3.9	5.0
459	Other Support Services	0.0	4.6	0.4	5.0
480	Other Accommodations	0.0	1.4	3.6	5.0
32	Water, Sewage and Other Systems	0.0	3.3	1.0	4.3
450	All Other Miscellaneous Professional and Technical	0.0	3.6	0.3	3.9
13	Animal Production, Except Cattle and Poultry	0.0	0.1	3.6	3.7
485	Commercial Machinery Repair and Maintenance	0.0	2.5	0.3	2.8
391	Air Transportation	0.0	1.4	1.3	2.8
436	Lessors of Nonfinancial Intangible Assets	0.0	2.4	0.1	2.6
484	Electronic Equipment Repair and Maintenance	0.0	2.3	0.2	2.5
112	Sawmills	0.0	2.3	0.1	2.4
428	Insurance Agencies, Brokerages, and Related	0.0	1.1	1.2	2.3
419	Sound Recording Industries	0.0	1.9	0.3	2.2
466	Other Ambulatory Health Care Services	0.0	0.0	2.1	2.1
457	Investigation and Security Services	0.0	1.8	0.1	1.9

Sector	Industry	Direct*	Indirect*	Induced*	Total*
433	Video Tape and Disc Rental	0.0	0.1	1.6	1.7
42	Maintenance and Repair of Farm and Nonfarm	0.0	0.4	1.1	1.5
67	Animal (Except Poultry) Slaughtering	0.0	0.0	1.3	1.3
414	Periodical Publishers	0.0	1.0	0.3	1.3
456	Travel Arrangement and Reservation Services	0.0	0.4	0.9	1.3
453	Facilities Support Services	0.0	1.1	0.2	1.3
497	State and Local Government Passenger Transit	0.0	0.7	0.4	1.2
17	Hunting and Trapping	0.0	0.0	0.8	0.8
10	All Other Crop Farming	0.0	0.2	0.5	0.7
429	Funds, Trusts, and Other Financial Vehicles	0.0	0.0	0.6	0.6
498	State and Local Government Electric Utilities	0.0	0.3	0.3	0.6
475	Museums, Historical Sites, Zoos, and Parks	0.0	0.0	0.6	0.6
68	Meat Processed From Carcasses	0.0	0.0	0.5	0.5
362	Wood Kitchen Cabinet and Countertop Manufacturing	0.0	0.2	0.3	0.5
6	Greenhouse and Nursery Production	0.0	0.1	0.3	0.4
174	Laminated Plastics Plate, Sheet, and Shapes	0.0	0.2	0.0	0.2
389	Buttons, Pins, and All Other Miscellaneous Manufacturing	0.0	0.1	0.1	0.1
14	Logging	0.0	0.1	0.0	0.1
	Total Jobs Generated	1,976.8	1,535.7	896.2	4,408.8

*Measured in number of jobs

As well drilling decreases and the energy fields move into production and post-production phases, the number of employees needed in the oil and gas sector will also decrease. As workers emigrate, the demand for housing and other services will decline, deflating a temporarily inflated economy and causing loss of employment in other sectors of the economy (e.g., the service industry). The rate at which this emigration occurs will be crucial to Sublette County's ability to rebound after the surge of local spending has passed.

4.4 REVENUE PROJECTIONS

Economic development from drilling and production will generate revenue for federal, state, and local agencies. Federal taxes are derived from corporate profits, indirect business taxes including customs and excise, and personal and social insurance. The majority of the taxes accrue to the federal government with state and local governments collecting approximately 45%. State and local taxes are derived from motor vehicle licensing, property, sales, and severance taxes, as well as personal tax and social insurance taxes.

Further analysis is required to determine whether tax revenue collected by the counties is sufficient to cover adverse environmental and socioeconomic effects arising as a result of rapid growth and economic development.

Table 4.4-1 Tax Impact, Sublette County

Year	State/Local[a]	Federal[b]	Total
2007	$83,111,767	$100,532,235	$183,644,002
2007 (518 wells)	$73,494,231	$84,831,853	$158,520,107
2009	$79,345,345	$95,792,510	$175,137,855
2009 (555 wells)	$79,300,940	$91,749,203	$171,260,541

[a] non-education
[b] non-defense

4.5 SOCIAL SERVICES AND QUALITY OF LIFE PROJECTIONS

Housing is a critical component in evaluating quality of life, and Sublette County already faces problems in this area. Availability of affordable housing in Sublette County is lacking, as apparent by the steep increase in housing costs in the past five years, the increase in population, and the comparatively low wages earned by many residents of the county, especially those in the service industry (see also Section 3.4.1).

Medical and law enforcement services are also important to quality of life. Sublette County currently relies on 7 physicians, 2 nursing FTE employees, and 3.5 dentists in the medical arena. The county's Criminal Justice system employs 23 in the Sheriff's office, 7 court justices, and can house up to 52 inmates in the detention center. Projecting future needs in these areas first requires defining the current load, or number of residents served per employee. Table 4.5-1 calculates the 2007 load in medicine and law enforcement based on a county population of 7,359. For example, each physician has a current load (patients or customers per service employee) of 1,051 patients. If the number of employees remains the same through 2020, (under a projected population increase to 12,000 [USDI 2007]), loads increase over 60%. The last column of Table 4.5-1 lists the total number of FTE needed to service a population of 12,000 (USDI 2007) while maintaining 2007 loads in these areas.

Table 4.5-1 Services Sublette County 2007

Services	FTE	2007 Load	2020 Load	FTE Required
Physicians	7.0	1,051	1,714	11
Nurses	2.0	3,680	6,000	3
Dentists	3.5	2,103	3,429	6
Sheriff's Office	23.0	320	522	38
Detention beds	52.0	142	231	85
Total employed and served	87.5	7,296	11,896	143

* 2007 population: 7,359
* 2020 estimated population: 12,000 (USDI 2007)

The social and cultural effects of the oil and gas industry on Sublette County are mixed, especially between areas of the county that have previously experienced oil and gas development and areas that have not. The customs and culture of mining industry newcomers are changing the complexion and history of the town of Pinedale and northern areas of the community, an area not accustomed to rapid growth from labor in-migration. The shift from a ranching- and recreation-based culture to a mining-based culture has been well documented in the national media (Clarren 2007; Kenworthy 2006; Ring 2005; Wilkinson 2005). Conversely, in southern Sublette County, the recent increases in activity in the towns of Big Piney and Marbleton are more aligned with the existing cultural history of the area.

As natural gas development continues and increases in intensity, these impacts can be expected to continue. Newcomers related to the gas industry are expected to continue moving to the area until the development stage is completed. Correspondingly, anxiety from existing residents regarding population growth and planning is likely to continue. However, the initial "shock" of the cultural and economic changes to the area felt by residents will likely lessen as the development continues. Both current residents and newcomers will become more accustomed to one another as time passes. The series of community satisfaction surveys on the boom town of Delta, Utah found that the largest drop in community satisfaction occurred during the initial two years of growth, even though the majority of population growth was yet to occur (Brown et al. 2005). The researchers found that many of the residents may have been able to reconcile their feelings with the new and growing community over time (Brown et al. 2005).

At the conclusion of the development stage (sometime between 2018 and 2025 as shown in Figure 4.1-2), it is likely that many of the newcomers tied to jobs in the Mining Sector will migrate out of the region as the development and production of energy declines sharply. The area will likely experience an economic downturn associated with the out-migration of temporary and permanent residents. This also has the potential to decrease community satisfaction and social cohesiveness, depending on the severity of the downturn. The study of Delta, Utah found that the second largest drop in community satisfaction occurred during the "bust" years, and community satisfaction did not return to pre-boom levels until nearly ten years after the bust, when the population remained relatively stable (Brown et al. 2005). The "busy-ness" of town will likely decrease, as fewer demands will be put on local service industry, accommodation, and local government sectors. However, hundreds of long-term gas industry production jobs will remain in the area for the life of well production on the gas fields (trailing off through approximately 2065), and Sublette County's culture can be expected to reflect the residency of these workers and the prior influx in mining activity.

5. CONCLUSION

In recent years, increased population in Sublette County has brought significant change to almost every aspect of life in the area. Although oil and gas development has increased employment opportunities, average wages, and individual income in Sublette County, the industry presence has also increased the cost of living and reduced the availablility of affordable housing. As area population has grown, county infrastructure needs have increased significantly; higher crime rates have required more law enforcement personnel; higher student enrollment numbers have required more teachers and classrooms in the schools; increased maintenance on the roads has required more crews and equipment; and a lack of available workers in the area has led to understaffed businesses, overworked employees, and business closures. Additionally, new customs and culture of mining industry newcomers have changed the complexion of the communities.

For example, the County Roads and Bridge Department has identified recently-rebuilt roads which now require additional work. Winter plowing needs have increased because, due to housing shortages, residents are living year-round in homes which had previously been used only during the summer. Rental houses, motels, and RV parks are filled to capacity. These factors, in addition to newly-constructed subdivisions and houses, are straining existing water and sewers systems in the area, many of which require upgrades and/or expansion. These infrastructure needs are graphically illustrated in Sublette County and municipality budgets—2007 budgets for Big Piney, Marbleton, and Pinedale allocate between 60% and 90% of their entire budgets for capital projects.

Although mineral revenues have helped fund infrastructure and other projects across the state, local governments have benefited from severance taxes and mineral royalties. Increased revenue for the county is provided primarily though county gross product tax receipts, which have grown tremendously in recent years. A large percentage of county and municipal budgets in 2007 are earmarked for capital improvements to accommodate the increased population and subsequent increased need for public services. The county gross products tax is a major funding source for these improvements.

In addition to straining government-managed infrastructure and personnel needs, the oil and gas presence in Sublette County affects residents on a personal level as well. The housing market has been significantly affected by population increases brought about by oil and gas employees. Currently, the residential housing market is very expensive.

In local school districts, Sublette County may begin to see a reversal of high academic achievement, high teacher pay, and high levels of teacher experience. Constitutional Amendment B is an indirect response to the oil and gas presence in Sublette County, and reallocates revenues from mineral-rich counties throughout the state. The effects of Amendment B will significantly impact Sublette district budgets and, in turn, may affect student performance and teacher retention. Districts may resort to mill levy increases if

the base mill assessments cannot support district needs. Alternatively, budget items such as teacher pay could slowly decrease to match the average state salary. Technology purchases and other "effective but costly" teaching tools may slow down significantly. Most importantly, funds previously anticipated and earmarked for addressing the effects of an increased student population will no longer be available.

In broader terms, in addition to quantifying the growth that has occurred to date in Sublette County, this report predicts additional population growth for the next several years, followed by a population decline expected after the development phase completes. Accompanying this downturn in population and gas development, major changes to the county and municipal budgets are expected to occur as gross products tax revenue decreases. The county will either have to rely on other sources of revenue to support their budget and their community, or reduce the level of government-provided services. Although the exact degree to which the population and budget will grow or recede is not known at this time, it is certain that the impact of the completed gas production cycle will affect the communities and the residents of Sublette County for some time.

Projections based on BLM documents (JIDP FEIS and Pinedale Anticline SEIS) estimate that drilling will peak in 2009. Calculations of the number of direct drilling, production, and reclamation personnel needed to complete those phases show that 1,900 FTE oil and gas employees will be needed annually, as will an additional 2,500 FTE local workers for indirect and induced jobs. Employment will be high and somewhat level until about 2018, around which time it will sharply decline.

As employment in the Mining Sector decreases, so do other types of indirect and induced jobs. Therefore, the oil and gas industry has a direct and significant influence on the population and employment opportunities in Sublette County. This affects nearly all sectors of the community, particularly related to housing construction and public services, and encompasses the cultural changes that come with population growth.

County revenues and expenditures will be driven by the activities of the oil and gas industry, as well as federal, state, and local funding. Sublette County's capacity to grow quickly and gracefully will depend upon sufficient funding for increased personnel and facilities, but more importantly, upon correctly anticipating, quantifying, and preparing for the scope of impact which oil and gas activities generate. Planning is even more crucial as oil and gas activities decline, as Sublette County develops strategies to retain residents and promote a healthy economy once the oil and gas industry has moved on.

6. LIST OF PREPARERS

Table 6-1 List of Preparers

Name/Role	Agency/Firm	Education	Years Experience
Travis Benton Environmental Scientist	Ecosystem Research Group	B.S. Forestry	10
Dianne Burke Environmental Scientist	Ecosystem Research Group	M.S. Chemistry B.A. Biochemistry	27
Morgan Davies Environmental Scientist Wildlife Biologist	Ecosystem Research Group	M.S. Ecology and Natural Resources B.S. Biology	6
Hayley Hesseln Resource Economist Associate Professor	Ecosystem Research Group Associate	Ph.D. Forest Economics Bachelor of Commerce	14
Meredith Holden Office Manager References	Ecosystem Research Group	B.S. Business Management	13
Jeffrey Jacquet Socioeconomic Analyst	Sublette County	M.A. Sociology B.A. Sociology	4
Gregory Kennett Senior Environmental Scientist	Ecosystem Research Group	B.S. Forestry, Watershed Management Certified Professional in Range Management	27
Melanie Smith Environmental Scientist GIS Specialist	Ecosystem Research Group	M.A. Geography B.A. Environmental Studies Certified GIS Professional	9
Anne Washburn Environmental Scientist	Ecosystem Research Group	B.A. English	8
Simon Weseen Professional Research Associate	Ecosystem Research Group Associate	M.S. Agricultural Economics B.S. Biology B.S.A. Environmental Science	8

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