DRAFT SOCIOECONOMIC ANALYSIS TECHNICAL SUPPORT DOCUMENT FOR THE JONAH INFILL DRILLING AND SOUTH PINEY PROJECTS ENVIRONMENTAL IMPACT STATEMENTS

Prepared for

Bureau of Land Management
Wyoming State Office
Cheyenne, Wyoming

Pinedale Field Office
Pinedale, Wyoming

and

Jonah Infill Drilling Project Operators
South Piney Natural Gas Development Project Companies

Prepared by

TRC Mariah Associates Inc.
Laramie, Wyoming

January 2005

DRAFT

SOCIOECONOMIC ANALYSIS
TECHNICAL SUPPORT DOCUMENT FOR
THE JONAH INFILL DRILLING AND SOUTH PINEY PROJECTS
ENVIRONMENTAL IMPACT STATEMENTS

Prepared for

Bureau of Land Management
Wyoming State Office
Cheyenne, Wyoming

and

Pinedale Field Office
Pinedale, Wyoming

and

Jonah Infill Drilling Project Operators
South Piney Natural Gas Development Project Companies

By

TRC Mariah Associates Inc.
Laramie, Wyoming
MAI Projects 35982 and 36358

January 2005

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

Page

TABLE OF CONTENTS (CONTINUED)

Page

TABLE OF CONTENTS (CONTINUED)

Page

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

Page

LIST OF TABLES

Page

LIST OF TABLES (CONTINUED)

Page

LIST OF TABLES (CONTINUED)

LIST OF TABLES (CONTINUED)

Page

LIST OF TABLES (CONTINUED)

Page

LIST OF TABLES (CONTINUED)

LIST OF TABLES (CONTINUED)

Page

1.0 OVERVIEW

TRC Mariah Associates Inc. (TRC Mariah) developed the socioeconomic profiles of the study area and the University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department (UWAED) performed the input/output analysis used as the basis for impact estimates provided in this technical support document for the Jonah Infill Drilling Project (JIDP) and South Piney Natural Gas Development Project (SPP) environmental impact statements (EISs). The analysis was performed according to the requirements of the socioeconomic analysis protocol developed for this project (TRC Mariah 2003). At the direction of the Bureau of Land Management (BLM) Wyoming State Office, the analysis utilized information from existing documents (as appropriate), documents currently in preparation (provided by the authors or analysts as necessary), the Sonoran Institute Economic Profile System (EPS) software (Sonoran Institute 2003), and other extant data to develop economic profile baseline data. IMPLAN® PRO 2.0 (IMPLAN) software was used to conduct input/output analysis to determine potential impacts of the proposed projects and alternatives. UWAED has calibrated county-specific data sets for the study area under a contract with the State of Wyoming (personal communication, October 14 and 17, 2003, with Roy Allen, Economist, BLM Wyoming State Office) and the protocol mandated that the calibrated county-specific datasets be used in place of the nationalized county data provided by MIG, Inc. (the manufacturer of IMPLAN). Cumulative impacts were estimated based on the information developed for the JIDP and SPP Proposed Actions and alternatives and reasonable foreseeable development information.

The proposed economic study area included the counties and communities most likely to be impacted by the JIDP/SPP, including the following:

- Lincoln County and the community of LaBarge;
- Sublette County and the communities of Pinedale, Big Piney, Marbleton, and Boulder;
- Sweetwater County and the communities of Eden, Farson, and Rock Springs;
- Wyoming, and
- the U.S. (for selected items, as appropriate).

Existing documents and documents in preparation that were utilized to develop economic profile baseline data and to estimate potential and cumulative impacts for the study area included the following reports:

- *Southwest Wyoming Resource Evaluation Socio/Economic Evaluation* (SWREE), *Final Report, Parts I and II* (UWAED 1997);
- the economic effect analysis developed for the *Jack Morrow Hills Coordinated Activity Plan* (JMHCAP) (UWAED 2003);
- the JMHCAP supplemental draft EIS (BLM 2003a);
- BLM's *Socioeconomic Profile-Pinedale* (BLM 2003b);
- the economic impact analysis currently being prepared for the Pinedale Resource Management Plan (RMP) (UWAED [2004]);
- *Sublette County Comprehensive Plan: County Vision, Goals and Policies* (Sublette County Board of Commissioners and Sublette County Planning Commission [SCBC and SCPC] 2003).

The following socioeconomic factors were profiled using either the EPS or other sources mentioned above:

- population and demography;
- employment and personal income;
- quality of living (i.e., the degree to which a person enjoys the important possibilities of his or her life);
- industry and economy;
- tax and revenue;
- grazing; and
- recreation.

2.0 METHODS

2.1 ECONOMIC PROFILES

TRC Mariah developed baseline profiles from selected statistics for the counties and affected communities in the JIDP/SPP study area for the 20-year study period (1980 to 2000). The baseline profiles were developed using existing documents, documents in preparation, the EPS, and data obtained from other extant sources. The baseline profiles developed from EPS provided the foundation from which social and economic impacts arising from the JIDP/SPP and alternatives were projected and compared. The EPS profiles, tables, and graphs used for this analysis are on file at TRC Mariah's Laramie, Wyoming, office under Project 35982. EPS software is available to the public at no charge from <www.sonoran.org>, where it may be downloaded and individual county profiles may be created. Additionally, the State of Wyoming has developed county profiles which may be viewed at <http://eadiv.state.wy.us/wef/eps.asp>.

2.1.1 Resources

The EPS was formally adopted by the U.S. Department of the Interior, BLM, Washington, D.C. (Instruction Memorandum No. 2003-169, May 16, 2003) for use with all RMPs in the 14-state region covered by EPS. The BLM Wyoming State Office specified that EPS be used to profile affected counties and communities in the JIDP/SPP EIS study area (personal communication, October 14 and 17, 2003, with Roy Allen, Economist, BLM Wyoming State Office).

The EPS was developed by the Sonoran Institute Socio/Economics Program, in partnership with the BLM, to provide analysts and planners with a way to efficiently and consistently produce detailed socioeconomic profiles at the state, regional, county, and multi-county level. Profiles produced from EPS contain narrative, tables, and figures that illustrate long-term trends:

- in population;
- in employment and personal income by industry;
- in average earnings;

- in retirement and other non-labor income;
- in business development; and
- in agriculture.

Additional or more-detailed information used to compile profile and baseline socioeconomic data may have been obtained from extant sources, including the following:

- the U.S. Census Bureau;
- the U.S. Department of Commerce, Bureau of Economic Analysis (BEA);
- other U.S. departments and agencies;
- various State of Wyoming departments and agencies;
- local county and community governments;
- UWAED;
- BLM;
- JIDP and SPP proponents (collectively referred to as Operators herein); and
- personal interviews with individuals in affected areas (particularly on subjects where an apparent disconnect between published data and actual circumstances seemed to exist).

2.1.2 Socioeconomic Study Factors

TRC Mariah compiled baseline statistics for a 20-year study period (1980 to 2000) for the social and economic factors detailed in the sections below.

2.1.2.1 Population and Demography

Factors related to population and demography include the following:

- population trends;
- income, poverty, and unemployment; and
- workforce age, gender, and disabilities.

2.1.2.2 Employment and Personal Income

Factors related to employment and personal income include the following:

- average wages by area;
- median wages by job category;
- total personal income (TPI) (adjusted for place of residence and place of work), including labor income (i.e., earnings from work; wages, salaries, and self-employment income), investment income (i.e., dividends, interest, and rent), and transfer payments (i.e., Social Security benefits, Medicare and Medicaid benefits, and other income support and assistance); and
- per capita personal income (PCPI)

2.1.2.3 Quality of Living

Factors related to quality of life (e.g., the degree to which a person enjoys the important possibilities of his or her life) of residents in the economic study area were gathered and enumerated where possible. Baseline statistics were compiled on quality of life in the affected communities, counties, and the State of Wyoming. Quality of life factors include the following:

- crime (including crimes against people and crimes against property);
- health care (facilities and providers);
- housing (type, quality, quantity, cost, assessed values, building permits issued);
- cost of living;
- inflation; and
- education (primary, secondary, post-secondary).

2.1.2.4 Industry and Economy

Factors related to income and the economy include the following:

- gross state product ("value added" or the gross output [sales, operating income] minus intermediate inputs [purchased or imported goods or services used in production]);

- industry compensation of employees (sum of employees wages and salaries plus supplements to wages and salaries);
- industry employment and job growth trends; and
- earnings by industry and industry growth trends.

2.1.2.5 Taxes and Revenues

Factors related to taxes and revenue include the following:

- mineral severance taxes and federal minerals royalties received by Wyoming and directly distributed to counties, cities, and towns;
- fiscal year general fund revenue collections by source;
- fiscal year distribution of mineral severance taxes to all accounts by mineral;
- royalties from state minerals received and distributed by the State of Wyoming;
- payments in lieu of taxes (PILT);
- state-assessed real and personal property valuations;
- state-assessed production valuations;
- proportionate taxable valuation of various classes of property in Wyoming;
- locally assessed property valuations;
- ad valorem taxes;
- sales tax collections;
- use tax collections; and
- lodging tax collections.

2.1.2.6 Grazing

Factors related to grazing include the following:

- historic cattle grazing use within JIDP area (JIDPA) and SPP area (SPPA) and
- estimated direct fiscal revenues to local government from livestock grazing based on the proportion of production taxes and federal grazing fees received or returned to the JIDPA/SPPA .

2.1.2.7 Recreation

TRC Mariah compiled baseline statistics for consumptive (hunting) and nonconsumptive recreation in the JIDPA and SPPA, utilizing the methodology developed for the SWREE (UWAED 1997). Historical information was derived from previously listed sources (see Sections 1.0 and 2.2) and/or the Wyoming Game and Fish Department (WGFD) and the Wyoming Division of Tourism.

Where sufficient data were available, recreation activities in the JIDPA and SPPA were separated into nonresident and resident use. Nonresident use value was based on the economic impact from expenditures by nonresidents in the region. Direct fiscal revenues to local governments from recreation were estimated based on the proportion of nonresident sales, lodging, and gas tax revenues returned to local governments in the study area.

Recreation data included the following items:

- BLM-recorded recreation visits;
- BLM recreation days (visits split into 12-hour days);
- net consumer value per day for outdoor recreation activities;
- visitor expenditures;
- hunter recreation days for appropriate herd units (obtained from WGFD);
- number of hunters; and
- surface ownership status of herd units.

2.2 IMPACT ANALYSIS

TRC Mariah developed the socioeconomic impact analysis for the JIDP/SPP EISs utilizing the methods used for the SWREE (UWAED 1997) and the economic effect analysis developed for the JMHCAP (UWAED 2003; BLM 2003a). Additional information was obtained from the Operators, BLM, BLM's pertinent reasonable foreseeable development documents, Wyoming Agricultural Statistics Service, WGFD, and other sources.

The economic impacts of the JIDP/SPP and alternatives on the economic study area were analyzed using IMPLAN, which is an input/output (I/O) modeling system (personal communication, October 14 and 17, 2003, with Roy Allen, Economist, BLM Wyoming State Office). I/O modeling is a mathematical accounting of the flow of dollars and commodities through a region's economy. These types of models provide estimates of how a given amount of a particular economic activity translates into jobs and income in a region. The I/O analysis used coefficients calibrated by the UWAED specifically for the SWREE from a combination of primary and secondary data specific to Lincoln, Sublette, and Sweetwater Counties. These calibrated county-specific coefficients were updated for the JMHCAP (BLM 2003a) and the Pinedale RMP (UWAED 2004; BLM 2004a). The year 2000 was be used as the base year.

The BLM provided estimates of physical outputs for selected commodities associated with the various alternatives. TRC Mariah, in consultation with the Operators, BLM, and UWAED, determined the appropriate values for these commodities. UWAED then used the output and value data in IMPLAN to estimate the economic impacts of the JIDP and SPP on the economic study area.

The JIDP/SPP analysis was based on a 20-year development horizon (2003-2023) and a 47-year production horizon (2003-2050), with 2000 being used as the base year. Cumulative economic effects are expressed as both short term (2003-2012) and long term (2013-2050 for the SPP; 2013-up to 2085 for the JIDP). The economic analysis focused on three types of commodities, including natural gas infill development, cattle grazing (sheep are approved for grazing on the Boundary allotment in the JIDPA; however, sheep have not been grazed in more than 5 years, and for the purposes of the analysis herein, it is assumed that sheep shall not be grazed on JIDP- or SPP-affected allotments), and recreation activities (hunting and nonconsumptive).

Prior to modeling, input data used for the I/O model was adjusted for inflation and converted to 2000 constant-dollars, as necessary. After modeling, impact dollar values were discounted using a 3.5% discount rate as recommended for projects exceeding 30 years by the Office of Management and Budget (OMB) Circular No. A-94 (OMB 2004). The OMB recommendation for using a real discount rate of 3.5% for constant-dollar benefit-cost analysis approximates the marginal pretax rate of return on an average investment in the private sector in recent years (BLM 2003a).

The OMB describes the discount rate policy in OMB (2004). To compute net present value, it is necessary to discount future benefits and costs. This discounting reflects the time value of money. Benefits and costs are worth more if they are experienced sooner. All future benefits and costs, including nonmonetized benefits and costs, should be discounted. The higher the discount rate, the lower is the present value of future cash flows. For typical investments, with costs concentrated in early periods and benefits following in later periods, raising the discount rate tends to reduce the net present value. On the other hand, when costs and revenues are both concentrated in early periods with lower benefits following in later periods, raising the discount rate tends to increase the net present value.

Real versus Nominal Discount Rates. The proper discount rate to use depends on whether the benefits and costs are measured in real or nominal terms.

- A real discount rate that has been adjusted to eliminate the effect of expected inflation is used to discount constant-dollar or real benefits and costs. A real discount rate can be approximated by subtracting expected inflation from a nominal interest rate.
- A nominal discount rate that reflects expected inflation is used to discount nominal benefits and costs. Market interest rates are nominal interest rates in this sense.

As presented herein, the "nominal" value of project activities is the simple calculation of dollars with no adjustments. The "present value" is the value of those activities after the real discount rate has been applied over time.

The discount factor is calculated as $1/(1+i)^t$ where i is the interest rate and t is the project year (OMB 2004).

The I/O model required a series of assumptions and inputs specific to the study area. Assumptions included the value of production resulting from land uses within the JIDPA and SPPA under each alternative. BLM staff and cooperating agencies provided information on current uses in the JIDPA and SPPA and how those uses may change under each alternative. This information provided a physical quantitative measure of inputs necessary for the economic impact analysis (e.g., number of gas wells, animal unit months [AUMs] [an AUM is the amount of forage necessary to feed a cow and a calf for one month], recreational visitor days, etc.). Primary data and sources used to estimate physical inputs for the I/O model are summarized in Chapter 4.0.

Estimates of inputs, including prices, were used to evaluate the potential sales from uses of the JIDPA and SPPA under each alternative. This direct sales estimate serves as the input for the I/O model to obtain an estimate of total economic impact for each alternative (changes in direct and indirect income and employment).

The economic impact analysis for the No Action Alternative was the first model prepared to provide a baseline for the alternatives analysis. It contains a discussion of impacts that were used for comparison with other alternatives. Methodology for the Proposed Action impact analyses are fully discussed in Chapter 4.0. Project-specific impacts are discussed for the JIDP in Chapter 5.0 and for the SPP in Chapter 6.0. Where impacts are the same among alternatives, reference was made to those alternatives so that impact discussions are not repeated. Cumulative impacts for the Proposed Action and each alternative are discussed and include the social and economic impacts of the Proposed Action or alternatives in combination with other proposed, existing, or reasonable foreseeable developments.

2.2.1 Natural Gas Activities

The economic impact of the Proposed Actions, alternatives, and cumulative effects on the study-area economy were analyzed in two parts using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). The first part of each project analyzed was the development phase and the economic impacts associated with drilling and completion of wells in the JIDPA and SPPA. The second part analyzed was the production phase and the economic impacts associated with the production of natural gas from the completed wells.

Estimated average per well development and production costs were provided by the Operators. Certain economic assumptions were used in the natural gas development analyses (the drilling and completion of natural gas wells), including the following:

- expenditure per well (cost to drill);
- volume of production (million cubic feet [MMCF]) per well;
- value of production (the average price of natural gas used for the price forecast by the Consensus Revenue Estimating Group (CREG) [CREG 2004]);
- total economic impact per well (direct and indirect);
- industry earnings per well;
- annual job equivalents (AJEs) per well (An AJE represents 12 months of employment. For example, one AJE could represent one job for 12 months or two jobs for 6 months or three jobs for 4 months. For the purposes of this analysis, a job [one AJE] is defined as 260 worker-days = 1 worker-year, a person year is 365 days; therefore, there are approximately 1.4 worker years per person year [one AJE = 1.4 person-years]); and
- local government taxes and revenues.

2.2.2 Grazing

The economic impact of the Proposed Actions, alternatives, and cumulative effects on livestock grazing in the JIDPA and SPPA was estimated using the methods described in the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a).

The value of cattle grazing AUMs was estimated using data obtained from the Wyoming Agricultural Statistics Service which included the value of livestock sold in Wyoming each year from 1998 to 2002 (Wyoming Agricultural Statistics Service 2003). Gross receipts per AUM were estimated from 5-year average prices and adjusted for inflation each year to 2002 dollars. A 5-year average was used in the analysis due to the variability in livestock prices in recent years and the lack of correlation between livestock prices, other industries, and inflation. Livestock prices were conservatively held constant throughout the planning period. Total livestock sales were divided by the number of animals that calved in each year, which provides a value per animal sold. The value per cow was divided by an AUM conversion factor, which resulted in an estimated value per AUM per year. The value and number of AUMs per alternative were used in combination with IMPLAN to estimate economic impacts of grazing under each alternative.

Based on the information described above, certain AUM economic assumptions were developed for impact analysis. These included:

- gross production receipts per AUM;
- total economic impact (direct and secondary) per AUM;
- labor earnings generated per AUM;
- AJEs per AUM; and
- local government revenue generated per AUM.

2.2.3 Recreation

The economic impact of the Proposed Actions, alternatives, and cumulative effects on recreation were estimated using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a).

Recreation activities are not purchased in an identifiable market so their economic value must be determined indirectly. Two types of measures are typically used for "non-market" commodities:

- the expenditures associated with the use of the non-market commodity, and
- the net value of the non-market commodity to the consumer.

The first measure considers the economic activity generated by the use of the non-market commodity by measuring participant expenditures to estimate the economic activity that is generated in the region in terms of income and jobs. In regional analyses, this type of measure is typically used to value recreation use by nonresidents and this was the measure employed in this analysis.

For resident expenditures, it was assumed that recreationists would have spent their money elsewhere in the region's economy if they had not been participating in the recreation activity. Recreation expenditures by residents are viewed as a shifting of dollars from one site or commodity to another based on personal consumption preferences and not a net gain to the region's economy.

The second measure considers the value of the satisfaction that the non-market commodity provides the consumer by considering the value of the recreation activity to the participant after all his or her costs are subtracted. This measure represents the "net economic value" to the user that is over-and-above costs. It is similar to the concept of profit for a business. Special techniques based on observed consumer behavior or the expressed valuations by the consumer are used to estimate this type of value. In regional analysis, this type of measure is typically used to value recreation use by residents. This measure was not used for this analysis due to a lack of available data on resident use. A detailed discussion of the estimation of "net economic values" is presented in the appendix of the economic effect analysis developed for the JMHCAP (UWAED 2003; BLM 2003a).

Recreation impacts were estimated utilizing information obtained from the sources described in Chapter 1.0 and Section 2.2.1. From those estimates, certain economic assumptions were developed for use in the analysis for consumptive (i.e., hunting pronghorn and greater sage-grouse) and nonconsumptive recreation (e.g., wildlife and scenery viewing, off-road vehicle use), including the following:

- expenditures by individual per recreation day;
- total economic impact (direct and secondary) per recreation day;
- labor earnings generated per recreation day;
- AJEs generated per recreation day;
- local government revenue generated per recreation day; and
- net economic value generated per recreation day.

2.2.4 Social Impacts

Baseline social and economic factors, including population, personal income, and quality of living factors described in Sections 2.1.2.1-2.1.2.3 were compared to expected changes in the economy that would affect a typical family in the study area. Impacts were evaluated against the potential for changes in quality of life factors (i.e., availability of necessities, recreation and leisure time) and the ability of residents to maintain or improve the current quality of life as a result of the proposed projects and alternatives.

2.2.5 Economic Justice

The potential direct, indirect, and cumulative effects to the social, cultural, and economic well-being and health of minority and low-income groups were evaluated per *Executive Order* (EO) *12898*. This was done by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of the proposed projects (including cumulative effects) on minority populations and low-income populations.

3.0 SOCIOECONOMIC PROFILES AND EXISTING ENVIRONMENT

The Pinedale Field Office (PFO) and Rock Springs Field Office (RSFO) RMP Records of Decision (RODs) (BLM 1988, 1997, 2004a) and land use plans for both the state (Wyoming State Land Use Commission 1979) and local areas (SCBC and SCPC 2003) identify the following management objectives associated with socioeconomics:

- to coordinate land use decisions with economic factors and needs;
- to mitigate economic, social, and environmental impacts on communities caused by rapid or large-scale growth and development;
- to plan for the provision of public facilities and services, including safe and efficient transportation and utility systems, in coordination with local land use policies, goals, and objectives; and
- to provide adequate, suitable land to meet housing needs of all residents.

BLM (2004a) criteria stipulate that impacts to socioeconomic resources would be considered potentially significant if any of the following were to occur:

- changes in total employment in Lincoln, Sublette, and Sweetwater Counties exceed an increase or decrease of 1% of the trend or
- changes in local tax revenues exceed an increase or decrease of 15% of the trend.

The SCBC and SCPC (2003) emphasize the following values specific to the social traditions and socioeconomic base of Sublette County.

- Sublette County's unique, local culture should be preserved and enriched, a culture characterized by a rural Wyoming flavor, a thriving private business community, an atmosphere friendly to working families, and the security of friendly crime-free communities.
- There should be an abundance of economic freedom and diverse opportunities for residents old and new to pursue prosperity and happiness--complemented and sustained by a business-friendly atmosphere, reasonable taxation, a low cost of

living, limited regulation, wise development of its natural resources, and a strong tradition of a good work ethic.

Additional information has been taken from the socioeconomic profile (BLM 2003b) prepared for inclusion in the new Pinedale RMP (now in preparation). Unless otherwise stated, all dollar amounts are presented in year 2000 dollars, adjusted for inflation.

3.1 POPULATION AND DEMOGRAPHY

3.1.1 Geographic Study Area

3.1.1.1 JIDP Location

The JIDPA is located in south-central Sublette County, Wyoming, approximately 32 mi southeast of Pinedale and 28 mi northwest of Farson, Wyoming, on approximately 30,500 acres in T28N and T29N, R107W through R109W. This acreage includes approximately 28,580 acres of federal surface and mineral estate managed by the BLM; 1,280 acres of State of Wyoming surface and minerals; and 640 acres of private surface/federal minerals. Access to the area is from U.S. Highway 191, located 1.5 to 11 mi east of the JIDPA.

3.1.1.2 SPP Location

The SPPA is located in southwest Sublette County, approximately 13 mi west of Big Piney on 31,231 acres in T29N and T30N, R114W. Access is via U.S. Highway 189 located 13 mi east of the SPPA.

3.1.1.3 Economic Study Area

The economic study area includes the counties and communities most likely to be impacted by the proposed projects, including LaBarge in Lincoln County; Pinedale, Big Piney, Marbleton, and Boulder in Sublette County; and Eden, Farson, and Rock Springs in Sweetwater County. Rock Springs is about 70 mi from the project areas, but is a hub for regional natural gas development activities and likely will be home to some of the project workers. Wyoming and the U.S. are also included in the profile and impact analyses where information is available and pertinent.

Like much of Wyoming, the economic study area is quite rural in nature. All three counties have a large land area with a dispersed population as summarized in Table 3.1. Public lands constitute the majority of the land in the three counties, ranging from 72.4% in Sweetwater County to 81.5% in Sublette County. Landownership in all three counties is primarily federal, ranging from 68.7% in Sweetwater County to 74.7% in Sublette County. Private lands constitute only 20.8% of Lincoln County lands, 18.5% of Sublette County lands, 27.6% of Sweetwater County lands, and 43.0% of all lands in Wyoming.

3.1.2 Population

Population data was obtained from the U.S. Census Bureau (2000a, 2000b, 2000c, 2000d), Taylor and Lieske (2002), and the Wyoming Department of Administration and Information (WDAI) (2001a, 2001b, 2002a, 2002b, 2003a). EPS uses BEA population data, which differs from census totals; however, percentages tend to approximate calculations based on census data. Where the population data conflict, census estimates were used for calculations and variances from EPS reporting are noted. EPS profiles, charts, and raw data are on file at TRC Mariah's Laramie, Wyoming, office.

Annual growth rates between two consecutive years (e.g., 1999-2000) were calculated using a simple annual growth formula (Formula 1).

Formula 1:

([Y2 data -Y1 data]/Y1 data) X 100 = annual growth

Example of Annual Growth from 1999 to 2000

([2000 data-1999 data]/1999 data) x 100 = Annual Growth rate for 1999

Table 3.1 Landownership of the JIDP/SPP Study Area.[1]

	Wyoming		Counties: Lincoln		Counties: Sublette		Counties: Sweetwater	
Geographic Characteristic	Acres	Mi^2	Acres	Mi^2	Acres	Mi^2	Acres	Mi^2
PUBLIC LANDS								
Federal Lands								
National Park Service	2,342,399	3,660.0	7,438	11.6	0	0	0	0
Forest Service	9,270,312	14,484.9	901,026	1,407.9	1,169,377	1,827.2	93,276	145.7
Fish and Wildlife	92,805	145.0	6,029	9.4	0	0	25,291	39.5
Bureau of Land Management	17,428,611	27,232.2	1,013,269	1,583.2	1,257,155	1,964.3	4,304,983	6,726.5
Bureau of Reclamation	803,294	1,255.1	25,032	39.1	5,428	8.5	200,250	312.9
Total Federal Lands	29,937,421	46,777.2	1,952,794	3,051.2	2,431,960	3,799.9	4,623,800	7,224.7
Percentage of Total Federal Lands	47.6%	n/a	71.4%	n/a	74.7%	n/a	68.7%	n/a
State of Wyoming								
State Lands Commission	3,649,649	5,702.6	212,095	331.4	212,095	331.4	212,095	331.4
Recreation Commission	126,901	198.3	4	0.0	0	0	25	0.0
Department of Game and Fish	156,170	244.0	2,181	3.4	9,425	14.7	35,395	55.3
Total State Lands	3,932,720	6,144.9	214,280	334.8	221,520	346.1	247,515	386.7
Percentage of Total State Lands	6.3%	n/a	7.8%	n/a	6.8%	n/a	3.7%	n/a
Local Government								
County	15,156	23.7	0	0	701	1.1	1,483	2.3
City	46,894	73.3	0	0	525	0.8	4,110	6.4
School Districts and Colleges	23,759	37.1	0	0	141	0.2	910	1.4
Total Local Government Lands	85,809	134.1	0	0	1,367	2.1	6,503	10.2
Percentage of Total Government Lands	0.14%	n/a	0	0	0.04%	n/a	0.1%	n/a
Other Public Lands	1,884,186	2,944.0	1,482	2.3	2,923	4.6	7,782	12.2
Percentage of Total Other Public Lands	2.99%	n/a	0.05%	n/a	0.09%	n/a	0.12%	n/a
Total Public Lands	35,840,136	56,000.2	2,167,074	3,386.1	2,653,480	4,146.1	4,871,315	7,611.4
Percentage of Total Public Lands	57.0%	n/a	79.2%	n/a	81.5%	n/a	72.4%	n/a
PRIVATE LANDS	27,073,322	42,302.1	568,566	888.4	602,433	941.3	1,860,085	2,906.4
Percentage of Total Lands	43.0%	n/a	20.8%	n/a	18.5%	n/a	27.6%	n/a
TOTAL LANDS	62,913,458	98,302.3	2,735,640	4,274.4	3,255,913	5,087.4	6,731,400	10,517.8

[1] Number of acres for each land classification was obtained from Wyoming Department of Administration and Information (WDAI) (2002a). The number of square miles and percentage of total acres was calculated. In some instances, the calculated information differs from the information presented in WDAI (2002a) and BLM (2003b).

Annualized growth rate over a period of time (e.g., 1980 to 1990) was calculated using Formula 2. Formula 2 is a geometric mean equation, based on end-points.

Formula 2:

$$[(\text{Y2 data}/\text{Y1 data})^{(1/[\text{Y2-Y1}])} - 1] \times 100 = \text{average annual growth}$$

Example of Average Annual Growth from 1980 to 1990

$$[(\text{1990 data}/\text{1980 data})^{(1/[1990-1980])} - 1] \times 100 =$$

average annual growth rate for the period 1980 to 1990

All state and local area dollar estimates are in year 2000 dollars (thousands) (adjusted for inflation), with the exception of PCPI, which is stated in actual dollars and was obtained from BEA (2003b).

3.1.2.1 United States

U.S. census numbers indicate fairly steady growth occurred during the 20-year study period (1980-2000). From 1980 to 2000, the U.S. population grew by 24% (54,879,707 people) (WDAI 2001a) (Table 3.2). EPS estimates a different number of people but arrives at the same percentage.

The majority of U.S. residents (222,358,309, 79%) live in urban areas (Table 3.3). Of those in rural areas (59,063,597), 95% (56,075,066) are nonfarm residents (U.S. Census Bureau 2000d). A total of 2,987,531 U.S. residents lives on farms. The U.S. has an average population density of 79.6 people/square mile (U.S. Census Bureau 2000a).

3.1.2.2 Wyoming

Numbers from the 2000 census indicate considerable growth in the Rocky Mountain West; however, Wyoming has experienced both growth and decline over the past 20 years. Wyoming's census numbers also indicate differences in growth between the urban and rural areas of the state. After increasing by 41% between 1970 (332,416) and 1980 (469,557) and then decreasing by more than 3.4% from 1980 to 1990 (453,588), Wyoming population trends have returned to

Table 3.2 Historic and Projected Population.

Location	Population[1] 1980[2]	1990[2]	2000[2]	Total Change in Population (%)[1] 1980-1990	1990-2000	1980-2000	Projected Population[1] 2002[3]	2010[4]	2015[4]	2020[4]	2025[4]
U.S. (thousands)	226,542	248,709	281,421	9.8	13.2	24.2	288,368	297,716	310,133	322,742	335,050
State of Wyoming	469,557	453,588	493,782	-3.4	8.9	5.2	498,703	607,000	641,000	670,000	694,000
Lincoln County	12,177	12,625	14,573	3.7	15.4	19.7	14,890	15,520	NP	NP	NP
LaBarge	302	493	431	63.2	-12.6	42.7	NR	NR	NP	NP	NP
Sublette County	4,548	4,843	5,920	6.4	22.2	30.2	6,240	6,690	NP	NP	NP
Big Piney	530	454	408	-10.1	-1.3	-23.0	NR	461	NP	NP	NP
Bondurant	NR	NR	155	--	--	--	NR	NR	NP	NP	NP
Boulder	NR	NR	30	--	--	--	NR	NR	NP	NP	NP
Cora	NR	NR	76	--	--	--	NR	NR	NP	NP	NP
Daniel	NR	NR	89	--	--	--	NR	NR	NP	NP	NP
Marbleton	537	634	720	18.0	16.9	34.1	NR	814	NP	NP	NP
Pinedale	1,066	1,181	1,412	10.7	20.3	32.5	NR	1,596	NP	NP	NP
Sweetwater County	41,723	38,823	37,613	-6.9	-3.1	-9.9	37,194	35,400	NP	NP	NP
Eden	NR	NR	388	--	--	--	NR	NR	NP	NP	NP
Farson	NR	NR	242	--	--	--	NR	NR	NP	NP	NP
Rock Springs	19,458	19,050	18,708	-2.1	-1.7	-3.9	NR	17,607	NP	NP	NP

1 NR = not reported; -- = not calculated due to lack of information; NP = no projection available at this geographic level.
2 WDAI (2001a). Information for Bondurant, Boulder, Cora, Daniel, Eden, and Farson was not collected until the 2000 census. U.S. Census Bureau information was not collected for LaBarge until the 1990 census; however, WDAI reported 1980 estimates (WDAI 2001a).
3 Estimate as of July 2002. WDAI (2003a).
4 U.S. (Campbell 1997) and Wyoming (WDAI 2002b) projections.

Table 3.3 Urban and Rural Population and Density, 2000.

Location	Population[1] Urban	Residents Total	Farm[2]	Non-Farm[2]	Density per Square Mile
U.S.					
No. of People	222,358,309	59,063,597	2,987,531	56,076,066	79.6
Percent	79%	21%	5%	95%	NA
State of Wyoming					
No. of People	322,073	171,709	15,150	156,559	5.1
Percent	65%	35%	9%	91%	NA
Lincoln County					
No. of People	2,958	11,653	718	10,897	3.6
Percent	20%	80%	6%	94%	NA
Sublette County					
No. of People	--[3]	5,920	477	5,443	1.2
Percent	--	100%	8%	92%	NA
Sweetwater County					
No. of People	33,512	4,101	416	3,685	3.6
Percent	89%	3%	10%	90%	NA

1 U.S. Census Bureau (2000a).
2 Total rural residents living on farms and not living on farms.
3 Sublette County has no urban population as defined by the U.S. Census Bureau.

a more moderate growth rate (Taylor and Lieske 2002; WDAI 2002a). According to the 2000 census, the state's population increased by 8.9% between 1990 and 2000, from 453,588 to 493,782, and increased 5.2% over the 20-year study period (U.S. Census Bureau 2000a) (Table 3.2). Wyoming's population growth from 1980-2000 (5.2%) was substantially less than that in the neighboring states of Colorado (30.6%), Utah (29.6%), Idaho (28.5%), and Montana (12.9%). Growth was also lower than the national average (13.2%), but it was comparable to the eastern border states, South Dakota (8.5%) and Nebraska (8.4%) (Taylor and Lieske 2002). However, Wyoming's growth was substantially higher than North Dakota (0.5%) (Taylor and Lieske 2002).

Although Wyoming has grown since 1990, population growth has not been evenly distributed throughout the state. The majority of Wyoming residents (322,073, 65%) lives in urban areas (Table 3.3). Of those in rural areas (171,709), 91% (156,559) are nonfarm residents (U.S. Census Bureau 2000d). A total of 15,150 Wyoming residents live on farms, and 1,611 (11%) of these live in the three-county study area (U.S. Census Bureau 2000d). Wyoming has a population density 5.1 people/square mile (U.S. Census Bureau 2000a).

3.1.2.3 Lincoln County

The Lincoln County population increased 3.7% between 1980 (12,177) and 1990 (12,625); however, by 2000 the population rose to 14,573, a 15.4% increase from 1990 (U.S. Census Bureau 2000a, 2000b) (Table 3.3). Thus, the Lincoln County population increased by 2,396 (19.7%) during the 20-year study period. (EPS, using BEA population estimates, indicated an 18% increase in population). The majority of Lincoln County residents (11,653, 80%) lives in rural areas (Table 3.3). Of these, 94% (10,897) are nonfarm residents (U.S. Census Bureau 2000d). Lincoln County has a population density 3.6 people/square mile (U.S. Census Bureau 2000a).

LaBarge is the community in Lincoln County most likely to be affected by the proposed projects. The U.S. Census Bureau indicates that population data for LaBarge was not collected until the 1990 census; however, it was reported for 1980 by WDAI (2001a). Unlike Lincoln County as a whole, the population of LaBarge rose from 302 in 1980 to 493 in 1990 (63% increase) then fell to 431 in 2000 (-12.6%), for a total increase of 129 (43%) during the 20-year study period (Table 3.2).

3.1.2.4 Sublette County

The Sublette County population in 2000 was 5,920, up from 4,843 (22%) in 1990 and up from 4,548 (30%) in 1980 (U.S. Census Bureau 2000a, 2000b). (EPS indicates a growth of 1,333 people, a 59% increase in population). Sublette County has no urban clusters or urban areas as defined by the U.S. Census Bureau. Therefore, the entire population is considered rural, but of that number, 477 (8%) are farm residents, while 5,443 (92%) are nonfarm residents (U.S. Census Bureau 2000d) (Table 3.3). Sublette County has a population density 1.2 people/square mile (U.S. Census Bureau 2000c).

Pinedale, Big Piney, Marbleton, and Boulder in Sublette County are the communities most likely to be affected by the proposed projects. Bondurant, Cora, and Daniel may also be affected. Census data for Bondurant, Boulder, Cora, and Daniel was not collected until the 2000 census. In 2000, Pinedale had the largest population in Sublette County (1,412), while Boulder had the smallest population in the entire study area (30) (Table 3.2).

According to local officials, population has changed in the Sublette County area since the census was conducted. Pinedale has seen growth, although it has not been quantified (personal communication, May 20, 2004, with Patti Raisch, Pinedale Town Clerk); Marbleton has increased to possibly 750 residents (personal communication, May 21, 2004, with Alice Griggs, Marbleton Town Clerk), and Big Piney has remained stable or declined (personal communication, May 20, 2004, with Vickie Brown, Big Piney Town Clerk).

3.1.2.5 Sweetwater County

The Sweetwater County population in 2000 was 37,613, down from 38,823 (-3.1%) in 1990 and from 41,723 in 1980, thus the decrease over the 20-year study period of 9.9% (-4,110) (U.S. Census Bureau 2000a, 2000b) (Table 3.2). (Despite an obvious downward trend visible on it's accompanying graph, EPS indicates an increase of 4,778 people [11%].) Sweetwater County has a population density of 3.6 people/square mile; however, unlike Sublette County, 89% (33,512) of the Sweetwater County population lives in urban clusters (U.S. Census Bureau 2000d) (Table 3.3). Of the 4,101 rural residents, only 416 (10% of rural residents; 1% of county residents) reside on farms.

Rock Springs is the community most likely to be affected in Sweetwater County; however, Eden and Farson may also be minimally affected. No census data was collected for Eden and Farson until 2000. Rock Springs reflected Sweetwater County's trend, declining 1.7% from 19,458 in 1980 to 19,050 (-2.1%) in 1990 to 18,708 (-3.9% from 1980) in 2000. In 2000, Rock Springs had the largest population in the entire study area (18,708) (Table 3.2). In the affected portion of Sweetwater County, Farson had the smallest population (242) (U.S. Census Bureau 2000a; 2000b).

3.1.3 Income, Poverty, and Unemployment

Income, poverty, and unemployment data were obtained for each county in the study area from the U.S. Census Bureau (1981, 1990, 2000c) and Wyoming Department of Employment, Research, and Planning (WDERP) (2002a, 2002b, 2002c). EPS does not address poverty and has limited coverage of unemployment trends. Personal per capita income as reported by the census is not the same as the PCPI reported by BEA (see Section 3.2). All income and wage statistics are reported in year 2000 dollars, adjusted for inflation based on the U.S. average CPI used by EPS as reported by the Bureau of Labor Statistics (BLS), unless otherwise noted. Table 3.4 shows the information on median household income, personal per capita income, poverty, and unemployment at the state and county level and at the community level, where available.

Table 3.4 Income, Poverty, and Unemployment.

	Median Household Income[1,2] ($)			Personal Per Capita Income[1,2] ($)			Poverty Rate[1,2] (%)			Unemployment Rate[1,2] (%)		
Location	1980[3]	1990[4]	2000[5]	1980[3,6]	1990[4,6]	2000[5,6]	1979[3]	1989[7]	1999[5]	1980[8,9]	1990[9,10]	2000[10,11]
U.S.	35,194	39,599	41,994	21,280	25,787	29,469	12.4	11.8	12.4	7.1	5.6	4.0
Wyoming	41,784	35,700	37,892	24,561	23,696	27,372	7.9	11.2	11.4	4.0	5.5	3.9
Lincoln County	37,627	37,534	40,794	19,602	19,071	20,980	11.5	11.1	9.0	6.0	6.6	5.2
LaBarge	NR	12,142	18,837	NR	6,995	18,837	NR	24.5	12.3	NR	NR	NR
Sublette County	36,425	35,343	39,044	25,201	24,746	26,927	9.7	8.8	9.7	2.7	2.9	3.8
Big Piney	NR	15,418	17,647	NR	8,882	17,647	NR	6.2	11.5	NR	NR	NR
Bondurant	NR	NR	19,432	NR	NR	19,432	NR	NR	19.2	NR	NR	NR
Boulder	NR	NR	12,500	NR	NR	NR	NR	NR	33.3	NR	NR	NR
Cora	NR	NR	20,831	NR	NR	20,831	NR	NR	7.9	NR	NR	NR
Daniel	NR	NR	21,213	NR	NR	21,213	NR	NR	24.4	NR	NR	NR
Marbleton	NR	15,125	18,446	NR	8,713	18,446	NR	10.1	4.2	NR	NR	NR
Pinedale	NR	17,030	20,441	NR	9,811	20,441	NR	12.9	8.9	NR	NR	NR
Sweetwater County	50,394	47,707	46,357	10,955	16,810	28,037	5.2	7.4	7.8	3.7	5.5	4.8
Eden	NR	NR	52,625	NR	NR	18,392	NR	NR	17.6	NR	NR	NR
Farson	NR	NR	44,545	NR	NR	16,140	NR	NR	0.0	NR	NR	NR
Rock Springs	19,525	19,456	51,539	4,471	11,208	19,396	5.8	8.5	9.4	NR	NR	NR

1 NR = not reported.
2 All national, state, and local area dollar estimates are in year 2000 dollars adjusted for inflation based on U.S. average consumer price index (for urban consumers). EPS uses the urban consumer base; therefore, it was also applied to inflation adjustments for this technical report to maintain consistency. Median household income is for all geographic units; personal per capita is for towns and cities. Poverty rate is the percent of people in poverty. Unemployment rate is the percentage of people actively seeking work but unemployed.
3 U.S. Census Bureau (1981) (based on 1979 income).
4 U.S. Census Bureau (1990) (based on 1989 income).
5 U.S. Census Bureau (2000c) (based on 1999 income).
7 WDAI (2001b). Poverty rate is the percent of people in poverty.
8 WDERP (2002a).
9 BLS (2003a).
10 WDERP (2002b).
11 WDERP (2002c).

The following definitions involved in the discussion of income, poverty, and unemployment were obtained from the U.S. Census Bureau (2000a).

<u>Household income</u> is the sum of money income received in a calendar year (1979, 1989, 1999) by all household members 15 years old and over, including household members not related to

the householder, people living alone, and other nonfamily household members. Included in the total are amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income.

Personal per capita income is the mean income computed for every man, woman, and child in a geographic area. It is derived by dividing the total income of all people 15 years old and over in a geographic area by the total population in that area. (Income information is not collected for all people under 15 years old even though all people under the age of 15 are included in the denominator of per capita income, thus, personal per capita income may be underestimated.)

Below poverty level is a classification assigned to families and persons if their total family income or unrelated individual income was less than the poverty threshold specified for the applicable family size, age of householder, and number of related children under 18 present. The U.S. Census Bureau follows OMB's Statistical Policy Directive 14 to define poverty and uses a set of money income thresholds that vary by family size and composition to determine who is poor. If a family's total income is less than that family's threshold, then that family, and every individual in it, is considered poor. If a person is not living with anyone related by birth, marriage, or adoption, then the person's own income is compared with his or her poverty threshold.

The poverty thresholds do not vary geographically, and they are updated annually for inflation using the CPI. The official poverty definition counts money income before taxes and does not include capital gains and noncash benefits (such as public housing, Medicaid, and food stamps).

Poverty is not defined for people in military barracks, or institutional group quarters, or for unrelated individuals under age 15 (such as foster children); they are excluded from the poverty universe--that is, they are considered neither as "poor" nor as "nonpoor" (Dalaker and Proctor 2000). According to the U.S. Census Bureau, for a family of four (i.e., two adults and two children), the poverty threshold in 2002 occurred at an annual income of $18,244 (U.S. Census Bureau 2003).

If total family income is less than the poverty threshold (poverty guidelines as published by the U.S. Department of Health and Human Services) appropriate for that family, the family is in poverty. All family members have the same poverty status. For individuals who do not live with family members, their own income is compared with the appropriate threshold. If total family income equals or is greater than the threshold, the family (or unrelated individual) is not in poverty. Total family income divided by the poverty threshold is called the ratio of income to poverty. A family is considered to be in poverty if the ratio of income to poverty is less than 1.0. The difference in dollars between family income and the family's poverty threshold is called the income deficit (for families in poverty) or income surplus (for families above poverty).

Computation of Poverty:

Total Family Income/Poverty Threshold = Ratio of Income to Poverty
Ratio of Income to Poverty ≥ 1.0 = family not in poverty
Ratio of Income to Poverty <1.0 = family in poverty

Total Family Income - Poverty Threshold = Income Deficit or Surplus

<u>Employment</u>, as defined by the BEA, is the total number of persons: a) performing any type of labor for pay or profit, b) working at least 15 hours per week on an unpaid basis in family enterprises, and c) temporarily absent for non-economic reasons. Employment under this definition includes all full-time and part-time jobs. The BEA employment count is a measure of occupied jobs, rather than a measure of employed persons. If an individual holds two separate jobs at any given time, the individual is counted twice, since two employment positions are occupied.

On the other hand, WDERP derives unemployment rates from the BLS data. The BLS employment and unemployment figures are a count of people, not jobs. This is the fundamental difference in methodology between BEA and BLS employment figures. Unemployed persons include those persons who did not work, have made specific efforts to find employment, and were also available for work. The unemployment rate is calculated by dividing the number of unemployed persons by the total civilian labor force. All unemployment information was obtained from WDERP (2002a, 2002b, 2002c).

3.1.3.1 United States

Households throughout the U.S. experienced increased income over the 20-year study period, although poverty levels remained relatively static and unemployment decreased. The median household income throughout the U.S. increased by approximately 13% between 1980 and 1990 and by 6% between 1990 and 2000, with a total increase of 19% (<1% average annual increase) over the course of the 20-year study period. Personal per capita income increased 21% from 1980 to 1990 and again increased (14%) from 1990 to 2000, for a total increase of 38% (slightly less than 2% average annual increase) over the 20-year study period. Overall, for the 20-year study period there was no change in poverty levels in the U.S., although they dropped slightly from 1979 to 1989 then increased again by 1999 (U.S. Census Bureau 1981, 1990, 2000a) (Table 3.4). The unemployment rate dropped throughout the 20-year study period, from 7.1% (1980) to 4.0% (2000) (BLS 2003a).

3.1.3.2 Wyoming

The median household income throughout Wyoming fell by nearly 15% between 1980 and 1990 and grew 6% between 1990 and 2000, for a total decline of 9% over the course of the 20-year study period (-0.5% average annual decline]) (Table 3.4). In distinct contrast to national increases, Wyoming's personal per capita income fell by nearly 4% from 1980 to 1990, but experienced a recovery of 16% from 1990 to 2000, for an overall increase of 11% (0.5% average annual growth) over the 20-year study period. The poverty rate increased over the 20-year study period, from 7.9% in 1979 to 11.4% in 1999 (U.S. Census Bureau 1981, 1990, 2000a). The unemployment rate for Wyoming rose from 1980 (4.0%) to 1990 (5.5%), then decreased to 3.9% by 2000 (WDERP 2002a, 2002b, 2002c).

3.1.3.3 Lincoln County

Lincoln County residents experienced an overall increase in income, along with reduced poverty and unemployment rates over the 20-year study period.

The median household income in Lincoln County fell by 0.2% between 1980 and 1990 then grew by nearly 9% between 1990 and 2000, for an overall increase of 8% for the 20-year study period (0.4% average annual increase) (see Table 3.4). Personal per capita income in Lincoln County decreased by nearly 3% from 1980 to 1990 but followed the state trend for an increase of nearly 10% from 1990 to 2000, for an overall increase of almost 7% (0.3% average annual increase) over the 20-year study period. Personal per capita income only slightly exceeds the poverty level. The poverty rate decreased slightly from 1979 (11.5%) to 1989 (11.4%) and decreased again, to 9% by 1999 (U.S. Census Bureau 1981, 1990, 2000a). Unemployment followed a rise-and-fall pattern similar to that experienced by the state and the other counties in the study area, with the unemployment rate increasing from 6.0% in 1980 to 6.6% in 1990, then falling to 5.2% in 2000 (WDERP 2002a, 2002b, 2002c).

Data was not collected for LaBarge until the 1990 census. LaBarge has experienced trends similar to the state, with median household income increasing by approximately 55% (4% average annual growth) from 1990 to 2000 (see Table 3.4). Personal per capita income increased more than 169% (10% average annual growth) between 1990 and 2000. Despite the dramatic increase, the per capita income of LaBarge barely exceeded the poverty level ($18,244). The poverty rate significantly decreased from 24.5% in 1989 to 12.3% in 1999; however, it still exceeds the poverty rate in both the state and county, as well as the other counties in the study area.

3.1.3.4 Sublette County

Sublette County residents experienced an overall increase in income, although poverty rates remained stable and unemployment rates increased over the 20-year study period.

The median household income in Sublette County fell by nearly 3% between 1980 and 1990, then increased by 10% between 1990 and 2000, for an overall increase of 7% (0.4% average annual growth) over the 20-year study period (see Table 3.4). Personal per capita income in Sublette County followed the state trend and fell by almost 2% between 1980 and 1990 but increased by almost 9% from 1990 to 2000, for an overall increase of 7% (0.3% average annual growth) over the course of the 20-year study period. The poverty rate decreased from 9.7% in 1979 to 8.8% in 1989 but, despite the gains in personal income, increased back to 9.7% by 1999 (U.S. Census Bureau 1981, 1990, 2000a). The 2000 unemployment rate in Sublette County (3.8%) was lower than the state overall and was the lowest unemployment rate in the study area. Unemployment followed a rise-and-fall pattern similar to that experienced by the state and the other counties in the study area, with the unemployment rate increasing from 2.7% in 1980 to 3.8% in 2000 (WDERP 2002a, 2002b, 2002c).

Complete information for the potentially affected communities in Sublette County is not available for all study years. Big Piney, Marbleton, and Pinedale have experienced increases in both median household income and personal per capita income since 1980. Marbleton had the highest increase in median household income (22%; 2% average annual growth) and personal per capita income (112%; 8% average annual growth) (see Table 3.4). Despite the increase, the per capita income of Marbleton barely exceeds the poverty level and no personal per capita income is reported for Boulder. The median household income in Boulder in 2000 was only $12,500--68.5% of the poverty level ($18,244). The highest reported poverty rates in the three-county study area in 2000 were in Sublette County--Boulder (33.3%), Daniel (24.4%), and Bondurant (19.2%). Although poverty in Sublette County has remained relatively stable, the poverty rates in Marbleton and Pinedale have decreased since 1989. EPS indicatesthat the fastest growing area of personal income is from non-labor sources--presumably in-migrants attracted by the quality of life in the community (personal communication, December 2004, with Roy Allen, Economist, BLM Wyoming State Office, Cheyenne).

3.1.3.5 Sweetwater County

The median household income in Sweetwater County fell by 5% between 1980 and 1990 and fell again by 3% between 1990 and 2000, for an overall decrease of 8% (-0.4% average annual change) over the course of the 20-year study period (see Table 3.4). However, personal per capita income increased 53% from 1980 to 1990 and 67% from 1990 to 2000, for an overall increase of 156% over the course of the 20-year study period (Table 3.4). The poverty rate increased 42% from 1979 to 1989 but only increased 5% from 1989 to 1999 (U.S. Census Bureau 1981, 1990, 2000a). The 2000 unemployment rate in Sweetwater County was 4.8% and was higher than the state and nation. Unemployment followed a rise-and-fall pattern similar to that experienced by the state and the other counties in the study area, with the unemployment rate increasing from 3.7% in 1980 to 5.5% in 1990, then falling to 4.8% by 2000 (WDERP 2002a, 2002b, 2002c).

Rock Springs experienced a decline in median household income (-0.4%) from 1980 to 1990 but experienced an increase (165%) from 1990 to 2000, for an overall increase of 164% (5% average annual growth) over the 20-year study period (see Table 3.4). Personal per capita income increased (151%) from 1980 to 1990 and again from 1990 to 2000 (73%), for an overall increase of 334% (8% average annual growth) over the course of the 20-year study period. Despite the increase in personal income, the Rock Springs poverty level increased from 5.8% in 1979 to 8.5% in 1989 and to 9.4% in 1999.

Information for Eden and Farson in Sweetwater County was not collected until the 2000 census. However, the median household income in Eden was the highest in the three-county study area ($52,625), and Farson had the lowest poverty level in the three-county study area in 1999 (0.0%) (see Table 3.4).

3.1.4 Workforce Age, Gender, and Disabilities

Workforce information was obtained from the U.S. Census Bureau (2000e, 2000f), because EPS does not address the workforce on a national level; therefore, census information is presented in this section. For the purposes of this report, the civilian labor force is defined as all persons between 16 and 66 years of age (retirement age is 67) in the civilian non-institutional population who either had a job or were looking for a job in the last 12 months and who did not have an employment disability. Employment disability was defined for the purposes of the last census as a condition that had lasted for 6 months or more:

- that limited the kind or amount of work that he or she could do at a job,
- that prevented him or her from working at a job,

- that made it difficult to go outside the home alone (for example, to shop or visit a doctor's office), and
- that made it difficult to take care of his or her own personal needs such as bathing, dressing, or getting around inside the home.

Based on the age of residents, employment disability information, and the unemployment rates in each county, there is a civilian labor force of approximately 1,719 unemployed working-age residents available for employment in the study area (Table 3.5). However, there may be some disconnect between published data and the actual available labor force. A labor shortage has been reported in all sectors in Sweetwater County, with as many as 600 job vacancies existing in November 2004 (Mast 2004). Additionally, the new Halliburton facility has reported that it is having difficulty filling the 100 new jobs created by its facility in Rock Springs (Mast 2004).

Table 3.5 Population and Workforce, 2000.[1]

			County		
Sex and Age	U.S.	Wyoming	Lincoln	Sublette	Sweetwater
Male					
0-15 years	32,919,334	57,604	1,985	680	4,727
16-66 years	92,539,411	168,540	4,627	2,080	13,168
67 years and over	12,594,818	22,109	763	281	1,072
Total males	138,053,563	248,253	7,375	3,041	18,967
Female					
0-15 years	31,353,445	54,266	1,901	663	4,515
16-66 years	93,508,194	162,400	4,455	1,926	12,533
67 years and over	18,506,704	28,863	842	290	1,598
Total females	143,368,343	245,529	7,198	2,879	18,646
Total all ages	281,421,906	493,782	14,573	5,920	37,613
Total working age	186,047,605	330,940	9,082	4,006	25,701
Persons with disabilities[2]	57,890,659	30,952	633	325	1,942
Total potential workforce	128,156,946	299,988	8,449	3,681	23,759
Unemployment rate	4.0%	3.9%	5.2%	3.8%	4.8%
Number of Persons Available for Employment	5,126,277	11,699	439	139	1,140

1 U.S. Census Bureau (2000e).
2 U.S. Census Bureau (2000f).

3.1.4.1 United States

As a whole, in 2000, the population of the U.S. was almost equally divided between males (49%) and females (51%). There were 186,047,605 (66% of the total population) working-age residents in the U.S. (U.S. Census Bureau 2000e) (Table 3.5). According to census records, 57,890,659 individuals in the U.S. were work disabled (U.S. Census Bureau 2000f), leaving a total of 128,156,946 working-age individuals nationwide (Table 3.5). Given an unemployment rate of 4%, there were approximately 5,126,277 unemployed residents of working age available for employment in the nation.

3.1.4.2 Wyoming

As a whole, in 2000, the population of Wyoming was almost equally divided between males (248,253; 50.3%) and females (245,529; 49.7%) (see Table 3.5). There are 330,940 (67% of the total population) working age residents in Wyoming (U.S. Census Bureau 2000e). According to census records, 30,952 individuals in Wyoming are work-disabled (U.S. Census Bureau 2000f), leaving a total of 299,988 working age individuals statewide. Given an unemployment rate of 3.9%, there are approximately 11,699 unemployed residents of working age available for employment in the state.

3.1.4.3 Lincoln County

The population of Lincoln County was nearly equally divided between males (7,375; 51%) and females (7,198; 49%) (see Table 3.5). There are 9,082 (62%) working-age residents in Lincoln County (U.S. Census Bureau 2000e). Of these, the census indicates that 633 people are work disabled (U.S. Census Bureau 2000f), leaving 8,449 working age individuals available for employment. Given an unemployment rate of 5.2%, there are approximately 439 unemployed residents of working age available for employment in Lincoln County.

3.1.4.4 Sublette County

The population in Sublette County had slightly more males (3,041; 51%) than females (2,879; 49%) (see Table 3.5). There are 4,006 (68%) working-age residents in Sublette County (U.S. Census Bureau 2000e). Of these, the census indicates that 325 individuals are work disabled (U.S. Census Bureau 2000f), leaving a total of 3,681 working age individuals available for employment. Given an unemployment rate of 3.8%, there are approximately 139 unemployed residents of working age available for employment in Sublette County.

3.1.4.5 Sweetwater County

The population of Sweetwater County was nearly equally divided between males (18,967; 50%) and females (18,646; 50%) (see Table 3.5). There are 25,701 (68%) working-age residents in Sweetwater County (U.S. Census Bureau 2000e). Of these, the census indicates that 1,942 individuals are work disabled (U.S. Census Bureau 2000f), leaving a total of 23,759 working-age individuals available for employment. Given an unemployment rate of 4.8%, there are approximately 1,140 unemployed residents of working age available for employment in Sweetwater County.

3.1.5 Quality of Living

Data on quality of living for each county in the study area were obtained from the Wyoming Business Council (2002b, 2002c, 2002d), WDAI (2002b), and personal communications. Due to the remote and unique area encompassed by the JIDPA and SPPA, the U.S. is not included in the quality of life analysis, with the exception of crime statistics.

3.1.5.1 Crime

The crime indexes are "100" based, meaning that a value of 100 for a particular level of geography is the average national value. For example, a value of 150 indicates that the area has one and a half times the average risk level. A value of 50 indicates that the area is at half the average risk level.

Wyoming has a low crime index compared to the national average, with the index for personal crimes at 49--about half the national index--and property crimes at 71--about three-fourths the national index. The highest individual crime index for personal crime in Wyoming is for rape (80), which is higher than the index for any of the counties in the study area. The highest Wyoming crime index for crimes against property is larceny (115)--15% greater than the national average (Wyoming Business Council 2002b).

The overall personal crime index in the study area is less than the national average (ranging from 30 to 60%), although murder (133% in Sublette County) exceeds the national average. The crimes against property index is generally lower than the national average (ranging from 33 to 76%), with the exception of larceny (155% in Sweetwater County).

Sublette County has implemented an enhanced 911 system as part of community policing efforts and to promote citizen's health and safety (Sublette County Sheriff's Department 2002). A 911 System Health Questionnaire identifies health concerns for local area citizens, which is included as part of a computer system used to assist medical, fire, and law enforcement in meeting the needs of victims in the event of an emergency. Additionally, Sublette County has implemented: an innovative Ranch Watch program; child identification and fingerprinting; McGruff (child safety); D.A.R.E.; citizen's academy; seminars on drug awareness, shoplifting, and check fraud; and vacation watch program to aid in the prevention of crime in this largely rural area.

The Sublette County Sheriff's Department staff includes a sheriff, undersheriff, lieutenant, emergency management coordinator, three detectives, a probation/resource officer, two patrol sergeants, a seasonal forest patrol deputy, five patrol deputies for Big Piney/Marbleton, five patrol deputies for Pinedale, four patrol deputies for the county, a detention sergeant and five detention deputies, a communication sergeant and five communication deputies, an office manager, and three secretaries/clerks (Sublette County Sheriff's Department 2002).

The Sublette County Sheriff's office services all of Sublette County and the affected towns within the Sublette County. While calls for service have increased in recent years (from 3,000 in 1995 to 7,000 in 2003), approximately 40% of the increased demand is a result of displaced Jackson Hole residents who have in-migrated to Sublette County in an attempt to find housing; the remaining 60% of the increase results from a combination of Jonah Field workers and tourists (ranging from 11,000 to 14,000 visitors per day during the summer) (personal communication, May 2004, Sheriff Hank Ruland, Sublette County Sheriff's Department, Pinedale, Wyoming). The budget has increased from $1.0 million in 1995 to more than $4.5 million in 2004. The majority of calls for service resulting from Jonah Field development are medical emergencies not involved with criminal action, although some increase in speeding violations can be attributed to the Jonah Field workers. According to Sheriff Ruland, the oil and gas workers are welcome and contributing members of the community who show that they genuinely care about the community by participating in such activities as community clean-up days. Additionally, recent improvements in the county legal system (new jail, courthouse, equipment, competitive wages, increased staffing [up from 12 officers in 1995 to 26 sheriff's deputies and 21 jail officers in 2003], and vehicles) are a direct result of the tax revenues resulting from natural gas activities in the Jonah Field.

The Sheriff's department and Sublette County would not have been able to sufficiently expand to keep up with the increased demand for services without those revenues (personal communication, May 2004, Sheriff Hank Ruland, Sublette County Sheriff's Department, Pinedale, Wyoming). However, service calls increased from 4,032 in 1995 to 7,347 in 2003 (Royster 2004). According to Sheriff Ruland, the biggest crime problem in Sublette County is methamphetamine. Drug use also leads to increases in domestic violence and bar fights--particularly within the temporary worker demographic. Although there has been an increase in drug use in Sublette County, Ruland does not equate that increase to oil and gas workers--it is a state-wide problem (Royster 2004). Additionally, Ruland recognizes that any increase in population--including visiting hunters and other tourists--result in an increase in drug and alcohol-related calls (Royster 2004). The majority of law enforcement calls in Sublette County still involve traffic--people speeding or running stop signs. One study indicates that transient workers pose challenges to law enforcement primarily in the form of highway safety and increased substance abuse (Blevins et al. 2204.) However, it is estimated that crime in Sublette and Sweetwater County has increased by 80% since 2000, largely as a result of oil and gas development (personal communication, December 2004, Marilyn Filkins, Sublette County Attorney [formerly Sweetwater Deputy County Attorney], Pinedale). At the end of 2004, the

Sublette County Attorney's office had 1,200 open cases and had hired an assistant county attorney to handle only criminal cases. Additionally, she indicated that in 2000-2001, there were one or fewer felony arrests in Sublette County, in 2004 the average is approximately one felony arrest per week and many of those are egregious aggravated assaults. Ms. Filkins also reports gang-like behavior from various drilling and pipeline crews. Increases in felonies and drug-related calls have been reported by the Sweetwater County Sheriff and the Chief of Police in Rock Springs, and these were primarily attributed to oil and gas workers (crime report to Pinedale/Anticline Working Group (PAWG) presented by Jana Weber) (personal communication, December 2004, with Roy Allen, Economist, BLM Wyoming State Office, Cheyenne). Ms. Filkins holds the opinion that Sweetwater County has a higher incident of crime related to methamphetamine than Sublette County.

It should be noted that both Questar (a local oil and gas producer) and EnCana require random drug testing for employees and subcontractors. Additionally, EnCana sponsors training sessions for emergency response personnel and Questar donates money to family violence organizations (Royster 2004). However, one of the smaller local operators is reported to have delayed drug-testing for a year and a half, and when a random drug test was performed, 16 of 18 workers on a drill rig tested positive and were fired (personal communication, December 2004, Marilyn Filkins, Sublette County Attorney [formerly Sweetwater Deputy County Attorney], Pinedale).

3.1.5.2 Infrastructure

County and community profile information was primarily obtained from BLM (1997) as well as local community websites and other extant information.

Lincoln County

In Lincoln County, LaBarge is the only potentially affected community. It was incorporated in 1973 and is located in Lincoln County on U.S. Highway 189 approximately 75 mi north of Green River and 21 mi south of Big Piney. The town has a mayor/council, one full-time and one part-time policeman, 911 emergency telephone service, and a 15 member volunteer fire department. There is a 6,000-volume library, one day care center, one senior center, four churches, one motel with 36 rooms, and an RV park with six spaces. Medical services are provided by a weekly clinic and by ambulance service, and communications include a weekly newspaper, cable TV, and a post office. Recreational facilities include one ice skating rink, two baseball fields, bike paths, two parks, and a small airport. It has been reported that there is a shortage of health-care providers in Sublette County (Royster 2004). Some health-care providers may work shifts up to 52 hours straight. The Pinedale Medical Clinc serviced approximately 12,000 patients in 2003--mostly oil and gas workers.

Sublette County

Sublette County has three airports; 26 churches; three libraries; five medical facilities (however, the nearest hospitals are in Jackson and Rock Springs, Wyoming); two museums; two newspapers; nine post offices (Big Piney, Bondurant, Boulder, Cora, Daniel, Farson, LaBarge, Marbleton, and Pinedale); and two school districts including three elementary schools, two middle schools, two high schools, and a private school, with higher education available from Western Community College's distance learning program; and utilities/services are provided by one telephone company, two garbage/refuse services, one cable television provider, three natural gas suppliers, one electricity supplier, and one coal company. Citizen organizations are important to Sublette County's infrastructure and include volunteer fire departments, a search-and-rescue organization, and a citizen's recycling program (Sublette.Com 2001; Pinedale Online 2002).

Pinedale. Located approximately 100 mi northwest of Rock Springs and 32 mi north of the JIDPA on U.S. Highway 191, Pinedale is the county seat of Sublette County. The town has a mayor/council government, 911 emergency service, and a volunteer fire department. Police protection for the town is provided through contract with the Sublette County Sheriff's Office. There is a 37,000-volume library, one day care center, one senior center, nine churches, 11 hotels/motels with a total of 162 rooms, and a recreational vehicle (RV) park with 44 spaces. Medical services include a clinic, three doctors, a physician's assistant, one dentist, ambulance service, and a nursing home with 107 rooms. Communications include a weekly newspaper, cable TV, and a post office. There is one golf course, one ice skating rink, bike paths, two parks, and a recreation center, as well as a small airport. It has been reported that there is a shortage of health-care providers in Sublette County. Some health-care providers may work shifts of up to 52 hours straight. The Pinedale Medical Clinic serviced approximately 12,000 patients last year--mostly oil and gas workers (Royster 2004).

Pinedale has a variety of establishments for overnight lodging. A Best Western and Super 8 are located on the west end of town and offer the most rooms. A variety of smaller motels are located in the downtown area. The surrounding area has several bed and breakfasts, guest ranches and lodges, and individual cabins available for rent. Tourism in and around Pinedale, and in Sublette County generally, is a major business with the primary attraction being the natural resources in the area and the many outdoor activities associated with them, including hunting, fishing, camping, backpacking and hiking, wilderness escapes, horseback riding, mountain biking, golf, wildlife viewing, downhill skiing, cross-country skiing, and snowmobiling.

<u>Big Piney</u>. Big Piney is located on U.S. Highway 189 about 95 mi north of Green River and 35 mi southwest of Pinedale. The town has a mayor/council government, 911 emergency service, and a voluntary fire department. Police protection is provided by the Sublette County Sheriff's Office. There is a 40,000-volume library, one day care center, six churches, and three motels. Medical services include two doctors, one dentist, and ambulance service. Communications include a weekly newspaper, cable TV, and a post office. There is one ice skating rink, one bike path, three parks, three baseball fields, one swimming pool, and a small airport. Major employers include the oil and gas industry, agriculture, and retail trade and services.

<u>Marbleton</u>. Marbleton is located on U.S. Highway 189, 1 mi north of Big Piney. Marbleton has an RV park and picnic grounds, two motels, a coffee shop and restaurant, gas stations, retail shops, a movie theater, a medical clinic, and an airport. Major industries include ranching, oil and gas, and recreation.

Boulder. Boulder is an unincorporated community located on U.S. Highway 191, 12 mi south of Pinedale and 85 mi north of Rock Springs. Boulder has a post office and the Boulder Store, which includes a store, gas station, RV park (nine spaces), motel (nine rooms), restaurant, and bar.

Sweetwater County

Sweetwater County is located in the southwestern part of Wyoming with 60 mi of its border touching the states of Utah and Colorado. The county consists of 10,497 sq mi. The two largest cities in the county are Rock Springs and Green River.

Rock Springs. Established in 1888 as a mining town, the cultural tradition in Rock Springs emphasizes natural resources as the driving force behind its economy (Rock Springs Chamber of Commerce 2004). Rock Springs is located along Interstate 80 (I-80) in west-central Sweetwater County and serves as the economic hub of the area. Law enforcement and fire protection services are available, as well as a 911 emergency number. Public education is provided by 11 elementary schools, two junior high schools, one high school, and Western Wyoming Community College (a 2-year junior college). Community services consist of two libraries (107,000 total volumes), eight day care centers, and 32 churches. Commercial services include two shopping centers, five convention facilities (with a total capacity of 4,660 persons), 31 hotels/motels (1,680 total rooms), an RV park (50 spaces), and several mobile home parks. Medical care is provided by a hospital (100 beds), a nursing home (100 rooms), 33 doctors, 24 dentists, and an ambulance service. Communications consist of two local newspapers (one published in Rock Springs and one in Green River), cable television, telephone service, two AM and three FM radio stations, and two post offices.

Recreation resources include 17 baseball fields, 24 tennis courts, six swimming pools, eight soccer fields, a golf course, one ice skating rink, two recreation centers, and 24 parks. Outdoor recreation opportunities available within 30 mi of the city include Flaming Gorge National

Recreation Area and various opportunities on BLM-administered lands, including Boar's Tusk, sand dunes, petroglyphs, and the Oregon/California Trails.

Cultural/entertainment attractions include the Red Desert Rodeo, Wild Horse Days, the Sweetwater County Museum, the historical Rock Springs City Hall Museum, the Fine Arts Center, and the Western Wyoming Community College Dinosaur Collection.

Rock Springs is serviced by two commercial airlines providing flights to and from the Rock Springs Airport, two bus lines, four car rental services, and two taxi services.

Eden/Farson. Eden and Farson are two unincorporated communities located on U.S. Highway 191 about 40 mi northwest of Rock Springs and 28 mi southeast of the JIDPA. The communities are governed by Sweetwater County and have a resident sheriff's officer and highway patrolman, a 26-member volunteer fire department, ambulance service, and 911 emergency phone service. There are four churches, two gas stations, two cafes, two bars, and a convenience store. Recreational facilities include a youth center and a county park.

Eden and Farson are not serviced by a doctor, nurse, or dentist, although there is an emergency medical technician service. The nearest medical facility is in Rock Springs. There is one elementary and one secondary school. Bridger Valley Electric supplies energy and three vendors supply propane for heating. Residents have individual wells and septic systems, and solid waste disposal facilities are available. Housing is limited, with farm and ranch homes constituting the primary type of housing.

3.1.5.3 Housing

Historic information on housing was obtained from the WDAI (2002a), and projected data were obtained from the Wyoming Business Council (2002d), these data are presented in Table 3.8. Rental rates and cost as compared to the state were obtained from WDAI (2003b) (Table 3.9a), and housing values as well as percentage of income spent on housing were obtained from Wyoming Housing Database Partnership (WHDP) (2003) (Table 3.9b).

Table 3.8 Historic and Projected Housing Availability.

	Wyoming						Lincoln					
	Historic				Projected		Historic				Projected	
Housing Item	1980	1990	2000	2002	2007	2012	1980	1990	2000	2002	2007	2012
Type of Housing[1,2]												
Vacant	N/A	34,572	30,246	38,804	38,706	39,582	N/A	1,272	1,565	1,349	1,389	1,430
Owner-occupied	N/A	114,544	135,514	139,391	149,399	159,413	N/A	3,310	4,280	4,461	4,869	5,282
Renter-occupied	N/A	54,295	58,094	58,736	60,422	62,098	N/A	826	986	1,024	1,072	1,116
Total housing units	188,217	203,411	223,854	236,931	248,527	261,093	4,671	5,408	6,831	6,834	7,330	7,828
Percent of Housing[1]												
Vacant	N/A	17.0	13.5	16.4	15.6	15.2	N/A	23.5	22.9	19.7	18.9	18.3
Owner-occupied	N/A	56.3	60.5	58.8	60.1	61.1	N/A	61.2	62.7	65.3	66.4	67.5
Renter-occupied	N/A	26.7	26.0	24.8	24.3	23.8	N/A	15.3	14.4	15.0	14.6	14.30
No. of Building Permits[2]	3,845	692	1,582	2,045	--	--	30	3	145	204	--	--

	Sublette						Sweetwater					
	Historic				Projected		Historic				Projected	
Housing Item	1980	1990	2000	2002	2007	2012	1980	1990	2000	2002	2007	2012
Type of Housing[1,2]												
Vacant	N/A	1,077	1,181	1,155	1,177	1,201	N/A	1,828	1,816	2,075	2,063	2,107
Owner-occupied	N/A	1,281	1,737	1,820	2,055	2,289	N/A	9,552	10,586	10,722	10,960	11,154
Renter-occupied	N/A	553	634	652	692	733	N/A	4,065	3,519	3,420	3,168	2,926
Total housing units	2,393	2,911	3,552	3,627	3,924	4,223	15,116	15,445	15,921	16,217	16,191	16,187
Percent of Housing[1]												
Vacant	N/A	37.0	33.2	31.8	30.0	28.4	N/A	11.8	11.4	12.8	12.7	13.0
Owner-occupied	N/A	44.0	48.9	50.2	52.4	54.2	N/A	61.8	66.5	66.1	67.7	68.9
Renter-occupied	N/A	19.0	17.9	18.0	17.6	17.4	N/A	26.3	22.1	21.1	19.6	18.1
No. of Building Permits[2]	82	37	54	88	--	--	801	56	41	48	--	--

1 Historic data from WDAI (2002a); projected data from Wyoming Business Council (2002d). Reported average availability may not accurately reflect actual availability within particular communities (e.g., Pinedale) that have already been impacted by other projects (e.g., Pinedale/Anticline Project) in the area.

2 Total residential units (i.e., single family units, duplex units, tri- and four-plex units, and multi-family units) (Wyoming Housing Database Partnership 2003).

Table 3.9a Average Rental Rates.[1]

	Apartment[2]			House[3]			Mobile Home[4]			Mobile Home Lot[5]		
	Fourth Quarter			Fourth Quarter			Fourth Quarter			Fourth Quarter		
Location	2001 ($)	2002 ($)	Percent Change	2001 ($)	2002 ($)	Percent Change	2001 ($)	2002 ($)	Percent Change	2001 ($)	2002 ($)	Percent Change
Lincoln	292	332	13.7	400	388	-3.1	315	304	-3.4	158	163	3.2
Sublette	441	534	21.1	613	655	7.0	350	457	30.6	175	165	-5.7
Sweetwater	390	392	0.5	533	516	-3.2	422	422	0.0	201	197	-2.2
Wyoming average	430	443	3.0	599	617	3.0	436	448	2.8	178	183	3.1

1 WDAI (2003b). Reported average rental rates may not accurately reflect actual rates within particular communities (e.g., Pinedale) that have already been impacted by other projects (e.g., Pinedale/Anticline Project) in the area.
2 Two-bedroom, unfurnished, excluding gas and electric.
3 Two or three-bedroom, single family, excluding gas and electric.
4 This price reflects total monthly rental expense, including lot rent.
5 Single-wide, including water.

The U.S. Census Bureau defines a housing unit as "a house, an apartment, a group of rooms or a single room intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the building and which have a direct access from the outside of the building or through a common hall. In accordance with this definition, each apartment unit in an apartment building is counted as one housing unit" (WHDP 2003). Residences reported herein include single family units (including mobile homes), duplex units, tri- and four-plex units, and multi-family units. The habitability of vacant residences is unknown, and the acceptability of any individual housing unit is not quantifiable and is subjective for each individual tenant. Housing units are locations intended to be permanent living residences and do not include transient lodging facilities such as hotels, motels, and bed-and-breakfasts.

Table 3.9b Housing Values and Percentage of Income Spent on Housing, 2000.[1]

		County		
	Wyoming	Lincoln	Sublette	Sweetwater
Housing Values				
Number of Occupied Units	193,608	5,266	2,371	14,105
Median Value	$96,600	$95,300	$112,000	$104,200
Median Monthly Owner Costs				
Mortgage	$825	$855	$847	$953
No mortgage	$229	$233	$243	$231
Median Selected Renter Costs				
Contract Rent	$373	$362	$413	$363
Gross Rent	$437	$434	$523	$428
Percentage of Income Spent on Housing[2]				
Rental Units				
Number of Units	55,793	921	502	3,488
Less than 10%	5,109	101	41	449
10-14%	8,331	167	74	715
15-19%	8,150	176	50	487
20-24%	6,533	82	58	402
25-29%	4,914	54	23	286
30-34%	3,569	30	21	162
35-39%	2,641	28	13	134
40-49%	3,177	81	32	125
>50%	7,179	120	75	385
Not computed	6,190	921	115	343
Units with Mortgage				
Number of Units	62,809	1,838	473	5,128
Less than 10%	5,157	126	35	426
10-14%	13,007	347	87	1,173
15-19%	13,879	363	85	1,201
20-24%	10,691	296	69	833
25-29%	6,845	222	63	567
30-34%	3,783	118	45	325
35-39%	2,465	76	16	164
40-49%	2,691	139	15	157
>50%	4,081	139	56	259
Not computed	210	12	2	23
Units Without Mortgage				
Number of Units	32,782	1,147	389	2,155
Less than 10%	19,215	688	239	1,423
10-14%	5,770	235	54	371
15-19%	2,737	96	24	122
20-24%	1,703	38	32	93
25-29%	921	24	11	39
30-34%	565	17	9	20
35-39%	322	23	4	23
40-49%	328	17	8	13
>50%	911	17	6	44
Not computed	310	12	2	7
Total No. of Units Compiled for Income Spent on Housing[2]	151,384	3,906	1,364	10,771

1 WHDP (2003).
2 Total number of units used by WDHP to calculate percentage of income spent on housing unit information does not equal total number of occupied units.

3.1.5.3.1 Wyoming

In 2002, Wyoming had a total of 236,931 housing units with a 16.4% vacancy rate (38,804 vacant units). More than 2,000 residential housing building permits were issued state-wide in 2002 (WHDP 2003) (Table 3.8).

The cost of rental housing for the fourth quarter of 2002 increased between 2.8 and 3.1% from 2001 for all types of housing in Wyoming. The highest rent in the fourth quarter of 2002 was for houses at $617, up 3.0% from the previous year, and the lowest rent was for mobile home lots at $183 (assumes the renter owns a mobile home to place on a lot), up 3.1% from the previous year (Table 3.9a).

According to WHDP (2003), 193,608 residential units in Wyoming were occupied in 2000 (Table 3.9b). The median value of these units was $96,600, with a median mortgage payment of $825 and a median gross rent of $437. Of the 151,384 units surveyed for percentage of income spent on housing, 36.9% of these units were rentals, 41.5% were mortgaged units, and 21.7% were units without a mortgage. Some occupants paid more than 50% of their income for housing costs (12.9% of renters, 6.5% of mortgaged unit owners, and 2.8% of unmortgaged unit occupants) (Table 3.9b).

3.1.5.3.2 Lincoln County

In 2002, Lincoln County had the fewest renter-occupied units (15%, 1,024 units) in the study area. There were 1,349 vacant units (19.7%) in Lincoln County. However, the greatest number of residential building permits (204) in the study area was issued in Lincoln County (WHDP 2003) (see Table 3.8).

Lincoln County had the lowest rental costs in the study area in both 2001 and 2002. The cost of rental housing for the fourth quarter of 2002 increased over 2001 for apartments (13.7%) and mobile home lots (3.2%), while the rates for houses (-3.1%) and mobile homes (-3.4%)

decreased during the same period. The highest rent in the fourth quarter of 2002 in Lincoln County was for houses ($388) and the lowest was for mobile home lots ($163) (see Table 3.9a).

According to WHDP (2003), 5,266 residential units in Lincoln County were occupied in 2000 (see Table 3.9b). The median value of these units was $95,300, with a median mortgage payment of $855 and a median gross rent of $434. Of the 3,906 units surveyed for percentage of income spent on housing, 23.6% were rentals, 47.1% were mortgaged units, and 29.4% were units without a mortgage. In Lincoln County, 8.8% of renters, 7.8% of mortgaged unit occupants, and 1.5% of unmortgaged unit occupants spent more than half their income on housing costs.

3.1.5.3.3 Sublette County

In 2002, Sublette County had the highest officially reported vacancy rate in the study area (31.8%, 1,155 vacant units), and the lowest number of owner-occupied units (50.2%) (see Table 3.8). However, individuals have reported that it was difficult to rent or purchase adequate housing in Sublette County and a surplus apparently does not exist (personal communication, Bill Lanning, BLM, PFO). No housing is available in Pinedale, Big Piney, or Marbleton (personal communication, May 20, 2004, with Patti Raisch, Pinedale Town Clerk; Vicky Brown, Big Piney Town Clerk; Alice Griggs, Marbleton Town Clerk; and Mary Langford, Sublette County Clerk). According to Ms. Langford, most of the housing impact in the town of Pinedale originates from administrators associated with oil and gas field development, rather than oil and gas field workers. However, according to Sheriff Hank Ruland, up to 40% of the demand on his office results from the in-migration of dislocated Teton County residents who cannot find adequate housing in Jackson Hole (personal communication, May 21, 2004, with Sheriff Hank Ruland, Sublette County Sheriff's Department). Therefore, a large percentage of the housing demand may result from dislocated Teton County residents rather than oil and gas workers. This view is shared by Cyd Goodrich, Ms. Goodrich stipulates that there is no low-income housing available in the Pinedale community. She holds the opinion that much of the pressure is from higher-middle to lower-upper income families moving out of Teton County and she has never heard anyone express a lack of interest in moving to Pinedale because of oil and gas development. However, most of the affected individuals who encounter difficulty obtaining housing are native residents of Pinedale, especially young or newly married, under-employed couples who simply cannot afford the high rental rates and are not in a position to purchase. The vacancy rate for rentals/hotels/motels in summer (April-November) is estimated to be 0%, while it is less than 10% the rest of the year and declining (personal communication, December 2004, with Cyd Goodrich, Realtor, Pinedale Properties). Much of the seasonal pressure on housing comes from seasonal, often migrant workers from Canada, who come on work visas. Landlords offer only one-year leases and do not allow subletting, so, although the houses are only used during the drilling season by workers in areas without year-round operations and sit vacant the rest of the year, other workers who are involved in year-round operations have difficulty finding adequate housing. Housing pressures are less in the southern part of the county, because there are no direct roads to the oil and gas fields (personal communication, December 2004, with Cyd Goodrich, Realtor, Pinedale Properties). Additionally, the demand for new housing apparently exceeds the rate of building. A total of 88 new residential building permits were issued in Sublette County in 2002 (WHDP 2003).

Sublette County had the highest rental costs for apartments ($534, up 21.1% from the fourth quarter of 2001), houses ($655, up 7.0%), and mobile homes ($457, up 30.6%) in the study area in the fourth quarter of 2002--these were also the greatest increases in the study area, and Sublette County was the only county in the study area to see an increase in rental rates for houses. However, Sublette County had the greatest decrease in rental rates for mobile home lots (-5.7%) in the study area (see Table 3.9a). In 2004, rent for single family homes ranges from $1,000-$1,500/month, while small apartments in multi-unit facilities range from $850-$1,000/month (personal communication, December 2004, with Cyd Goodrich, Realtor, Pinedale Properties).

According to WHDP (2003), 2,371 residential units in Sublette County were occupied in 2000 (see Table 3.9b). The median value of these units was $112,000, with a median mortgage payment of $847 and a median gross rent of $523. Of the 1,364 units surveyed for percentage of income spent on housing, 36.8% were rentals, 34.7% were mortgaged units, and 28.5% were units without a mortgage. In Sublette County, 14.9% of renters, 18.4% of mortgaged unit occupants, and 61.4% of unmortgaged unit occupants spent more than half their income on housing costs.

Plans are underway to build another motel in town and several mancamps are currently under discussion by area operators for permitting to alleviate some of the pressures on housing (personal communication, December 2004, with Cyd Goodrich, Realtor, Pinedale Properties). Several housing developments are also being planned (personal communication, December 2004, with Roy Allen, Economist, BLM Wyoming State Office, Cheyenne).

3.1.5.3.4 Sweetwater County

In 2002, Sweetwater County had the highest number of owner-occupied units (10,722, 66.1%), the highest number of renter-occupied units (3,420, 21.1%), and the lowest vacancy rate (2,075 units, 12.8%) (Table 3.8). A total of 48 new residential building permits were issued in Sweetwater County in 2002 (WHDP 2003).

Sweetwater County had the highest rental costs for mobile home lots ($197) in the study area in the fourth quarter of 2002. However, the average rent for mobile home lots decreased by 2.2% from the previous year. Rental rates for Sweetwater County remained relatively stable or declined from the rates for the previous year across the board, with the greatest decrease in the study area in rates for houses (-3.2%) and the lowest increase in the study area in rental rates for apartments (0.5%). The rates for mobile homes did not change (Table 3.9b).

According to WHDP (2003), 14,105 residential units in Sweetwater County were occupied in 2000 (Table 3.9b). The median value of these units was $104,200, with a median mortgage payment of $953 and a median gross rent of $428. Of the 10,771 units surveyed for percentage of income spent on housing, 32.4% were rentals, 47.6% were mortgaged units, and 20.0% were units without a mortgage. In Sweetwater County, 11.0% of renters, 5.1% of mortgaged unit occupants, and 2.0% of unmortgaged unit occupants paid more than 50% of their income for housing costs.

3.1.5.4 Cost of Living and Inflation

Cost of living and inflation information was obtained from the Wyoming Cost of Living Index (WCLI) for the fourth quarter of 2002 (WDAI 2003b). The WCLI is a summary of price data collected from 27 cities and towns throughout Wyoming over the period of January 8, 9, and 10, 2003. The price data collected are used to build a comparative index and to estimate inflation rates for Wyoming and the five regions of the state (Table 3.10).

Twenty-seven communities across the state were included in the WCLI based on the following criteria. First, the largest city or town in each county was priced. In addition, prices were collected in any city or town with a population of more than 5,000 persons or where a city or town had at least 85% of that county's largest community's population. In counties where only one community was priced, those prices were used to represent the entire county. In counties where two communities were priced, a population-based weighted average of the prices for the two communities was used for the entire county.

The 140 items surveyed were aggregated into six categories, which were then weighted according to their overall importance in the average consumer's budget. These categories and their respective weight components included housing (46.3%), transportation (17.1%), food (14.7%), recreation and personal care (10.3%), apparel (5.8%), and medical costs (5.8%). 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.

Table 3.10 Comparative Cost of Living Index.[1]

Rank	County	All Items	Food	Housing	Apparel	Transportation	Medical	Recreation and Personal Care
1	Teton	139	105	174	121	104	110	111
2	Sheridan	106	107	107	120	100	107	104
3	Sublette	105	96	107	123	101	97	110
4	Campbell	105	100	111	87	99	101	102
5	Laramie	104	107	109	94	98	100	97
6	Johnson	103	105	100	132	100	99	106
7	Albany	102	94	107	103	101	99	96
8	Natrona	99	105	98	103	100	98	96
9	Sweetwater	98	100	95	94	100	99	103
10	Park	97	99	92	107	101	102	101
11	Carbon	94	105	85	91	102	96	107
12	Converse	94	95	90	89	100	98	98
13	Fremont	93	89	91	87	101	99	100
14	Hot Springs	93	98	83	102	102	104	103
15	Uinta	93	92	89	87	100	105	98
16	Goshen	91	93	85	99	99	97	99
17	Platte	91	100	80	107	100	95	100
18	Lincoln	91	90	84	102	100	92	99
19	Big Horn	89	96	77	117	100	95	99
20	Washakie	89	92	78	112	99	101	98
21	Niobrara	88	90	74	104	101	103	106
22	Crook	87	93	76	98	100	93	101
23	Weston	87	89	76	93	101	109	100

[1] Fourth quarter 2002. Prices as of January 8, 9, and 10, 2003 (statewide average = 100) (WDAI 2003b).

The WCLI compared each county's price level to the statewide average for the fourth quarter of 2002. All 23 counties were included to create the comparative index and are included in Table 3.10 for purposes of comparison. The WCLI reflected only the price level of each county, at the time of data collection, compared with the statewide average of 100.

3.1.5.4.1 Lincoln County

Lincoln County ranked 18th in the state in the fourth quarter of 2002, and had a significantly lower cost of living than the other counties in the study area with an all-items index of 91. Housing had the lowest index value (84) and apparel (102) had the highest index value in the county.

3.1.5.4.2 Sublette County

Sublette County was the third most expensive county in the state in the fourth quarter of 2002 and had the highest cost of living in the study area with an all items ranking of 105 (Table 3.10). Sublette County had the highest index in the study area for housing (107), apparel (123), transportation (101), and recreation and personal care (110).

3.1.5.4.3 Sweetwater County

Sweetwater County was ranked ninth in the state in the fourth quarter of 2002 (see Table 3.10). It had the highest index in the study area for food (100) and medical (103). Sweetwater County had the lowest index in the study area for apparel (94).

3.1.5.5 Inflation

Tables 3.11 and 3.12 show estimated Wyoming inflation rates. Table 3.11 shows estimated inflation rates for all categories and the respective category weights. Table 3.12 shows the estimated annual all items inflation rates for the five regions of the state, as well as statewide rates. The inflation rate represents the percent change in the price level of a standard basket of selected consumer items priced this quarter, compared with the price level of the same goods recorded one year ago. WDAI (2003b) weighted the data by population to more accurately represent the price changes experienced by the majority of consumers in Wyoming. Nationally, the inflation rate from December 2001 to December 2002 was 2.4% (CPI), as reported by the BLS.

The Wyoming annual all-items inflation rate for the fourth quarter of 2002 was 3.7% (Table 3.11), with the medical category experiencing the highest inflation rate for the third consecutive period, increasing 6.0% over the previous period. A broad increase in prices across the medical category led to the relatively high increase in healthcare-related costs. Within the medical category, health insurance costs experienced significant increases, and if this trend continues, healthcare-related inflation will continue to remain high.

The transportation and apparel categories experienced large price increases from 2001 to 2002 largely due to increased gasoline prices during that time period. At the time of pricing for the WCLI, the full impact of gasoline increases was not yet realized, but significant increases in gasoline prices were incorporated into the 4.7% increase from the previous year in transportation-related costs (Table 3.11).

The apparel category experienced an annual increase in prices of 4.5% in the fourth quarter of 2002 (Table 3.11). This category can be volatile from quarter to quarter because many of the items priced may be subject to discount sales and the timing of these sales from year to year may have a large effect on the final apparel inflation number. The southwest region, which includes the study area,

Table 3.11 Annual Inflation Rates in Wyoming by Category (Statewide Average).[1]

	Category (%)						
Quarter[2]	All Items	Food	Housing	Apparel	Transportation	Medical	Recreation and Personal Care
Weights	100.0	14.7	46.3	5.8	17.1	5.8	10.3
4Q96	4.8	9.3	2.4	7.0	7.0	4.1	2.9
2Q97	2.8	4.9	2.1	2.8	2.4	3.3	2.8
4Q97	2.9	4.5	2.5	-0.6	0.9	4.7	5.0
2Q98	1.5	2.6	0.9	3.6	0.0	0.2	3.7
4Q98	2.2	2.8	2.6	4.0	-2.2	0.7	6.2
2Q99	2.6	3.7	3.2	1.1	0.7	3.0	2.3
4Q99	3.1	4.7	2.5	-0.2	4.5	3.4	3.1
2Q00	4.3	4.9	3.6	-1.2	7.9	5.2	3.3
4Q00	3.2	1.8	3.9	-0.4	2.9	4.0	3.9
2Q01	4.3	3.0	6.6	3.1	1.6	4.0	2.0
4Q01	3.5	5.0	4.5	1.8	-0.1	7.3	2.3
2Q02	2.5	1.9	3.1	0.5	-0.4	5.9	4.3
4Q02	3.7	3.3	3.1	4.5	4.7	6.0	3.9

1 Source: WDAI (2003b). Note: The 2Q99 inflation calculations mark the first time the WCLI used all 23 counties to calculate the inflation rates. Previously, only 15 counties were used. The inflation rate represents the percent change in the price level of a standard basket of selected consumer items priced this quarter, compared with the price level of the same goods recorded one year ago.

2 4Q96 = fourth quarter (October, November, December) 1996. Fourth quarter represents the December to December and 2nd Quarter represents the June to June percent change.

Table 3.12 Annual Inflation Rates for the U.S., Wyoming, and Regions.[1]

Quarter[3]	U.S. Consumer Price Index (%)	Wyoming (All Items %)	Region[2] (All Items %)				
			Southeast	Southwest	Central	Northeast	Northwest
4Q96	3.3	4.8	5.2	4.0	5.0	4.2	4.9
2Q97	2.3	2.8	3.6	2.8	3.1	1.0	2.6
4Q97	1.7	2.9	3.3	4.0	1.9	3.0	2.2
2Q98	1.7	1.5	1.3	2.6	0.3	2.1	2.5
4Q98	1.6	2.2	2.7	2.8	1.4	2.0	2.4
2Q99	2.0	2.6	3.8	3.4	1.5	2.6	0.9
4Q99	2.7	3.1	3.6	2.6	2.8	3.4	3.0
2Q00	3.7	4.3	3.9	2.3	4.4	7.4	4.0
4Q00	3.4	3.2	2.8	2.6	3.4	6.9	3.8
2Q01	3.2	4.3	4.1	3.1	5.0	4.8	4.6
4Q01	1.6	3.5	4.9	2.3	2.9	4.0	2.6
2Q02	1.1	2.5	2.6	1.4	2.8	3.1	2.2
4Q02	2.4	3.7	3.0	2.5	5.1	5.1	2.7

1 Source: WDAI (2003b). Note: The 2Q99 inflation calculations mark the first time the WCLI used all 23 counties to calculate the inflation rates. Previously, only 15 counties were used.

2 Regional Composition for Inflation Estimate:
Southeast: Albany, Carbon, Goshen, Laramie, Niobrara, and Platte Counties.
Southwest: Lincoln, Sublette, Sweetwater, and Uinta Counties.
Central: Converse, Fremont, and Natrona Counties.
Northeast: Campbell, Crook, Johnson, Sheridan, and Weston Counties.
Northwest: Big Horn, Hot Springs, Park, Teton, and Washakie Counties.

3 4Q96 = fourth quarter (October, November, December) 1996. Fourth quarter represents the December to December and 2nd Quarter represents the June to June percent change.

had the lowest inflation rate (2.5%) in the state for the fourth quarter of 2002 (Table 3.12). Because the regional inflation rates are calculated using a smaller sample size than the state-wide all items rate, they may be more volatile over time. Thus, when considering regional inflation rates, it must be noted that they can vary significantly from quarter to quarter.

3.1.6 Education

All study area schools are reported to have plenty of capacity for expansion of enrollment (Blevins et al. 2004). School enrollment (ADM) in Pinedale increased from 637 in 2002 to 693 in 2004 (personal communication, December 2004, with Tom Burns, Retired School Business Manager, Pinedale). The school is estimated to be operating at approximately 80-85% capacity in 2004. Mr. Burns stated that Pinedale has historically had a 10-15% turnover of student population annually from non-oil and gas field related transient families.

Several schools in Sweetwater County have closed recently. These schools were built in anticipation of mine expansions that never occurred, and with actual mine closures, there was insufficient population to maintain the schools (personal communication, December 2004, with Tom Burns, Retired School Business Manager, Pinedale). However, the increased population anticipated to meet employment requirements for the new Halliburton and Schlumberger facilities could once again increase the county population sufficiently to require the schools to be reopened (personal communication, December 2004, with Tom Burns, Retired School Business Manager, Pinedale).

3.1.6.1 Primary and Secondary Education

Information on education statistics in the study area was obtained from the National Center of Education Statistics (NCES) (2003) (Table 3.13). The Wyoming Comprehensive Assessment System (WyCAS) is a systematic approach to student assessment (Wyoming Department of

Table 3.13 Education Statistics, 2001-2002.[1]

		County		
Statistic	Wyoming	Lincoln	Sublette	Sweetwater
Schools	388	13	8	31
School Districts	58	2	2	2
Students	88,130	3,110	1,217	7,175
American Indian/Alaskan Native Students	2,834	14	4	51
Asian/Pacific Islander Students	793	17	10	39
Black Non-Hispanic Students	1,195	5	7	93
Hispanic Students	6,370	44	20	689
White Non-Hispanic Students	76,936	3,030	1,176	6,303
Diploma Recipients	6,071	246	94	566
Staff	13,398	421	214	1,100
Teachers	7,026	215	105	565
Pupil/Teacher Ratio	13.3:1	15.3:1	12.7:1	13.8:1

1 NCES (2003). NCES Report No. 550008375.

Table 3.14 Results of WyCAS Testing, Categorized by Economically Disadvantaged Category.[1]

District Name	Total Number of Students Tested	Number of Economically Disadvantaged Students	Proficient and Advancing (%)	Number of Not Economically Disadvantaged Students	Proficient and Advancing (%)
FOURTH GRADE					
Reading					
Lincoln #1	42	9	11	33	33
Lincoln #2	180	68	49	112	63
Sublette #1	51	14	21	37	68
Sublette #9	41	17	41	24	38
Sweetwater #1	279	86	22	193	48
Sweetwater #2	196	52	31	144	44
Writing					
Lincoln #1	42	9	11	33	30
Lincoln #2	180	68	34	112	49
Sublette #1	51	14	14	37	62
Sublette #9	41	17	17	24	46
Sweetwater #1	279	86	86	193	45
Sweetwater #2	196	52	52	144	37
Mathematics					
Lincoln #1	42	9	22	33	27
Lincoln #2	180	68	44	112	49
Sublette #1	51	14	14	37	41
Sublette #9	41	17	24	24	21
Sweetwater #1	279	86	21	193	55
Sweetwater #2	196	52	26	144	26
EIGHT GRADE					
Reading					
Lincoln #1	61	12	33	49	31
Lincoln #2	177	57	51	120	69
Sublette #1	55	0	--	55	64
Sublette #9	58	15	27	43	53
Sweetwater #1	332	37	11	295	25
Sweetwater #2	205	20	15	185	45
Writing					
Lincoln #1	61	12	33	49	45
Lincoln #2	177	57	63	120	82
Sublette #1	55	0	--	55	65
Sublette #9	58	15	60	43	60
Sweetwater #1	332	37	11	295	35
Sweetwater #2	205	20	25	185	56
Mathematics					
Lincoln #1	61	12	25	49	24
Lincoln #2	176	57	21	119	39
Sublette #1	55	0	--	55	56
Sublette #9	58	15	27	43	33
Sweetwater #1	332	37	3	295	33
Sweetwater #2	205	20	0	185	44
ELEVENTH GRADE					
Reading					
Lincoln #1	50	5	0	45	44
Lincoln #2	180	33	55	147	69
Sublette #1	55	11	55	44	66
Sublette #9	41	5	20	36	58
Sweetwater #1	308	0	--	308	41
Sweetwater #2	228	13	15	215	50
Writing					
Lincoln #1	50	5	20	45	42
Lincoln #2	180	33	70	147	69
Sublette #1	55	11	64	44	89
Sublette #9	41	5	60	36	61
Sweetwater #1	308	0	--	308	52
Sweetwater #2	228	13	38	215	61
Mathematics					
Lincoln #1	50	5	0	45	42
Lincoln #2	180	33	48	147	54
Sublette #1	55	11	55	44	61
Sublette #9	41	5	40	36	56
Sweetwater #1	308	0	--	308	37
Sweetwater #2	228	13	15	215	38

[1] Wyoming Department of Education Assessment and Accountability Office (2003).

Education Assessment and Accountability Office 2003). Its multiple components are designed to measure school progress towards meeting the newly adopted Wyoming Content and Performance Standards. Proficiency statistics for economically disadvantaged students are presented in Table 3.14 to provide an overview of the performance status of students in each district in the study area. Statewide testing was mandated by the Wyoming Legislature through *Enrolled Act II* in 1997 as a result of the Wyoming Supreme Court's decision related to the school finance lawsuit. WyCAS also meets several important federal requirements for testing.

3.1.6.1.1 Wyoming

There were 388 schools in 58 school districts in Wyoming that served a total 88,130 students in the 2001-2002 school year (see Table 3.13). The ethnic distribution of the students was as follows: 87.3% white/non-Hispanic; 7.2% Hispanic; 3.2% American Indian/Alaskan Native; 1.4% black/non-Hispanic; and 0.9% Asian/Pacific Islander. The average pupil/teacher ratio in the state is 13.3:1.

3.1.6.1.2 Lincoln County

Lincoln County had the second largest school system in the study area. In the 2001-2002 school year, 13 schools in two school districts (Lincoln #1 and Lincoln #2) served a total 3,110 students (see Table 3.13). The ethnic distribution of the students was as follows: 97.4% white/non-Hispanic; 1.4% Hispanic; 0.5% Asian/Pacific Islander; 0.5% American Indian/Alaskan Native; and 0.2% black/non-Hispanic. The average pupil/teacher ratio (15.3:1) in Lincoln County was the highest in the study area.

As presented in the WyCAS test results, 222 fourth graders in Lincoln County were tested for reading, writing, and mathematics. One hundred sixteen (52.3%) of these fourth graders were proficient in reading (see Table 3.14). Of the 222 tested fourth graders, 77 (34.7%) are considered economically disadvantaged, and only 34 (44.2%) of the disadvantaged students were proficient in reading. Of the 145 fourth graders determined to not be economically disadvantaged, 81 (55.9%) were proficient in reading. Overall, 89 (40.1%) of these fourth graders were proficient in writing. Twenty-four (31.2%) of economically disadvantaged fourth graders and 65 (44.8%) of the not economically disadvantaged students were proficient in writing. Overall, ninety-six (43.2%) fourth graders were proficient in mathematics. Thirty-two (41.6%) of the economically disadvantaged and 64 (44.1%) of those not economically disadvantaged were proficient in mathematics.

As presented in the WyCAS test results, 238 eighth graders in Lincoln County were tested for reading, writing, and mathematics. One hundred thirty-one (55.0%) of these eighth graders were proficient in reading (see Table 3.14). Of the 238 tested eighth graders, 69 (29.0%) are considered economically disadvantaged, and only 33 (47.8%) of the disadvantaged students were proficient in reading. Of the 169 eighth graders determined to not be economically disadvantaged, 98 (58.0%) were proficient in reading. Overall, 160 (67.2%) of these eighth graders were proficient in writing. Forty (58.0%) of economically disadvantaged eighth graders and 120 (71.0%) of the not economically disadvantaged students were proficient in writing. Overall, 74 (30.9%) eighth graders were proficient in mathematics. Fifteen (21.7%) of the economically disadvantaged and 59 (34.9%) of those not economically disadvantaged were proficient in mathematics.

As presented in the WyCAS test results, 230 eleventh graders in Lincoln County were tested for reading, writing, and mathematics. One hundred thirty-nine (60.4%) of these eleventh graders were proficient in reading (see Table 3.14). Of the 230 tested eleventh graders, 38 (16.5%) were considered economically disadvantaged and only 18 (47.4%) of the disadvantaged students were proficient in reading. Of the 192 eleventh graders determined to not be economically disadvantaged, 121 (63.0%) were proficient in reading. Overall, 144 (62.6%) eleventh graders were proficient in writing. Twenty-four (63.2%) of economically disadvantaged eleventh graders and 120 (62.5%) of the not economically disadvantaged students were proficient in writing. Overall, 114 (49.6%) eleventh graders were proficient in mathematics. Sixteen (42.1%) of the economically disadvantaged and 98 (51.0%) of those not economically disadvantaged were proficient in mathematics.

3.1.6.1.3 Sublette County

Sublette County had the smallest school system in the study area. In the 2001-2002 school year, eight schools in two school districts served a total 1,217 students (see Table 3.13). The ethnic distribution of the students was as follows: 96.6% white/ non-Hispanic; 1.6% Hispanic; 0.8% Asian/Pacific Islander; 0.6% black/non-Hispanic; and 0.3% American Indian/Alaskan Native. Sublette County had the lowest pupil/teacher ratio in the study area (12.7:1).

As presented in the WyCAS test results, 92 fourth graders in Sublette County were tested for reading, writing, and mathematics. Forty-four (47.8%) of these fourth graders were proficient in reading (see Table 3.14). Of the 92 tested fourth graders, 31 (33.7%) are considered economically disadvantaged, and only 10 (32.3 %) of the disadvantaged students were proficient in reading. Of the 61 fourth graders determined to not be economically disadvantaged, 34 (55.7%) were proficient in reading. Overall, 39 (42.4%) of these fourth graders were proficient in writing. Five (16.1%) of economically disadvantaged fourth graders and 34 (55.7%) of the not economically disadvantaged students were proficient in writing. Overall, 26 (28.3%) fourth graders were proficient in mathematics. Six (19.4%) of the economically disadvantaged and 20 (32.8%) of those not economically disadvantaged were proficient in mathematics.

As presented in the WyCAS test results, 113 eighth graders in Sublette County were tested for reading, writing, and mathematics. Sixty-two (54.9%) of these eighth graders were proficient in reading (see Table 3.14). Of the 113 tested eighth graders, 15 (13.3%) are considered economically disadvantaged, and only four (26.7%) of the disadvantaged students were proficient in reading. Of the 98 eighth graders determined to not be economically disadvantaged, 58 (59.2%) were proficient in reading. Overall, 71 (62.8%) eighth graders were proficient in writing. Nine (60.0%) of economically disadvantaged eighth graders and 62 (63.3%) of the not economically disadvantaged students were proficient in writing. Overall, Forty-nine (43.4%) of eighth graders were proficient in mathematics. Four (26.7%) of the economically disadvantaged and 45 (45.9%) of those not economically disadvantaged were proficient in mathematics (Table 3.14).

As presented in the WyCAS test results, 96 eleventh graders in Sublette County were tested for reading, writing, and mathematics. Fifty-seven (58.3%) of these eleventh graders were proficient in reading (see Table 3.14). Of the 96 tested eleventh graders, 16 (16.7%) were considered economically disadvantaged, and only seven (43.8%) of the disadvantaged students were proficient in reading. Of the 80 eleventh graders determined to not be economically disadvantaged, 50 (62.5%) were proficient in reading. Overall, 71 (74.0%) eleventh graders were proficient in writing. Ten (62.5%) of economically disadvantaged eleventh graders and 61 (76.3%) of the not economically disadvantaged students were proficient in writing. Overall, 55 (57.3%) of eleventh graders were proficient in mathematics. Eight (50.0%) of the economically disadvantaged and 47 (58.8%) of those not economically disadvantaged were proficient in mathematics.

3.1.6.1.4 Sweetwater County

Sweetwater County had the largest school system in the study area. In the 2001-2002 school year, 31 schools in two school districts served a total 7,175 students (see Table 3.13). The ethnic distribution of the students was as follows: 87.8% white/ non-Hispanic; 9.6% Hispanic; 1.3% black/non-Hispanic; 0.7% American Indian/Alaskan Native; and 0.5% Asian/Pacific Islander. The average pupil/teacher ratio (13.8:1) was consistent with the state average.

As presented in the WyCAS test results, 475 fourth graders in Sweetwater County were tested for reading, writing, and mathematics. One-hundred ninety-one (40.2%) of these fourth graders were proficient in reading (see Table 3.14). Of the 475 tested fourth graders, 138 (29.1%) were considered economically disadvantaged, and only 35 (25.4 %) of the disadvantaged students were proficient in reading. Of the 337 fourth graders determined to not be economically disadvantaged, 156 (46.3%) were proficient in reading. Overall, 241 (50.7%) of these fourth graders were proficient in writing. One hundred one (73.2%) of economically disadvantaged fourth graders and 140 (41.5%) of the not economically disadvantaged students were proficient in writing. Overall, 175 (36.8%) fourth graders were proficient in mathematics. Thirty-two (23.2%) of the economically disadvantaged and 144 (42.7%) of those not economically disadvantaged were proficient in mathematics.

As presented in the WyCAS test results, 536 eighth graders in Sweetwater County were tested for reading, writing, and mathematics. One hundred sixty-four (30.5%) of these eighth graders were proficient in reading (see Table 3.14). Of the 537 tested eighth graders, 56 (10.4%) were considered economically disadvantaged, and only seven (12.5%) of the disadvantaged students were proficient in reading. Of the 480 eighth graders determined not to be economically disadvantaged, 157 (32.7%) were proficient in reading. Overall, 216 (40.2%) eighth graders were proficient in writing. Nine (16.1%) economically disadvantaged eighth graders and 207 (43.1%) of the not economically disadvantaged students were proficient in writing. Overall, 180 (33.5%) eighth graders were proficient in mathematics. One (1.8%) of the economically disadvantaged and 179 (37.3%) of those not economically disadvantaged were proficient in mathematics.

As presented in the WyCAS test results, 536 eleventh graders in Sweetwater County were tested for reading, writing, and mathematics. Two hundred thirty-six (44.0%) of these eleventh graders were proficient in reading (see Table 3.14). Of the 536 tested eleventh graders, 13 (2.4%) were considered economically disadvantaged, and only two (15.4%) of the disadvantaged students were proficient in reading. Of the 523 eleventh graders determined to not be economically disadvantaged, 234 (44.7%) were proficient in reading. Overall, 296 (55.2%) eleventh graders were proficient in writing. Five (38.5%) of economically disadvantaged eleventh graders and 291 (55.6%) of the not economically disadvantaged students were proficient in writing. Overall, 198 (36.9%) eleventh graders were proficient in mathematics. Two (15.4%) of the economically disadvantaged and 196 (37.5%) of those not economically disadvantaged were proficient in mathematics.

3.1.6.2 Post-secondary Education

Information on post-secondary educational services was obtained from the Wyoming Community College Commission (2003).

Seven Wyoming community colleges and the University of Wyoming serve the state and the study area. Following the largest one-year increase in the last decade, enrollments at Wyoming's community colleges rose an average of 4.1% over the 2002-2003 school year. The increase was due in part to a number of strategic efforts implemented by the individual colleges and the college system, including an aggressive enrollment development campaign. The system maintains a high professor to student ratio, a supportive student environment, and extracurricular enrichment opportunities. In addition to workforce training and strong community partnerships, Wyoming's community colleges offer a strong developmental foundation, and an impressive springboard into further academic and career opportunities (Wyoming Community College Commission 2003).

Compared to a year ago, enrollment at Central Wyoming College was up 11.7%, Laramie County Community College was up in enrollment 8.3%, Eastern Wyoming College rose 7.7%, Western Wyoming Community College (at Rock Springs, within the study area) was up 5.6%, and Casper College's enrollment was up 4.0%. According to the Wyoming Community College Commission (2003), Wyoming leads the nation in proportion of the adult population served by community colleges at any given point in time. Currently, Wyoming community colleges serve 5.3% of the adult Wyoming population compared to a national average of 2.7%. On March 28, 2003, the Wyoming Community College Commission approved a statewide Technical Studies Associate of Applied Sciences Degree, which responds to the growing need for college degrees that recognize specialized workforce training programs offered by Wyoming community colleges.

3.1.7 Social Traditions

The study area's general heritage is based on ranching and mineral extraction and remains one of least populated and most undeveloped areas in the lower U.S., with a population density ranging from 1.2 people/square mile in Sublette County to 3.6 people/square mile in Sweetwater County (see Table 3.3). Landownership is largely public (80% of Sublette County, 79% of Lincoln County, and 72% of Sweetwater County) (see Table 3.1). Oil and gas has played a significant role in the regional economy since the 1920s. Historically, most of the oil and gas activity was limited to the LaBarge area in southwestern Sublette County and neighboring Lincoln County but now extends over much of the southern portion of the county.

The social characteristics throughout the study area are similar to other small rural western communities and are strongly tied to traditional natural resource-based industries such as agriculture and extractive industries. In addition, study area residents recognize the importance of public lands in providing the natural resource base for economic activities, as well as supporting a particular way of life. Public lands often provide scenic beauty, wildlife habitat, and recreational opportunities. Because public lands comprise 76% of all land within the study area, management decisions can affect not only the economic base but lifestyles as well.

Agriculture has provided the historical basis for community development for much of the nineteenth century, and ranching and grazing are viewed as a viable economic activity that provides open space, protection of natural resources, and support of cultural and ecological diversity. Although agricultural activities have become less important economically in recent years (providing 0.7% of industry income and 4.7% of employment in the study area in 2000), the industry is important for its historic and cultural influence. Moreover, agricultural is viewed as a guardian of resources and an underpinning of social culture in the area. Because management decisions made by federal land managers affect ranching operations beyond public land boundaries, communities are concerned about the social influences these decisions have on local communities.

The oil and gas industry has also played a strong role in the social character of Sublette County and has been an important part of the tax base for Sublette, Sweetwater, and Lincoln Counties for nearly 50 years. The area has experienced several boom and bust cycles throughout its history and has realized an increased population tied to this industry. Individuals working in this industry are now active members of local communities and are directly affected by federal land manager decisions.

In spite of the traditional social characteristics, there are indications that the views and beliefs of residents in the study area are changing. Some areas have seen an increase in population, including a combination of retirees and others attracted to this region for the abundance of high quality air, water, and land resources that offer a rich quality of life and reflect a western wilderness heritage. This new population is not tied to traditional natural resource industries and is more likely to support a conservation-oriented public land management policy.

3.2 PERSONAL INCOME TRENDS

The BEA reports data adjusted to current dollars using the Consumer Price Index (CPI). CPI data were obtained from the BLS (2003a). CPI is a measure of the average change in prices over time in a market basket of goods and services. The estimate for 2003 was based on the change in the CPI from fourth quarter 2001 to fourth quarter 2002. The BLS uses the following formula to compute the inflation factor and current year dollars.

Inflation Factor = (Current Year CPI / Year "X" CPI)
Current Year Dollars = Year "X" Dollars x Inflation Factor

The CPI values and inflation factors used by EPS and applied in this document are listed in Table 3.15. Average wage information was obtained from BEA (2003a) and is summarized in Table 3.16. Personal income trend data were obtained from the BEA (2003b). Table 3.17 shows the components of personal income for 1980, 1990, and 2000 for the counties in the study area and Wyoming.

<u>Personal income</u> can be broken down into three categories:

- labor income (i.e., earnings from work; wages, salaries, and self-employment income),
- investment income (i.e., dividends, interest, and rent), and
- transfer payments (i.e., Social Security benefits, Medicare and Medicaid benefits, other income support and assistance).

Table 3.15 CPI and Inflation Factors, 1980-2003.[1]

Year	CPI	Inflation Factor[2]	Year	CPI	Inflation Factor[2]
1980	82.4	2.09	1992	140.3	1.23
1981	90.9	1.89	1993	144.5	1.19
1982	96.5	1.78	1994	148.2	1.16
1983	99.6	1.73	1995	152.4	1.13
1984	103.9	1.66	1996	156.9	1.10
1985	107.6	1.60	1997	160.5	1.07
1986	109.6	1.57	1998	163.0	1.06
1987	113.6	1.52	1999	166.6	1.03
1988	118.3	1.46	2000[3]	172.2	1.00
1989	124.0	1.39	2001	177.1	0.97
1990	130.7	1.32	2002	179.9	0.96
1991	136.2	1.26	2003[4]	184.5	0.93

1 Obtained from BLS (2003a).
2 Inflation Factor = CPI current year/year "X" CPI.
3 2000 is the current year (base year) for the purposes of this analysis (i.e., inflation factor = 1.00--the base year when $1 is worth $1).
4 November 2003 CPI.

Table 3.16 Wages and Job Numbers.

	Average Wage ($)[1,2]			Number of Jobs[3]		
Area	1980	1990	2000	1980	1990	2000
U.S.	29,254	30,738	34,647	114,231,200	139,426,900	167,283,800
Wyoming	32,004	26,146	26,549	279,650	272,471	328,532
Lincoln	31,618	26,545	25,050	6,591	6,873	8,125
Sublette	27,816	23,260	24,783	2,812	3,076	3,965
Sweetwater	39,568	33,759	33,748	25,503	22,856	24,281

1 The employment estimates used to compute the average wage are a job, not person, count. People holding more than one job are counted in the employment estimates for each job they hold. Source: BEA (2003a).
2 All national, state, and local area dollar estimates are in year 2000 dollars, adjusted for inflation.
3 BEA (2003d).

Table 3.17 Personal Income by Major Source.[1]

							County								
	U.S.			Wyoming			Lincoln			Sublette			Sweetwater		
Income Item	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Income Source															
Labor Income (earnings from work)	3,615,178,085	4,622,364,468	6,088,880,000	9,481,940	7,530,552	9,006,059	211,327	176,954	186,814	82,942	73,132	86,531	1,079,406	833,885	883,267
Less: Personal contributions for social insurance[2]	160,889,971	267,369,815	357,843,000	(434,627)	(443,716)	(538,454)	(9,960)	(10,862)	(11,294)	(3,425)	(3,845)	(4,888)	(57,357)	(57,117)	(57,646)
Plus/minus: Adjustment for residence[3]	(948,772)	(971,013)	(1,060,000)	(160,186)	(15,830)	(33,158)	(20,687)	(7,190)	(1,374)	1,112	2,897	4,546	(68,086)	(76,827)	(50,302)
Equals: Net earnings by place of residence	3,453,339,342	4,354,023,640	5,729,977,000	8,887,127	7,071,006	8,434,447	180,680	158,902	174,146	80,629	72,184	86,189	953,963	699,941	775,319
Plus: Dividends, interest, and rent[4]	797,599,471	1,299,148,210	1,598,302,000	1,941,106	2,512,872	3,770,663	41,514	56,371	93,968	28,756	36,812	62,205	109,813	139,622	238,493
Plus: Transfer payments	584,706,772	783,610,132	1,070,592,000	818,364	1,166,353	1,600,213	20,804	27,112	39,839	6,921	11,835	16,721	62,011	83,394	103,608
Total personal income (TPI)	4,835,645,585	6,436,781,982	8,398,871,000	11,646,597	10,750,231	13,805,323	242,998	242,386	307,953	116,306	120,831	165,115	1,125,787	922,956	1,117,420
Per capita personal income (PCPI)[5]	21,280	25,787	29,760	24,561	23,696	27,941	19,602	19,071	21,041	25,201	24,864	27,741	12,749	18,058	29,811

1 Source: BEA (2003b). Thousands of Year 2000 dollars adjusted for inflation unless otherwise noted. All national, state, and local estimates are in current dollars adjusted for inflation based on U.S. average CPI (for urban consumers). EPS uses the urban consumer base; therefore, it was also applied to inflation adjustments for this technical report to maintain consistency. EPS uses unconventional groupings for some tabular information; therefore, totals presented by EPS (Appendix A) may vary slightly from those shown in this document.

2 Personal contributions for social insurance (e.g., Medicare) are included in earnings by type and industry but they are excluded from personal income.

3 The adjustment for residence is the net inflow/outflow of the earnings of inter-area commuters (i.e., live in Sweetwater County, work in Sublette County, net inflow to Sublette County and net outflow to Sweetwater County).

4 Rental income of persons includes the capital consumption adjustment.

5 PCPI as calculated by the BEA is not the same as personal per capita income reported by the census; therefore, they may not be identical.

Total personal income (TPI), as defined by the BEA, is the current income of residents of a particular area from all sources. It is measured after personal Social Security deductions but before personal tax deductions have been made. It includes income received from business; federal, state, and local governments; households; institutions; foreign governments; other labor income (such as employers' contributions to private social insurance programs); farm and non-farm proprietor income; dividends, interest, and rent; and transfer payments. It is the only key economic indicator that is adjusted for seasonality; it is not, however, adjusted for price changes.

Because total personal income is a measure of income received, estimates of state and local area personal income are assumed to reflect the residence of the income recipients (see below). Of the six major components of personal income, three are recorded on a place-of-residence basis. They are transfer payments; dividends, interest, and rental income; and proprietors' income. The data available at the state and county level for wages and salaries, other labor income, and personal contributions for social insurance are estimated from data recorded by place-of-work.

Four adjustments are made to earnings by place of work to derive total personal income by place of residence. Following these adjustments, total earnings still comprise the bulk of total personal income. Beginning with total labor and proprietor earnings, the first adjustment is made by deducting contributions for social insurance. Although these are considered part of employee total earnings for the current period, social insurance contributions are not received during the current period and are, therefore, not included in personal income.

The second adjustment is made for employee place of residency. The BEA defines employee residency as the location at which the employee is residing while employed. An example of this type of adjustment is a regular occurrence in Sweetwater County, Wyoming. Here, a significant number of employees work in the oil and gas fields in Sublette County but reside in Sweetwater County. Earnings for these employees show up as earnings data for Sweetwater County. However, in the derivation of personal income by place of residence, an adjustment is made to reallocate these earnings as personal income for Sublette County. This residency adjustment for Sublette County is, therefore, the net effect of place-of-work versus place-of-residence discrepancies.

A third adjustment is made by appending dividends, interest (monetary and imputed), and rent income.

- Dividends are payments in cash or other assets, excluding stock, by for-profit corporations to non-corporate stockholders in the state.
- Interest is the monetary and imputed interest income of persons from all sources. Imputed interest income is an estimate of the value of the services (such as checking and record keeping) provided by commercial banks, mutual savings banks, savings and loan associations, credit unions, and regulated investment companies (excluding life insurance carriers) without an explicit charge which is included by BEA in personal interest income (BEA 2003b).
- Rental income is the monetary income of persons from the rental of real property, the imputed net rental income of owner-occupants of non-farm dwellings, and the royalties received by persons from patents, copyrights, and rights to natural resources. The net rental value of owner–occupied nonfarm housing is included in the rental income of persons. The imputation assumes that the owner–occupants are in the rental business and that they are renting the houses in which they live to themselves: As tenants, they pay rent to the landlords (that is, to themselves); as landlords, they collect rent from their tenants (that is, from themselves), they incur expenses, and they may have a profit or a loss from the rental business (BEA 2003b).

The fourth and final adjustment is the addition of transfer payments. Transfer payments (benefits from government social insurance funds and certain other programs) are income payments to persons, generally in monetary form, for which they do not render current services. As a component of personal income, they are payments by governments and businesses to individuals and nonprofit institutions.

Once these four adjustments to the earnings by place of work component are made, the result is total personal income by place of residence. Personal income effectively measures the size of consumer markets. When presented by industry of origin, as in this report, earnings can also be interpreted as a measure of the size of industrial markets.

Per capita personal income (PCPI) is calculated by dividing total personal income of the area by the total population of the area (BEA 2003c). (PCPI is distinguished from the personal per capita income calculated by the U.S. Census Bureau and described in Section 3.1.3.) PCPI as computed by BEA is a useful tool to compare income across regions, states, and counties. PCPI can be used to track income growth over time. It is also useful in that it removes the effect of population growth on total personal income. PCPI data are presented in Table 3.17.

3.2.1 United States

In 2000, the U.S. had a TPI of $8.4 trillion (see Table 3.17). The change in TPI has remained relatively stable over the 20-year study period; TPI reflected an increase of 73.7% (2.8% average annual growth) from 1980. In 2000, net earnings from labor accounted for 68.2% of TPI (compared with 71.4% in 1980); dividends, interest, and rent accounted for 19.0% (compared with 16.5% in 1980); and transfer payments were 12.7% (compared with 12.1% in 1980). From 1990 to 2000, net earnings increased 31.6%; dividends, interest, and rent increased 23.0%; and transfer payments increased 36.6%.

In 2000, the U.S. had a PCPI of $29,760 (see Table 3.17). This PCPI was up 39.8% from 1980 (1.7% average annual increase). The average wage in the U.S. has also steadily increased, going from $29,254 (year 2000 dollars adjusted for inflation) in 1980 to $34,647 in 2000 (18% increase; 0.8% average annual increase), while the number of jobs for the same period increased by a total of 46% (BEA 2002, 2003a, 2003d).

3.2.2 Wyoming

In 2000, Wyoming had a TPI of $13.8 billion (see Table 3.17). This TPI ranked fifty-first in the U.S. (ranking includes the District of Columbia), down from 1980, when the TPI of $11.6 billion (in 1980 dollars) ranked forty-ninth in the U.S. The 2000 TPI reflected an increase of 18.5% since 1980 (0.9% average annual growth). In 2000, net earnings from labor accounted for 61.1% of TPI (compared with 76.3% in 1980); dividends, interest, and rent comprised 27.3% (compared with 16.7% in 1980); and transfer payments comprised 11.6% (compared with 7.0% in 1980).

Personal income from investments and transfer payments in Wyoming between 1980 and 2000 grew by 94.3% and 95.5%, respectively, while labor income decreased by 5.1% over this same time period. This change in how individuals earn income is not unlike national trends. A trend common in many areas in the Intermountain West, is the influx of individuals of retirement age choosing to reside in the region, thus resulting in an increasing dependence of the local economy on investment income (BLM 2003b).

In 2000, Wyoming had a PCPI of $27,941, compared to $24,561 in 1980 (see Table 3.17). This reflects a 13.8% increase over the 20-year study period, or 0.6% average annual growth. Wyoming's PCPI is 93.9% of the national average.

The average wage in Wyoming has steadily decreased, going from $32,004 in 1980 to $26,549 in 2000 (17.0% decrease; 0.9% average annual loss), while the number of jobs for the same period increased by a total of 17% (BEA 2002, 2003a, 2003d).

3.2.3 Lincoln County

In 2000, Lincoln County had a TPI of $308 million, an increase of 26.7% (1.2% average annual growth) since 1980 (see Table 3.17). In 2000, net earnings from labor accounted for 56.5% of TPI (compared with 74.4% in 1980); dividends, interest, and rent accounted for 30.5% (compared with 17.1% in 1980); and transfer payments accounted for 12.9% (compared with 8.6% in 1980).

In 2000, Lincoln County had a PCPI of $21,041, up 7.3% (0.4% average annual growth) from 1980 (see Table 3.17). The Lincoln County PCPI is 70.7% of the national average.

The average wage in Lincoln County in 2000 ($25,050) was 6% below the average for Wyoming and 72% of the national average. Wages in Lincoln County decreased a total of 21% over the 20-year study period (1.2% average annual decrease). The number of jobs for the same period increased by a total of 23%, well ahead of the state (17%) (BEA 2002, 2003a, 2003d).

3.2.4 Sublette County

In 2000, Sublette County had a TPI of $165 million (see Table 3.17). The 2000 TPI reflected an increase of 42.0% (1.8% average annual growth) from 1980, higher than the state change but remaining lower than the national change. In 2000, net earnings from labor accounted for 52.2% of TPI (compared with 69.3% in 1980); dividends, interest, and rent were 37.7% (compared with 24.7% in 1980); and transfer payments were 10.1% (compared with 6.0% in 1980).

In 2000, Sublette County had a PCPI of $27,741, up 10.1% (0.5% average annual growth) from 1980 (see Table 3.17). The Sublette County PCPI is 93.2% of the national average.

The average wage in Sublette County in 2000 ($24,783) was 71.5% of the national average and 93.3% of the state average (BEA 2002). The 2000 wage was 10.9% lower than in 1980 (0.6% average annual decrease). The number of jobs for the same period increased by a dramatic total of 41.0%, well ahead of the state (17.5%) (BEA 2002, 2003a, 2003d).

According to the EPS community profile, non-labor income sources are the fastest growing sector in Sublette County. Individuals in this segment of the income population are likely attracted by the quality of life and pristine beauty of the surrounding area (personal communication, December 2004, with Roy Allen, Economist, BLM Wyoming State Office, Cheyenne)..

3.2.5 Sweetwater County

In 2000, Sweetwater County had a TPI of $1.1 billion. This reflected a 0.7% decrease from 1980 (0.04% average annual decrease). In 2000, net earnings from labor accounted for 69.4% of TPI (compared with 84.7% in 1980); dividends, interest, and rent were 21.3% (compared with 9.8% in 1980); and transfer payments were 9.3% (compared with 5.5% in 1980).

In 2000, Sweetwater County had a PCPI of $29,811, up 11.9% (0.6% average annual growth) from 1980 (see Table 3.17). The Sweetwater County PCPI is more than 100% of the national average. The average wage in Sweetwater County during 2000 ($33,748) was 97.4% of the national average and 127.1% of the state average. Despite the apparent high wages, it is important to note that the 2000 wage was 14.7% lower than in 1980, an average annual loss of 0.8%. The number of jobs fell 4.8% in the same time period, as compared to state growth (17.5% increase in the number of jobs) (BEA 2002, 2003a, 2003d).

3.3 INDUSTRY AND ECONOMY

3.3.1 Overview

Gross state product (GSP) is the value added in production by the labor and property located in a state (BEA 2003f). The BEA calculates GSP for a state as the sum of gross state product originating (GSPO) by industry for all industries. This measure of GSP is the state counterpart of the nation's gross domestic product by industry from the national income and product accounts (BEA 2003f).

The GSPO by industry is the contribution of each industry, including government, to GSP. An industry's GSPO, often referred to as its "value added," is equal to its gross output (sales or receipts and other operating income, plus inventory change) minus its intermediate inputs (consumption of goods and services purchased from other industries or imported).

For each industry, the estimate of gross product is composed of four components (estimated below in year 2000 dollars only): 1) compensation of employees; 2) proprietor income with inventory valuation adjustment and capital consumption allowances; 3) indirect business tax and non-tax liability; and 4) other, mainly capital-related charges. Most of the compensation and proprietor income components of GSP are based primarily on BEA estimates of earnings by place of work, an aggregate in the state personal income series (BEA 2003f). The IBT component of GSP reflects liabilities charged to business expenses, most of which are sales and property taxes levied by state and local governments. The capital charges component of GSP comprises corporate profits with IVA, corporate capital consumption allowances, business transfer payments, net interest, rental income of persons, and subsidies less current surplus of government enterprises.

The industry classifications represent groupings in accordance with the revised *1987 Standard Industrial Classification* (SIC) *Manual*, published by the OMB (OMB 1987). The SIC was developed for use in the classification of establishments by the type of activity in which they are engaged, for the purposes of facilitating the collection, tabulation, presentation, and analysis of data relating to establishments and for promoting uniformity and comparability. These 10 major industrial sectors (one-digit SIC codes) are 1) agriculture; 2) mining; 3) construction; 4) manufacturing; 5) transportation, communication, and public utilities (TCPU); 6) wholesale trade; 7) retail trade; 8) finance, insurance, and real estate (FIRE); 9) services; and 10) government. For purposes of this classification, an establishment is an economic unit, generally at a single physical location, where business is conducted or where services or industrial operations are performed (BEA 2003f).

Each establishment is assigned an industry code on the basis of its primary activity, which is determined by its principal product (or group of products) produced or distributed or services rendered. Ideally, the principal product or service is determined by its relative share of "value added" at the establishment. In practice, however, it is rarely possible to obtain this measure for individual products or services. Typically, the BEA adopts some other criterion that may be expected to give approximately the same results in determining the primary activity of an establishment (BEA 2003f).

3.3.2 Wyoming Industry

The BEA calculates income and gross state product information at the SIC two-digit level. The data for GSP (Table 3.18) are presented at the simplified one-digit SIC code level for the purposes of this report, with the exceptions of mining (coal, metal, and non-mineral) separated from oil and gas and government separated into federal civilian, federal military, and state and local. Data presented in this technical support document are in year 2000 dollars, adjusted for inflation (see Section 3.2). Table 3.19 provides employee compensation data to provide a comparison of state-wide income growth in relation to GSP changes.

Table 3.18 Wyoming Gross State Product. [1]

	Gross State Product (GSP)								
	1980		1990		2000		Growth (%)		
Industry	GSP	% of GSP	GSP	% of GSP	GSP	% of GSP	1980-1990	1990-2000	1980-2000
Agriculture	619	2.7	510	2.9	468	2.4	-17.6	-8.2	-24.3
Mining (metal, coal, non-metallic)	3,162	14.0	1,920	10.9	1,437	7.5	-39.3	-25.1	-54.6
Oil and gas	6,499	28.8	4,215	23.8	3,089	16.2	-35.2	-26.7	-52.5
Construction	1,601	7.1	573	3.2	1,015	5.3	-64.2	77.1	-36.6
Manufacturing	917	4.1	779	4.4	1,335	7.0	-15.1	71.4	45.5
TCPU	2,236	9.9	2,661	15.0	2,510	13.1	19.0	-5.7	12.2
Wholesale trade	802	3.6	505	2.9	773	4.0	-37.1	53.2	-3.7
Retail trade	1,273	5.6	1,053	6.0	1,403	7.3	-17.3	33.3	10.2
FIRE	2,023	9.0	1,648	9.3	2,285	12.0	-18.5	38.6	13.0
Services	1,500	6.7	1,505	8.5	2,202	11.5	0.3	46.4	46.8
Government									
Federal civilian	391	1.7	427	2.4	501	2.6	9.2	17.4	28.2
Federal military	196	0.9	246	1.4	277	1.4	25.4	12.4	41.0
State and local	1,312	5.8	1,650	9.3	1,817	9.5	25.7	10.2	38.4
Total Gross State Product	22,532	100.0	17,690	100.0	19,112	100.0	-21.5	8.0	-15.2

1 BEA (2003e), millions of year 2000 dollars, adjusted for inflation.

Table 3.19 Compensation of Employees (Millions of Year 2000 dollars).[1]

	Compensation Paid to Employees from Gross State Product (GSP)[1]								
	1980		1990		2000		Growth (%)		
Industry	Paid	% of Total Paid	Paid	% of Total Paid	Paid	% of Total Paid	1980-1990	1990-2000	1980-2000
Agriculture	148	1.7	100	1.5	132	1.6	-32.5	31.8	-12.4
Mining (metal, coal, non-metallic)	1,220	14.0	655	9.6	518	6.4	-46.3	-20.9	-135.6
Oil and gas	1,014	11.6	426	6.3	580	7.2	-58.0	36.3	-74.8
Construction	997	11.4	402	5.9	642	7.9	-59.7	59.8	-55.3
Manufacturing	422	4.8	364	5.3	461	5.7	-13.9	26.8	8.4
TCPU	932	10.7	780	11.5	762	9.4	-16.3	-2.3	-22.3
Wholesale trade	416	4.8	250	3.7	299	3.7	-39.8	19.4	-39.1
Retail trade	775	8.9	622	9.1	799	9.9	-19.8	28.5	3.0
FIRE	255	2.9	237	3.5	308	3.8	-7.0	29.9	17.2
Services	832	9.5	895	13.2	1,393	17.2	7.6	55.7	40.3
Government									
Federal civilian	380	4.4	398	5.9	443	5.5	4.6	11.3	14.1
Federal military	173	2.0	217	3.2	226	2.8	25.3	4.0	23.3
State and local	1,166	13.4	1,455	21.4	1,547	19.1	24.7	6.4	24.6
Total Gross State Product	8,731	100.0	6,798	100.0	8,108	100.0	-22.1	19.3	-7.7

1 BEA (2003f), millions of year 2000 dollars adjusted for inflation.

In 2000, the greatest percentage of GSP came from oil and gas (16.2%) and TCPU(13.1%), followed closely by FIRE (12.0%) and services (11.5%) (Table 3.18). In contrast, in 1980, the greatest contributors to GSP were also from oil and gas (28.8%) and mining (14.0%), followed by TCPU (9.9%) and FIRE (9.0%) (Table 3.18). In 2000, combined mineral extraction (mining plus oil and gas) contributed 23.7% of GSP, down from 42.8% in 1980 (a combined decline of more than 53.2% over the 20-year period) (Table 3.18).

In 2000, the greatest percentage of employee compensation came from state and local government (19.1%), followed by services (17.2%) (Table 3.19). In contrast, in 1980, the greatest contributor to compensation came from mining (14.0%) and state and local government (13.4%), followed closely by oil and gas (11.6%) and construction (11.4%) (Table 3.19). Combined mineral extraction (mining plus oil and gas) contributed 13.6% of employee compensation in 2000, down from a combined total of 25.6% in 1980 (a combined decline of more than 50.9% over the 20-year period) (Table 3.19). This implies that economic development is resulting in job and revenue diversification within Wyoming.

3.3.3 Industry Employment

The BEA estimates annual employment and earnings for counties throughout the U.S. Total annual employment includes both full-time and part-time jobs so that individuals with more than one job will be counted twice. The employment estimates include those that are employed by businesses and public entities, as well as individuals that are self-employed. Data were obtained from BEA regarding total annual employment by industry for each county and for Wyoming for 1980, 1990, and 2000 to examine trends over the 20-year study period. These data are presented in Table 3.20.

3.3.1.1 Wyoming

All employment categories in Wyoming added 48,882 jobs from 1980 to 2000, an increase of 17.5% (0.8% average annual growth) (see Table 3.20). Services provided the greatest number of new jobs

Table 3.20 Employment by Industry.[1]

	Number of Jobs											
	Lincoln			Sublette			Sweetwater			Wyoming		
Industry	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Farm employment	851	733	698	429	402	412	266	220	205	14,504	12,476	12,624
Agriculture services, forestry, fishing and other	32	77	149	27	83	132	48	81	188	2,016	3,353	5,769
Mining (coal, metal, nonmetal, oil and gas)	1,359	667	517	276	315	325	7,318	4,989	3,717	38,523	20,840	19,387
Construction	575	444	863	388	261	427	3,282	1,533	1,509	25,805	15,782	24,879
Manufacturing	467	614	530	31	(D)[2]	91	494	745	1,649	10,512	11,203	13,583
Transportation and public utilities	503	568	582	176	145	108	2,208	1,987	1,785	19,169	16,583	17,084
Wholesale trade	196	80	133	25	(D)	55	773	648	615	10,055	7,633	8,812
Retail trade	821	1,083	1,389	499	409	603	3,743	3,739	4,447	43,998	47,252	57,824
Finance, insurance, and real estate	287	307	471	147	184	228	693	1,125	1,127	16,334	17,167	21,303
Services	576	1,040	1,278	395	599	905	3,605	3,760	4,749	48,437	61,294	83,161
Federal, civilian	117	146	110	62	91	96	304	262	266	7,539	7,589	7,400
Federal, military	63	75	84	39	28	41	214	228	215	6,335	6,311	6,204
State government	109	136	126	54	74	72	203	278	269	10,988	13,150	13,820
Local government	635	903	1,195	264	364	470	2,352	3,261	3,540	25,435	31,838	36,682
Total full-time and part-time employment	6,591	6,873	8,125	2,812	2,955	3,965	25,503	22,856	24,281	279,650	272,471	328,532

[1] BEA (2003b).
[2] (D) = not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals. BEA does not provide this information.

over the 20-year period (34,724). This comprised a 71.7% (2.7% average annual growth) increase in the number of service jobs from 1980 to 2000, providing 25.3% of all jobs in 2000 compared to 17.3% in 1980.

Agriculture services, forestry, and fisheries experienced the greatest percentage (186.2%; 5.4% average annual growth) of job growth during the 20-year study period, with 3,753 new jobs, and provided 1.8% of all Wyoming jobs in 2000 compared to 0.7% in 1980 (see Table 3.20).

The greatest number (-19,136) and highest percentage (-49.7%; -3.4% average annual loss) of job losses occurred in mining from 1980 to 2000, and mining provided 5.9% of all Wyoming jobs in 2000 compared to 15.8% in 1980 (see Table 3.20).

The average weekly wages in the private and government sectors in Wyoming in the first quarter of 2003 were $547 and $598, respectively. Mining had the highest average weekly wage at $1,104, followed by utilities at $1,044, and management at $1,001. The greatest percentage of employee compensation state-wide in the first quarter of 2003 came from government (27.2%), followed by total mineral extraction (14.7%) (WDERP 2003a).

3.3.1.2 Lincoln County

All employment categories in Lincoln County added 1,534 jobs from 1980 to 2000, an increase of 23.3% (1.1% average annual growth) (see Table 3.20). Services provided the greatest number of new jobs over the 20-year period (702). This comprised a 121.9% (4.1% average annual growth) increase in the number of service jobs from 1980 to 2000, providing 15.7% of all jobs in 2000 compared to 8.7% in 1980.

Agriculture services, forestry, and fisheries experienced the greatest percentage of job growth (365.6%; 8% average annual growth) during the 20-year study period, with 117 new jobs, and provided 1.8% of all Lincoln County jobs in 2000 compared to less than 0.5% in 1980 (see Table 3.20).

The greatest number (-842) and highest percentage (-62.0%; -4.7% average annual loss) of job losses occurred in mining from 1980 to 2000 (see Table 3.20). Mining provided 6.4% of all Lincoln County jobs in 2000 compared to 20.6% in 1980.

The average weekly wages in the private and government sectors in Lincoln County in the first quarter of 2003 were $660 and $495, respectively. Heavy and civil engineering construction had the highest average weekly wage at $1,439, followed by oil and gas at $1,243 and utilities at $1,051. Construction provided 29.5% of total income generated in Lincoln County in the first quarter of 2003 and government provided 22.2% (WDERP 2003a).

3.3.1.3 Sublette County

Industry employment in Sublette County added 1,153 new jobs from 1980 to 2000, an increase of 41.0% (1.7% average annual growth) (see Table 3.20). Services provided the greatest number of new jobs over the 20-year period (510). This comprised a 129.1% (4.2% average annual growth) increase in the number of service jobs from 1980 to 2000, providing 22.8% of all jobs in 2000 compared to 14.0% in 1980.

Agriculture services, forestry, and fisheries experienced the greatest percentage of growth (388.9%; 8.3% average annual growth), adding 105 new jobs during the 20-year study period (see Table 3.20). This category provided 3.3% all Sublette County jobs in 2000 compared to less than 1.0% in 1980.

The greatest number (-68) and highest percentage (-38.6%; -2.4% average annual loss) of job losses occurred in TCPU from 1980 to 2000 (see Table 3.20). TCPU provided 2.7% of all Sublette County jobs in 2000 compared to 6.3% in 1980.

The average weekly wages in the private and government sectors in Sublette County in the first quarter of 2003 were $559 and $529, respectively. Oil and gas had the highest average weekly wage at $1,846, followed by finance/insurance at $964 and federal government at $719. Oil and gas extraction (plus support activities) provided 30.3% of total income generated in Sublette County and government provided 27.3% in the first quarter of 2003 (WDERP 2003a).

3.3.1.4 Sweetwater County

Industry employment in Sweetwater County lost 1,222 jobs from 1980 to 2000, a decrease of 4.8% (0.2% average annual decrease) (see Table 3.20). Local government provided the greatest number of new jobs over the 20-year period (1,188). This comprised a 50.5% (2.1% average annual growth) increase in the number of local government jobs from 1980 to 2000, providing 14.6% of all jobs in 2000 compared to 9.2% in 1980.

Agriculture services, forestry, and fisheries experienced the greatest percentage of growth (291.7%; 7.1% average annual growth), adding 140 new jobs during the 20-year study period (see Table 3.20). This category provided 0.8% of all Sublette County jobs in 2000 compared to 0.2% in 1980.

The greatest number (-3,601) and highest percentage of job losses (49.2%; 3.3% average annual loss) occurred in mining from 1980 to 2000 (see Table 3.20). Mining provided 15.3% of all Sublette County jobs in 2000 compared to 28.7% in 1980.

The average weekly wages in the private and government sectors in Sweetwater County in the first quarter of 2003 were $744 and $580, respectively. Oil and gas had the highest average weekly wage at $1,728, followed by chemical manufacturing at $1,485 and mining (exclusive of oil and gas) at $1,346. The greatest percentage of employee compensation county-wide came in the first quarter of 2003 from mining (20.0%), followed by local government (14.7%) (WDERP 2003a).

3.3.4 Industry Earnings

Total earnings by industry for counties in the study area and Wyoming for 1980, 1990, and 2000 were obtained from BEA (Table 3.21). Data gaps and disclosure restrictions (e.g., income figures at the 2- and 3-digit SIC levels) often occur because data are not available for some regions or for certain years due to confidentiality restrictions. Data gaps may occur in both labor and income data. Data containing disclosure restrictions was estimated using the constant share of total method. Constant share of total calculations assume the category's share of the total in previous years remains the same during the missing years.

3.3.4.1 Wyoming

Wyoming experienced a loss in total gross earnings for all industries (private non-farm, farm, and government) of 5.0% from 1980 to 2000. In 1980, total mineral extraction was the largest source of industry earnings in Wyoming (25.0%), and government (federal civilian, military, state, and local

Table 3.21 Earnings by Industry.[1]

	Wyoming (Thousands of $)			County (Thousands of $)								
				Lincoln			Sublette			Sweetwater		
Income Item	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Farm[2]	179,991	191,042	95,760	6,685	5,559	2,675	5,935	8,228	1,969	1,229	1,785	292
Nonfarm agricultural services, forestry, fishing, and other[3]	30,425	50,777	77,999	403	513	1,165	357	677	892	713	726	1,665
Mining (metal, coal, nonmetallic)[4]	1,265,969	637,410	589,053	56,356	28,946	15,921	50	3,043	1,720	322,982	262,370	151,984
Oil and gas extraction[5]	1,102,210	673,330	750,850	20,493	5,747	10,688	16,551	10,934	13,919	116,820	83,967	124,438
Construction	1,131,352	498,755	768,822	23,211	15,296	25,949	15,425	7,686	11,937	177,174	59,118	56,754
Manufacturing[3]	433,727	365,436	478,173	12,825	17,514	12,887	610	1,481	1,135	21,824	34,714	106,835
Transportation and public utilities	924,125	740,282	751,189	24,867	29,076	29,519	8,071	5,503	3,245	109,418	99,300	91,285
Wholesale trade[3]	414,417	250,765	302,921	6,654	2,038	2,289	1,003	773	913	32,990	22,068	20,396
Retail trade	875,953	695,019	840,999	16,725	15,501	16,062	9,143	5,823	8,061	77,068	57,889	66,061
Finance, insurance, and real estate	290,903	247,437	446,611	5,124	4,182	6,131	1,989	1,457	3,932	15,076	13,448	25,631
Services	1,180,316	1,206,898	1,796,451	11,832	14,783	19,792	11,245	10,601	18,032	109,094	73,273	105,933
Federal government, civilian	374,702	382,042	421,904	4,942	6,000	5,538	2,610	4,126	5,566	16,261	14,954	15,720
Military	164,959	206,034	215,018	508	925	1,178	792	357	904	1,735	2,834	3,016
State government	372,796	437,358	435,192	4,017	4,556	4,183	2,102	2,486	2,362	7,881	9,560	9,058
Local government	740,096	947,968	1,035,117	16,685	26,319	32,837	7,057	9,478	11,944	69,143	97,879	104,199
Total Earnings	9,481,940	7,530,552	9,006,059	211,327	176,954	186,814	82,942	70,402	86,531	1,079,406	833,885	883,267

Table 3.21 (Continued)

				County								
	Wyoming (%)			Lincoln (%)			Sublette (%)			Sweetwater (%)		
Income Item	1980	1990	2000	1980	1990	2000	1980	1990	2000	1980	1990	2000
Farm[2]	1.9	2.5	1.1	3.2	3.1	1.4	7.2	11.7	2.3	0.1	0.2	0.0
Nonfarm agricultural services, forestry, fishing, and other[3]	0.3	0.7	0.9	0.2	0.3	0.6	0.4	1.0	1.0	0.1	0.1	0.2
Mining (metal, coal, nonmetallic)[4]	13.4	8.5	6.5	26.7	16.4	8.5	0.1	4.3	2.0	29.9	31.5	17.2
Oil and gas extraction[5]	11.6	8.9	8.3	9.7	3.2	5.7	20.0	15.5	16.1	10.8	10.1	14.1
Construction	11.9	6.6	8.5	11.0	8.6	13.9	18.6	10.9	13.8	16.4	7.1	6.4
Manufacturing[5]	4.6	4.9	5.3	6.1	9.9	6.9	0.7	2.1	1.3	2.0	4.2	12.1
Transportation and public utilities	9.7	9.8	8.3	11.8	16.4	15.8	9.7	7.8	3.8	10.1	11.9	10.3
Wholesale trade[5]	4.4	3.3	3.4	3.1	1.2	1.2	1.2	1.1	1.1	3.1	2.6	2.3
Retail trade	9.2	9.2	9.3	7.9	8.8	8.6	11.0	8.3	9.3	7.1	6.9	7.5
Finance, insurance, and real estate	3.1	3.3	5.0	2.4	2.4	3.3	2.4	2.1	4.5	1.4	1.6	2.9
Services	12.4	16.0	19.9	5.6	8.4	10.6	13.6	15.1	20.8	10.1	8.8	12.0
Federal government, civilian	4.0	5.1	4.7	2.3	3.4	3.0	3.1	5.9	6.4	1.5	1.8	1.8
Military	1.7	2.7	2.4	0.2	0.5	0.6	1.0	0.5	1.0	0.2	0.3	0.3
State government	3.9	5.8	4.8	1.9	2.6	2.2	2.5	3.5	2.7	0.7	1.1	1.0
Local government	7.8	12.6	11.5	7.9	14.9	17.6	8.5	13.5	13.8	6.4	11.7	11.8
Total Earnings	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Source: BEA (2003b). Thousands of Year 2000 dollars, adjusted for inflation.
2 Farm income consists of proprietors' income; the cash wages, pay-in-kind, and other labor income of hired farm workers; and the salaries of officers of corporate farms.
3 "Other" consists of wage and salary disbursements to U.S. residents employed by international organizations and foreign embassies and consulates in the United States.
4 Calculated by subtracting oil and gas extraction from total mining.
5 Oil and gas extraction for Sublette County in the year 2000 was not disclosed. Therefore, the value shown was estimated for the year 2000 using the constant share of total method based on the average of the shares for 1980 and 1990 and is likely underestimated for 2000 given known increases in this sector during that period. The same method was used to estimate manufacturing and wholesale in Sublette County in 1990 based on the average of the shares for 1980 and 2000.

government) provided 17.4% of income (see Table 3.21). Mining (metal, coal, nonmetallic) led the individual categories (13.4% of all income) in 1980, followed by services (12.5%); construction (11.9%); oil and gas extraction (11.6%), and TCPU (9.8%).

Wyoming's mining and minerals sector contributes more to GSP than any other sector of the economy (Foulke et al. 2001). Minerals (including oil and gas) accounted for 23.7% of Wyoming's GSP, or over $4.5 billion in 2000 (see Table 3.18) and supported approximately 19,387 full-time wage earners, or 5.9% of Wyoming's employment base (see Table 3.20) (BEA 2003e).

In 2000, government led industry income, providing 23.4% of income, followed by services (20.0%), retail trade (9.3%), construction (8.5%), and TCPU (8.3%) (see Table 3.21).

In real terms, for the 20-year study period, Wyoming industry income fell in farm, mining, oil and gas, construction, TCPU, wholesale trade, and retail trade. The most industry income growth occurred in non-farm agricultural services (156.4%; 4.8% average annual growth) and government (27.5%; 1.2% average annual growth) (Table 3.21).

3.3.4.2 Lincoln County

In 1980, total mineral extraction was the greatest source of industry income (36.4% of all income) in Lincoln County (see Table 3.21). Total government constituted 12.4% of total industry income in Lincoln County, followed by TCPU (12.8%); construction (11.0%); oil and gas extraction (9.7%); and retail trade (7.9%).

In 2000, total government led industry income (23.4%), followed by TCPU (15.8%); construction (13.9%); services (10.6%); and retail trade (8.6%). Total mineral extractions provided 14.2% of industry income (see Table 3.21).

Over the 20-year study period (1980-2000), non-farm agricultural services led industry growth (188.1%; 5.4% average annual growth), followed by services (67.3%; 2.6% average annual growth); total government (67.2%; 2.6% average annual growth) (note that military increased by 131.9% and local government increased by 96.8% over the 20-year study period), FIRE (19.6%), and TCPU (18.7%) (see Table 3.21). Losses occurred in total mineral extraction (-65.4%) and farm income (-60.0%).

3.3.4.3 Sublette County

In 1980, total mineral extraction provided 20.0% (oil and gas provided 20.0%, mining provided less than 0.1%) of Sublette County industry earnings, while construction provided 18.6%, followed by total government (15.1%), and services (13.6%) (see Table 3.21).

In 2000, total government provided the most industry income to Sublette County (24.0%), followed by services (20.8%), total mineral extraction (18.1%), construction (13.8%), and retail trade (9.3%) (see Table 3.21).

Industry income in Sublette County grew during the 20-year study period from 1980 to 2000 by 4.3% (0.2% annually) (see Table 3.21). Mining (metal, coal, nonmetallic) in Sublette County demonstrated a boom/bust cycle, going from an average annual growth rate of 50.8% from 1980 to 1990 to a declining average annual rate of 5.5% from 1990 to 2000; thus, while the industry overall grew by 3,340.0% (19.3% annual average growth) over the 20-year study period, it provided only 2.0% of all Sublette County industry earnings in 2000. Nonfarm agricultural services, forestry, fishing, and other was the next leading growth industry (149.9%; 4.7% average annual growth), followed by FIRE (97.7%), manufacturing (86.1%), and total government (65.4%; 2.5% annual average growth) (federal civilian government grew 113.3% and local government grew 69.3% during the study period). Farm industry income decreased a total of 66.8%, followed by TCPU (-59.8%), construction (-22.6%), and oil and gas extraction (-15.9%). Overall, mineral extraction provided a total of 18.1% of all Sublette County industry earnings in 2000 compared to 20.0% in 1980 (average annual a loss of 0.3%) (see Table 3.21).

3.3.4.4 Sweetwater County

In 1980, total mineral extraction provided 40.7% (mining provided 29.9%, and oil and gas provided 10.8%) of Sweetwater County industry earnings, while construction provided 16.4%, followed by TCPU and services (10.1% each) (see Table 3.21).

In 2000, total mineral extraction provided 31.3% (oil and gas provided 14.1%, and mining provided 17.2%) of Sweetwater County industry earnings, while total government provided 14.9%, followed by manufacturing (12.1%), and services (12.0%) (see Table 3.21).

Total earnings in Sweetwater County fell 18.2% (1.0% annual average loss) over the 20-year study period. Government industry income grew 38.9% (1.7% annual average growth) (military grew 73.8%, local government grew 50.7%, and state government grew 14.9%, while federal civilian fell 3.3%) (see Table 3.21). Manufacturing grew 389.5% (8.3% annually), followed by non-farm agricultural services (133.5%) and FIRE (70.0%). Farm fell 76.2%, followed by construction (-68.0%); wholesale trade (-38.2%), total mineral extraction (-37.1%; mining fell 52.9%, oil and gas grew 6.5%).

3.4 TAXES AND REVENUES

3.4.1 Wyoming Overview

According to the Tax Reform 2000 Committee (1999), the reporting and collecting of mineral taxes in the state is confusing and time-consuming. Mineral producers must report the same production three times for severance, mineral property, and the oil and gas conservation taxes. These procedures are costly for both the taxpayers and the administrators. Owners of mineral interest pay property taxes on minerals as much as 2 years after production. County treasurers sometimes have difficulty collecting mineral property taxes and often must initiate collection procedures against mineral interest owners who may be scattered throughout the nation or, worse, whose company may no longer be in business.

For this reason, only those revenues that are clearly and concisely reported by the state (i.e., severance taxes, ad valorem production and property taxes, federal royalties, and PILT) are discussed in detail in this technical support document. Historical information on the same types of revenues expected to occur as a result of the proposed projects are provided in year 2000 dollars, adjusted for inflation (see Section 3.2). Where available, revenue information was reported at the county and city level; however, information of this type is limited.

In Wyoming, minerals are taxed after they are produced and a value has been established (Wyoming Energy Commission 2001). Minerals remaining in the ground are not taxed and generate no revenue (however, undeveloped mineral leases do collect lease rentals and up-front bonus payments). Given a consistent price, the larger the volume of the produced mineral, the larger the amounts that will be subject to taxation and the greater the revenue for the state. At the extreme, if all production ceased, Wyoming would receive no tax or royalty revenues.

Produced minerals are classified as personal property. The two principal production taxes paid by mineral producers are (1) the county property (ad valorem) tax and (2) the state severance tax. As a result, produced minerals are the only class of property in the state on which two direct taxes are levied.

In addition to the production taxes paid on the assessed value of the produced mineral, producers also pay county property (ad valorem) taxes on plants, refineries, mining and well head equipment, pipelines, and other facilities used in the mineral production and transportation operations. Mill levies applied against mineral facilities and structures are the same as those applied against all other property in the taxing jurisdiction. Property associated with mineral production is classified as industrial property and thus has a higher assessment ratio than commercial, agricultural, or residential property.

Mineral producers also pay royalties, bonuses, rentals, and fees to the owner of the mineral for the right to obtain a lease and produce the mineral. Minerals are owned by the federal government, whereby the federal government receives a share of the revenues from the mineral production, or annual rentals are paid on mineral leases that are not producing. The same is true for minerals owned by the state government. In the case of federal royalty payments, the state receives a share of those payments through a federal revenue-sharing provision. Mineral disbursements to states are based on percentage share of royalties, rents, bonuses, and other mineral revenue collections.

To obtain a mineral lease from the state or federal government, the lessee must pay a bonus. This "bonus" is the amount that the successful winner of the lease (i.e., highest bidder) pays to acquire the lease. The state retains the entire bonus bid to acquire state leases. One-half of the federal lease bonus proceeds for federal land leases are returned to the state.

The Permanent Wyoming Mineral Trust Fund (PWMTF) is a fund that holds 25% of severance taxes currently received by the state and acts like a savings account for the state. The fund balance was $1.9 billion in June 2002 (Lummis et al. 2002). As reported by Lummis et al., during the previous fiscal year, over $74 million in severance taxes were added to the fund. Natural gas alone contributed 46.8% of severance taxes or more than $34.7 million to the PWMTF. Gas, oil, and associated products contributed more than $45.5 million (61.4%) of all severance added to the PWMTF. The principal of the PWMTF is inviolate but may be loaned to political subdivisions. The interest on the PWMTF goes to the state's general fund for the legislature to allocate to current programs.

The minerals industry accounts for a substantial share of revenues to the state and to local governments in Wyoming. Revenues that contributed to the general fund, including those from the minerals industry, from 1980 to 2000 are listed in Table 3.22. Ad valorem production revenues are the single largest source of state revenue and provided 96.5% of revenue in 1980, 94.6% in 1990, and 94.5% in 2000. The second and third largest sources of revenue in 1980 were sales and use tax (1.8%) and severance tax (0.6%). In 1990, sales and use tax (1.5%) was the secondmost important source of revenue, followed by PWMTF income (1.3%). Total general fund revenues fell nearly 16.6% from 1980 to 2000, with the greatest losses occurring in sales and service charges (-40.3%), followed by ad valorem production (-18.3%)

Table 3.22 Wyoming General Fund Revenues, Fiscal Year Collections by Source.[1]

Fiscal Year	Ad Valorem (Production)	Severance Tax	Sales & Use Tax	PWMTF Income	Pooled Income[2]	Charges-Sales and Services	Franchise Tax	Revenue from Others[3]	Penalties[4]	Federal Aid and Grants	All Other[3,5]	Total[6]
1980	12,907,248	79,282	245,683	25,061	30,410	31,495	15,746	10,131	1,491	9,464	21,444	13,377,455
1981	15,367,554	90,952	267,396	34,650	29,553	31,587	16,067	7,943	2,056	9,826	20,182	15,877,767
1982	14,162,407	201,201	293,965	46,613	37,622	17,129	10,296	13,356	2,304	2,806	21,938	14,809,638
1983	13,737,084	190,796	224,897	78,946	53,131	16,971	15,007	16,229	2,788	442	40,612	14,376,904
1984	13,903,877	181,963	200,116	93,578	48,802	15,005	14,169	13,363	1,976	3,840	29,000	14,505,689
1985	12,532,055	182,560	196,486	108,030	52,254	13,681	14,484	18,681	2,501	3,858	42,055	13,166,647
1986	9,384,099	169,940	196,322	113,788	57,582	17,242	18,627	14,206	1,273	707	26,932	10,000,718
1987	8,934,607	104,407	154,576	112,297	36,053	15,142	30,329	21,040	1,432	1,273	31,046	9,442,200
1988	8,340,254	96,495	150,859	105,738	25,878	14,398	15,197	11,271	1,181	756	22,310	8,784,337
1989	8,435,621	90,777	138,466	98,671	21,377	15,829	14,580	13,149	1,691	1,406	20,005	8,851,573
1990	8,415,025	97,318	134,719	113,515	67,982	13,997	14,336	9,724	3,642	977	22,153	8,893,390
1991	7,653,645	99,741	140,803	119,046	50,717	13,195	16,843	10,913	4,386	3,244	22,080	8,134,614
1992	7,579,071	83,109	142,873	113,807	66,214	16,555	15,162	14,060	5,093	5,504	14,362	8,055,810
1993	7,497,211	78,431	149,419	105,277	31,049	17,424	15,267	10,088	3,938	8,781	12,857	7,929,742
1994	7,240,946	75,800	217,771	99,976	26,045	17,785	14,739	16,551	5,381	9,062	38,561	7,762,616
1995	7,257,937	63,816	236,956	96,731	30,693	18,128	15,593	4,600	10,779	11,944	13,641	7,760,818
1996	7,842,694	67,661	229,365	94,964	29,839	18,286	13,759	4,389	2,203	12,194	15,166	8,330,520
1997	7,983,933	76,075	230,870	98,944	25,997	19,093	14,439	5,577	6,010	12,731	13,225	8,486,894
1998	7,422,008	73,484	247,974	106,994	24,687	19,197	14,073	6,317	7,148	11,153	17,499	7,950,534
1999	8,162,297	60,905	242,616	110,437	26,174	21,017	11,823	7,245	6,070	10,639	20,143	8,679,364
2000	10,542,096	83,616	262,339	117,485	26,192	18,799	13,629	14,830	5,809	8,189	64,712	11,157,696
Total Growth (%) (1980-2000)	-18.32	5.47	6.78	368.79	-13.87	-40.31	-13.45	46.39	289.74	-13.48	201.77	-16.59
Average Annual Growth Rate (%) (1980-2000)	-1.01	0.27	0.33	8.03	-0.74	-2.55	-0.72	1.92	7.04	-0.72	5.68	-0.90

1 Source: Consensus Revenue Estimating Group (CREG) (2003). In thousands of Year 2000 dollars, adjusted for inflation.

2 Pooled income revenues earned on water development funds were no longer distributed to the General Fund beginning in FY93.

3 In FY94, this category received an additional \$2.9 million in interest on severance tax protests. The rest of the difference in this series between FY94 and FY95 is primarily because revenues from Workers' Compensation (\$6.8 million in FY94) and the Retirement System Board's Trust & Agency Fund (\$0.8 million in FY94) no longer flowed into the General Fund beginning in FY95. However, the expenditure responsibilities were also shifted away from the General Fund at that time. Consequently, there was no net loss in actual General Fund revenues as a result of these changes.

4 Total revenues in this category in FY95 included \$4.1 million in severance tax penalty and interest and interest received during the Generally Accepted Accounting Principles transition period and an additional \$2.8 million from an oil audit settlement.

5 This category includes all 1200 series tax revenue, except sales and use taxes, inheritance tax (revenue code 1401), license and permit fees (2000 revenue series), property and money use fees (4000 revenue series, excluding investment income); and non-revenue receipts (9000 revenue series). The inheritance tax total for FY94 included \$21.0 million in revenue from a single estate settlement, and in FY00 it totaled \$45.1 million.

6 Inheritance Taxes will provide revenue to the general fund at diminishing rates through FY05. Due to federal legislation, the tax will be completely phased-out by FY06.

and pooled income (-13.9%). Increases over the 20-year study period were seen in PWMTF income (368.8%), penalties (289.7%), and all other sources (201.8%). However, market effects were markedly pronounced in 2000, as the significance of price increases in the natural gas industry became apparent as total revenues climbed 40.3% from 1998 to 2000. This growth was led by all other (269.8%), revenue from others (134.8%), and ad valorem production revenues (42.0%). BP America, one of the project proponents, was the number one taxpayer by taxable value rank for 2002 mineral production, contributing more than 10% of taxable mineral value in 2002 (Wyoming Department of Revenue 2003) (Table 3.22).

Declines from 1998 to 2000 occurred in charges-sales and services (-2.1%), franchise taxes (-3.2%), and federal aid and grants (-26.6%).

3.4.1.1 Severance Taxes

A severance tax is an excise tax imposed on the present and continuing privilege of removing, extracting, severing, or producing any mineral in Wyoming. Severance taxes are distributed according to *Wyoming Statute* (W.S.) 39-14-801 as presented in Table 3.23. Severance distributions to all Wyoming counties and cities and to those counties and cities in the study area are summarized in Table 3.24.

In 1980, Wyoming received $79.3 million in severance taxes compared to $83.6 million in 2000, an increase of 5.5% (see Table 3.22). While overall growth occurred over the 20-year study period, there was a large increase (22.7%) from 1980 to 1990, then a drop of more than 14.1% from 1990 to 2000. Natural gas prices rose in 2000 due to tighter supplies, lower storage stocks, and market perceptions (Energy Information Administration [EIA] 2001a). Increased exploration and lease auctions drove up the bonus payment component in the last several years. With renewed market pressure in late 1999, the value of production increased, as did corresponding tax revenues. Those effects were markedly pronounced in 2000 as the significance of the price increase became clear.

Table 3.23 Statutory Distribution of Severance Taxes (W.S. 39-14-801).

Recipient	Portion of Distribution	Basis/Authority
Subsection (b) mandatory distributions		W.S. 39-14-801(b)
Corrective action account[1]	As needed	To bring account balance to $10 million/W.S. 39-14-801(c)
Environmental pollution financial responsibility account[1]	As needed	To bring account balance to $1 million/W.S. 39-14-801(c)
Subsection (d) distributions[2]		Remaining severance taxes, not to exceed $155 million
General fund	62.26%	W.S. 39-14-801(d)(i)
Water Development Account I	12.45%	Purposes specified in W.S. 41-2-124(a)(i)/W.S. 39-14-801(d)(ii)
Water Development Account II	2.1%	Purposes specified in W.S. 41-2-124(a)(ii)/ W.S. 39-14-801(d)(iii)
Highway fund	4.33% or as needed	To maintain a minimum balance of $500,000 in the state park road account/W.S. 24-14-102
Counties	0.78%	County purposes/W.S. 39-14-801(d)(v)
Population based portion (1/2 of 0.78%)	50% of 0.78%	Proportion that the population of the county bears to the population of the state as determined by the most recent decennial census/ W.S. 39-14-801(d)(v)(A)
Assessed valuation portion (1/2 of 0.78%)	50% of 0.78%	Inverse of the assessed valuation of each county as computed under subparagraph W.S. 39-14-801(d)(vii)(C)/ W.S. 39-14-801(d)(v)(B)
Counties	3.1%	County purposes; proportion which the population of the county bears to total state population, population to be determined by resort to the latest federal census as periodically updated by the Census Bureau/W.S. 39-14-801(d)(vi)
Road construction funds of various counties	2.9%	Purposes specified in W.S. 24-2-110/W.S. 39-14-801(d)(vii)
Population based (1/3 of 2.9%)	§33.3% of 2.9%	Ratio that the population of the county bears to total state population based on the most recent decennial federal census/ W.S. 39-14-801(d)(vii)(A)
Road mileage based (1/3 of 2.9%)	§33.3% of 2.9%	Ratio that the mileage of county roads in the county bears to total county roads in Wyoming/ W.S. 39-14-801(d)(vii)(B)
Assessment based (1/3 of 2.9%)	§33.3% of 2.9%	Divide the inverse of each county percentage of total state-assessed valuation by the total sum of the inverses of all county percentages of state-assessed valuation/ W.S. 39-14-801(d)(vii)(C)
Cities and Towns	9.25%	Proportion which the population of the city or town bears to the population of all cities and towns in Wyoming, population to be determined by resort to the latest federal census as periodically updated by the Census Bureau/ W.S. 39-14-801(d)(viii)
Capital Construction Account	2.83%	Purposes specified in W.S. 9-4-604(k)(ii)/ W.S. 39-14-801(d)(ix)
Total Severance Distributions	100%	Not to exceed $155 million

1 W.S. 39-14-801(c) requires that distributions under subsection (b) of this section be made prior to any distributions under subsection (d) of this section. The amount of distributions under subsection (d) of this section shall not exceed $155 million in any fiscal year.

2 To the extent that distributions under subsection (d) of this section would exceed $155 million in any fiscal year, the excess shall be credited as follows: (i) one-third (1/3) to the general fund and (ii) two-thirds (2/3) to the budget reserve account.

Table 3.24 Summary of Mineral Severance Taxes Received by Wyoming and Directly Distributed to All Wyoming Counties and Cities and Project-Affected Counties and Cities in the Study Area.

	Distributions (Thousands of $)[1]				
Tax and Distribution Entity	1980	1990	2000	2001	2002
Total Received by Wyoming[2]	219,889	331,196	275,123	434,534	287,457
Amount Distributed to All Counties[2]	--	8,628	8,559	15,171	6,081
Lincoln County[3]	--	--	159	405	231
Sublette County[3]	--	--	61	159	94
Sweetwater County[3]	--	--	489	1,175	595
Amount Distributed to All Cities[2]	--	25,885	21,506	32,136	14,498
LaBarge[4]	--	--	27	53	22
Big Piney[4]	--	--	25	49	21
Marbleton[4]	--	--	35	74	37
Pinedale[4]	--	--	65	140	72
Rock Springs[4]	--	--	1,056	2,121	959

1 In thousands of year 2000 dollars, adjusted for inflation; -- = data not available.
2 CREG (2003). Total direct disbursements to cities and counties, not including capital construction or other funds.
3 Lummis et al. (2000, 2001, 2002, 2003). Distributions to counties. Total distributions reported by Lummis et al. do not add to the total reported as revenue received in CREG (2003).
4 Lummis et al. (2000, 2001, 2002, 2003). Distributions to towns and cities. Total distributions reported by Lummis et al. do not add to the total reported as revenue received in CREG (2003).

Counties directly received $8.6 million in 2000 severance taxes (Table 3.24). Cities and towns received $21.5 million in 2000 severance taxes, a decrease of 16.9% from 1990. Distributions of severance taxes to all accounts in 2000 totaled more than $275 million, down 16.9% from 1990 (Table 3.25). Foulke et al. (2001) believe that gas production will drive future revenues higher for the foreseeable future.

Table 3.25 Yearly Mineral Severance Taxes, Distribution by Account, Wyoming.[1]

	Distributions (Thousands of Dollars)													
Fiscal Year	General Fund	Budget Reserve Account[2]	PWMTF[3]	Water I	Water II	Highway Fund[4,5,6]	Cities and Towns	Counties[3]	School Foundation[4,6,7]	Community Colleges[4]	Cities, Towns, Counties, and Special Districts Capital Construction[5]	State Aid County Roads[5]	Other[8,9]	Totals[10]
Historical:														
1980	79,282	0	85,015	12,820	0	19,117	0	0	5,285	1,762	0	0	16,609	219,889
1981	90,952	0	99,641	16,213	0	23,694	0	0	6,442	2,147	0	0	22,059	261,149
1982	201,201	0	227,632	35,284	3,637	85,484	53,763	17,921	9,865	3,288	0	0	34,631	672,705
1983	190,796	0	215,378	27,910	12,557	88,110	56,506	18,835	9,638	3,213	0	0	34,069	657,013
1984	181,963	0	204,736	28,652	11,667	85,351	52,502	17,501	9,790	3,263	0	0	34,475	629,901
1985	182,560	0	210,348	28,342	12,200	87,198	54,898	18,299	9,563	3,188	0	0	38,547	645,143
1986	169,940	0	195,725	29,125	10,995	83,295	49,476	16,492	9,736	3,245	0	0	39,690	607,719
1987	104,407	0	94,694	24,802	5,900	56,760	26,552	8,851	8,213	2,738	0	0	60,192	393,110
1988	96,495	3,956	85,325	21,732	5,752	52,009	25,885	8,628	7,269	2,423	0	0	24,786	334,260
1989	90,777	39,377	70,530	21,562	5,332	50,702	23,995	7,998	7,384	2,461	0	0	0	320,118
1990	97,318	41,535	74,240	20,386	5,752	43,343	25,885	8,628	7,310	2,437	0	0	4,360	331,196
1991	99,741	42,042	75,268	20,515	5,914	43,809	26,615	8,872	7,224	2,408	0	0	0	332,407
1992	83,109	38,575	65,338	25,221	4,631	42,236	20,841	6,947	7,956	2,652	0	0	3,565	301,071
1993	78,431	53,598	63,614	19,255	4,630	25,761	20,836	6,945	19,166	2,347	0	0	8,066	302,649
1994	75,800	45,396	60,379	18,443	4,413	21,183	19,858	6,619	0	0	0	0	9,182	261,274
1995	63,816	29,917	49,012	17,711	3,192	11,659	14,364	5,557	110	37	1,770	2,767	8,283	208,195
1996	67,661	32,752	53,508	18,785	3,423	7,412	15,405	6,344	40	13	5,352	4,350	8,374	223,421
1997	76,075	35,941	60,884	18,134	4,193	8,124	18,870	7,656	13	4	5,724	4,918	9,211	249,748
1998	73,484	35,022	57,974	20,912	3,593	7,520	16,167	6,745	118	39	3,479	4,741	10,584	240,378
1999	60,905	29,111	50,300	18,733	2,846	0	12,805	5,500	4,977	4	3,510	4,588	9,784	203,063
2000	83,616	39,082	69,720	18,040	4,779	9,109	21,506	8,559	1,415	1	4,347	4,898	10,051	275,123
2001	134,931	56,178	109,606	20,160	9,109	27,674	32,136	15,171	23	3	4,833	5,426	19,284	434,534
2002	112,498	37,700	69,378	18,547	3,298	7,138	14,498	6,081	0	0	4,211	4,315	9,792	287,457

Table 3.25 (Continued)

	Distributions (Thousands of Dollars)													
Fiscal Year	General Fund	Budget Reserve Account[2]	PWMTF[3]	Water I	Water II	Highway Fund[4,5,6]	Cities and Towns	Counties[5]	School Foundation[4,6,7]	Community Colleges[4]	Cities, Towns, Counties, and Special Districts Capital Construction[5]	State Aid County Roads[5]	Other[8,9]	Totals[10]
Projected:														
2003	108,066	36,549	64,542	17,949	3,069	6,231	13,299	5,580	0	0	4,092	4,185	9,393	272,955
2004	118,200	43,500	71,100	19,300	3,300	6,700	14,300	6,000	0	0	4,400	4,500	10,500	301,800
2005	121,200	49,400	73,700	19,300	3,300	6,700	14,300	6,000	0	0	4,400	4,500	10,800	313,600
2006	123,400	53,800	75,000	19,300	3,300	6,700	14,300	6,000	0	0	4,400	4,500	11,100	321,800
2007	125,600	58,200	76,500	19,300	3,300	6,700	14,300	6,000	0	0	4,400	4,500	11,400	330,200
2008	127,200	61,300	77,900	19,300	3,300	6,700	14,300	6,000	0	0	4,400	4,500	11,700	336,600

1 Source: CREG (2003). Presented in year 2000 dollars.

2 The FY93 actual total included an additional $5.4 million, and the FY94 actual total included an additional $5.2 million in penalty and interest from pre-1990 production.

3 Chapter 62, 2002 Session Laws made permanent the diversion of PWMTF revenues to the Severance Tax Distribution Account, and repealed the language of Chapter 99, 2000 Session Laws requiring a larger proportion of coal bed methane revenues to be deposited into the PWMTF.

4 The drop in revenues to these accounts in FY94 was due to the expiration of the Capital Facilities Tax on coal and trona.

5 Impacted by the PILT Restoration Act, beginning in March of FY95. This act effectively diverted federal mineral royalty revenue from the Counties; Cities, Towns, Counties, and Special Districts Capital Construction; and State Aid to County Roads accounts to the Highway Fund; and replaced that revenue with an equal amount of Highway Fund coal severance tax.

6 In FY99 and FY00, mineral severance taxes and federal mineral royalties were diverted from the Highway Fund to the School Foundation Program account until a total of $20 million was received. This revenue diversion from the Highway fund was offset with additional fuel tax revenue. In FY01 and FY02, the diversion of revenues from these sources continued, however, the amount was not limited to a fixed dollar amount, rather it was a dollar for dollar swap in the amount raised by the fuel tax.

7 The FY93 total includes a one-time diversion of approximately $10.6 million from the Highway Fund.

8 Beginning in FY92, the totals shown in this column have included diversions from the Highway Fund to the LUST accounts (Financial Responsibility and Corrective Action accounts). Approximately $10.0 million a year will continue to be diverted to these accounts. An additional $1.4 million was diverted from the Highway Fund to the Compensation Reserve Account during FY94.

9 This column includes $5.5 million of Municipal Mineral Trust Fund monies in FY01. These funds are diverted from the Cities and Towns portion of Severance Taxes when the total Severance Taxes to those entities exceeds $24 million in any year, under the distribution formulas in place prior to Chapter 97, 2000 Session Laws.

10 FY98 coal revenues include $8.0 million in protest severance taxes which were from prior production years.

In 1980, 36.1% of mineral severance taxes went to the general fund; 38.7% to PWMTF; 8.7% to the highway fund; 5.8% to water; 2.4% to the school foundation; 0.8% to community colleges; and 7.6% to other; and no funds were distributed to the budget reserves; cities and towns; counties; cities, towns, counties, and special districts; capital construction; or state aid. In 1990, 29.4% of mineral severance taxes went to the general fund, 22.4% to PWMTF, 12.5% to the budget reserve account, 13.1% to the highway fund; 7.9% to water; 7.8% to cities and towns, 2.6% to counties, 2.2% to the school foundation; 0.7% to community colleges, 1.3% to other; and none to capital construction for cities, counties, or special districts. In 2000, 30% went to the general fund, 25% to the PWMTF, 14% to the budget reserve account, 8% to cities and towns, 9% to water, 4% to other, 3% each to the highway fund and counties, 2% each to capital construction for cities, counties, and special districts, and state aid to county roads, and 1% to the school foundation.

Crude oil contributed 40.5% of all distributed severance taxes in 1980, while natural gas contributed only 10.1% of distributed severance taxes (Table 3.26). By 2000, natural gas contributed 43.8% (a 445.4% increase from 1980; 8.9% average annual growth) of all severance taxes distributed, while crude oil dropped 35.6%, to contribute only 20.8% of severance tax distributions. CREG (2003) anticipates that natural gas will continue to provide a substantial portion of annual revenues, with estimates ranging from 40% of severance distributions in 2003 to nearly 50% in 2008, while all other minerals are expected to decline in importance.

3.4.1.2 Royalties

A mineral royalty is the amount of money the owner of the mineral resource receives as a payment or royalty from the mineral producer. Wyoming receives a base royalty of 16.7% of the value of production from state-owned minerals. The federal government receives a royalty of 12.5% of the value of production for federal minerals. Fifty percent of federal mineral royalties are returned to the state. Unlike severance taxes, royalties are based on the value of the products of production, not just what leaves the ground. For example, natural gas royalties are based on the value of the methane, helium, carbon dioxide, nitrogen, and liquids--not just the volume of raw gas.

In 1999, the Wyoming Legislature was grappling with a projected $200 million shortfall in its budget. Two years later, the surplus was projected at over $600 million. The difference came from

Table 3.26 Proportion of Mineral Severance Taxes to All Wyoming Accounts by Mineral.[1]

	Mineral Revenues (Thousands of $)[1]					
Fiscal Year	Crude Oil[2]	Natural Gas[2]	Coal[3,4]	Trona[4]	Others	Total[5]
1980	89,014	22,101	89,726	9,171	9,877	219,889
1981	92,527	34,564	113,906	11,345	8,807	261,149
1982	361,693	99,054	188,760	14,065	9,133	672,705
1983	321,389	123,791	195,368	11,216	5,250	657,013
1984	285,801	128,100	200,567	10,418	5,015	629,901
1985	290,892	141,495	201,140	7,904	3,712	645,143
1986	267,133	123,103	206,981	8,767	1,736	607,719
1987	131,738	77,447	175,044	7,774	1,107	393,110
1988	140,962	61,246	122,382	8,734	936	334,260
1989	108,375	77,485	123,767	7,624	2,868	320,118
1990	133,694	66,171	117,402	12,591	1,338	331,196
1991	134,992	66,697	118,112	11,361	1,246	332,407
1992	103,334	55,455	127,420	13,980	883	301,071
1993	92,155	70,456	119,586	12,619	1,393	302,649
1994	77,003	81,659	87,370	8,421	738	261,274
1995	64,218	49,007	84,515	9,563	891	208,195
1996	69,210	52,886	89,460	11,003	861	223,421
1997	69,249	81,551	86,558	11,323	1,067	249,748
1998	45,491	84,882	98,234	10,763	1,009	240,378
1999	30,658	76,413	88,202	6,768	1,022	203,063
2000	57,323	120,540	85,164	10,960	1,157	275,123
2001	72,425	258,648	94,554	8,083	825	434,534
2002	52,415	122,951	105,323	5,772	997	287,457
Total Growth (1980-2000) (%)	-35.60	445.41	-5.08	19.50	-88.29	25.13
Average Annual Growth (1980-2000) (%)	-2.18	8.85	-0.26	0.89	-10.17	1.13

1 Source: CREG (2003). Year 2000 dollars, adjusted for inflation.
2 Condensate from natural gas production is included in crude oil.
3 The drop in revenues that occurred in FY99 was due, in part, to the reduced taxation rates put in place by Chapter 168 of the 1999 Session Laws, "Oil Producers Recovery - 2."
4 FY98 coal revenues include $8.0 million in protest severance taxes that were from prior years' productions.
5 The drop in revenues that occurred in FY94 was due to the expiration of the Capital Facilities Tax on coal and trona.
6 The total for FY93 includes $5.4 million in penalty and interest from pre-1990 production. The FY94 total contains an additional $5.2 million in penalty and interest from oil and gas audit settlements on pre-1990 production.

the fact that gas and oil prices skyrocketed in 2000, bringing with them significant increases in all forms of mineral revenue along with increasing natural gas revenues, which include coalbed methane production. Natural gas prices rose in 2000 due to tighter supplies, lower storage stocks, and market perceptions (EIA 2001a). In the late 1990s, these sources of income were declining as prices for gas and oil were depressed. With renewed market pressure in late 1999, the value of production increased, as did corresponding taxes. Federal royalties are distributed by the State of Wyoming according to W.S. 9-4-601 as presented in Table 3.27. Federal royalty distributions to all counties and cities, and those cities in the project-affected area are shown in Table 3.28.

State mineral royalties received for production of state minerals are presented in Table 3.29.

Table 3.30 shows historic and projected federal mineral royalties and distributions. Federal royalties increased from $222 million in 1990 (year 2000 dollars, adjusted for inflation) to $309 million in 2000. Distributions of federal mineral royalties in 1980 went to the school foundation (38%), the highway fund (26%), cities, towns, counties, and special districts capital construction and other (10% each), cities and towns (8%), the University of Wyoming (7%), and the highway fund for county roads (2%); no funds were distributed to the remaining accounts (Table 3.30). In 1990, 45% went to the school foundation, 26% to the highway fund, 9% to cities and towns, 5% to cities, towns, counties, and special districts capital construction, 7% to the University of Wyoming, 2% each to the highway fund for counties and state aid for county roads, 3% to school capital construction, and 1% to the counties; no funds were distributed to the remaining accounts. In 2000, 33% to the school foundation, 18% to the highway fund, 15% to Legislative Royalty Impact Assistance Account (LRI), 9% to school capital construction, 6% each to the University of Wyoming and to cities and towns, 4% to cities, towns, counties, and special districts capital construction, 2% each to highway fund for county roads, the transportation enterprise, and other, and 1% to community college.

3.4.1.3 Payments in Lieu of Taxes (PILT)

The federal government owns and manages 49% of Wyoming lands. Federal lands are not subject to property taxes that support county governments and education; yet, local communities

Table 3.27 Statutory Distribution of Federal Mineral Royalties (W.S. 9-4-601).

Recipient	Portion of Distribution	Basis/Authority/Use
Subsection (a) distributions	All royalties less subsection (b) distributions	Distributed to trust and agency accounts; first $200 million to be distributed according to Subsection (a)
Highway fund	2.25%	W.S. 9-4-601(a)(i) Permanent construction or maintenance work in counties to which the royalties are attributable with priority given to roads and highways impacted by mineral development
	26.25%	W.S. 9-4-601 (a)(iii) Except as provided by W.S. 9-4-605(a); subject to purposes specified in W.S. 9-4-606 and 9-4-607
	1.25%	W.S. 9-4-601(a)(vi)
	2.25%	W.S. 9-4-601(a)(ix)
	0.625%	W.S. 9-4-601(a)(x)
Public school foundation program account	44.8%	Subject to W.S. 9-4-605
University of Wyoming trust and agency fund	6.75%	W.S. 9-4-601(a)(iv) When authorized by legislature for actual and necessary expenses of constructing, equipping, and furnishing new buildings; repair of existing buildings; purchasing of improved or unimproved real estate; payment of principal and interest on securities used to finance these projects or refund previously issued securities
Incorporated cities and towns	9.375%	W.S. 9-4-601(a)(v) Planning, construction, or maintenance of public facilities or providing public services
Population 325 or less	$12,000	W.S. 9-4-601(a)(v)(A)
Population greater than 325	$15,000	W.S. 9-4-601(a)(v)(A)
Remainder based on population	Balance of 9.375%	W.S. 9-4-601(a)(v)(B) Amount proportionate to percentage obtained by dividing average daily membership (W.S. 21-13-101) of all school districts within each county by the total average daily population of all school districts in the state. Distribution made in proportion that the population of the city or town bears to the total population of all cities and towns in the county.
Capital construction account	3.75%	W.S. 9-4-601(a)(vi) Purposes specified in W.S. 9-4-605(k)(i) or to fund bonds under W.S. 9-4-604(g); priority given to state subdivisions socially or economically impacted directly or indirectly by federal mineral development; Amounts not to exceed: 1. $40 million to be loaned or granted to incorporated towns and cities (voter-approved projects necessary for health, safety, and welfare of inhabitants); 2. $20 million loaned or granted to counties or special districts (hospital, fire protection, sanitary and improvement, solid waste disposal, service and improvement, water and sewer) Excess to earmarked revenue fund
Public school capital construction account	2.7%	W.S. 9-4-601(a)(vii) Purposes specified in W.S. 21-15-111(a)(i)

Table 3.27 (Continued)

Recipient	Portion of Distribution	Basis/Authority/Use
Subsection (b) distributions[2]		W.S. 9-4-601(b) All bonus payments from the federal government attributable to coal, oil shale, or geothermal leases of federal land within Wyoming
Construction and highway	50%	W.S. 9-4-601(b)(i) Not to exceed $200 million; less W.S. 9-4-601(b)(v) distributions
Business ready community account	Stipulated amount	W.S. 9-4-601(b)(v) If the school capital construction account is projected by CREG to have a positive balance at the end of the fiscal year, then 1. Fiscal year 2004, $7.5 million 2. Fiscal year 2005, $10.0 million 3. Excess to be deposited to school capital construction account
Capital construction accounts	75% of first 50%	W.S. 9-4-601(b)(i)(A) Less amounts distributed under (b)(v); purposes specified in W.S. 9-4-604(k)(i) to fund bonds under W.S. 9-4-604(g)
Highway fund	25% of first 50%	W.S. 9-4-601(b)(i)(B) Less amounts distributed under (b)(v);
Community college commission revenue fund account	10% of second 50%	W.S. 9-4-601(b)(iv)(A) for fiscal years 2004 and 2005; not to exceed $1.6 million in accordance with and in addition to W.S. 21-18-205(c) appropriations; excess to school capital construction account; and any remainder after end of biennial budget period to school capital construction account
Business ready community account	40% of second 50%	W.S. 9-4-601(b)(iv)(B) for fiscal years 2004 and 2005 in accordance with W.S. 9-4-601(b)(v); thereafter to school capital construction account
School foundation program	1/3 of any amount exceeding $200 million	W.S. 9-4-601(d)(iii)
Budget reserve account	2/3 of any amount exceeding $200 million	W.S. 9-4-601(d)(iv)

Table 3.28 Summary of Federal Mineral Royalties Received by Wyoming and Directly Distributed to All Counties and Cities and Project-Affected Counties and Cities.[1,2]

Tax and Distribution Entity	Distributions (Thousands of $)[3]				
	1980	1990	2000	2001	2002
Total Received by Wyoming[4]	198,742	222,188	309,093	434,676	334,703
Amount Distributed to Counties[4]	n/d	1,389	n/d	n/d	n/d
Amount Distributed to Cities[4]	--	20,830	19,588	21,678	20,007
LaBarge[5]	--	--	61	60	55
Big Piney[5]	--	--	66	64	55
Marbleton[5]	--	--	86	88	86
Pinedale[5]	--	--	147	152	154
Rock Springs[5]	--	--	1,010	1,002	994

1 Includes coal lease bonuses.
2 FY98 coal revenues include $8.0 million in protest severance taxes that were from prior production years.
3 In thousands of year 2000 dollars, adjusted for inflation; -- = data not available; n/d = no distribution.
4 Consensus Revenue Estimating Group (CREG) (2003). Total direct disbursements to cities and counties, not including capital construction or other funds.
5 Lummis et al. (2000, 2001, 2002, 2003). Distributions to towns and cities. Total distributions reported by Lummis et al. do not add to the total reported as revenue received in CREG (2003).

Table 3.29 Summary of State of Wyoming Mineral Royalties.

Fiscal Year	Thousands of $[1]
1980	--
1990	--
2000	27,721
2001	34,099
2002	56,021

1 Historical data for state-owned mineral royalties are not readily available and are generally not included in socioeconomic analyses prepared by Wyoming state agencies. WDAI (2002a).

Table 3.30 Federal Mineral Royalties (Including Coal Lease Bonuses) - Fiscal Year Distribution/Projections by Account.[1]

	Distributions (Thousands of Dollars)														
Fiscal Year	University of Wyoming[2]	School Foundation[3]	Highway Fund[3,4,5]	Highway Fund County Roads	Cities and Towns	Cities, Towns, Counties, and Special Districts Capital Construction[4,5,6]	Capital Construction School Dist[5,6]	Counties[4]	State Aid to County Roads[4]	LRI[2,7]	Community Colleges[7]	Other	Transportation Enterprise[8]	General Fund Administrative	Totals[9]
Historical:															
1980	13,415	74,528	52,170	4,472	14,906	19,377	0	0	0	0	0	19,874	0	0	198,742
1981	15,143	84,125	58,888	5,048	16,825	21,879	0	0	0	6	0	22,433	0	0	224,347
1982	17,589	97,716	68,401	5,863	19,543	25,913	14,868	0	0	507	11,189	0	0	0	261,590
1983	19,682	109,346	76,542	6,561	21,869	39,787	16,621	0	0	11,357	12,538	0	0	0	314,303
1984	17,263	95,905	67,134	5,754	19,181	33,871	14,578	0	0	8,935	10,997	0	0	0	273,618
1985	23,202	120,987	90,228	7,734	25,779	30,478	27,502	0	7,734	4,699	14,780	0	0	0	353,123
1986	20,299	96,479	73,408	6,292	20,974	28,495	24,329	0	6,292	7,521	12,025	0	0	0	296,114
1987	12,402	63,389	48,231	4,134	13,780	21,810	15,985	0	4,134	8,029	7,901	0	0	0	199,796
1988	15,527	107,121	60,383	5,176	17,252	18,878	0	0	5,176	1,626	2,143	0	0	0	233,282
1989	16,410	108,916	63,818	5,470	22,792	12,925	6,564	1,519	5,470	769	0	0	0	0	244,655
1990	14,998	99,540	58,324	4,999	20,830	11,109	5,999	1,389	4,999	0	0	0	0	0	222,188
1991	18,599	123,444	64,753	6,200	25,832	14,820	7,440	1,722	13,777	1,042	0	915	0	0	278,544
1992	15,153	99,306	52,091	4,987	20,781	11,184	5,985	1,385	11,083	1,828	0	247	0	0	224,031
1993	13,685	90,830	53,221	4,562	19,007	18,099	5,474	1,267	4,562	11,536	0	3,575	0	0	225,818
1994	13,954	92,613	54,265	4,651	19,380	18,448	5,582	1,292	4,651	11,598	0	3,486	0	0	229,920
1995	14,675	97,398	62,376	4,892	20,382	20,146	5,870	590	2,124	8,837	2,209	0	0	0	239,498
1996	13,051	86,617	61,663	4,350	18,126	16,057	5,220	0	0	9,394	2,348	0	0	0	216,826
1997	15,917	97,929	69,389	4,918	20,493	17,171	5,902	0	0	20,105	2,393	1,505	0	0	255,722
1998	15,866	94,404	64,775	4,741	19,753	10,538	8,145	0	0	14,890	614	2,127	0	0	235,852
1999	13,871	101,810	49,959	4,624	19,265	13,520	29,439	0	0	0	1,654	0	4,651	0	238,795
2000	19,886	101,996	56,432	4,902	19,588	13,796	29,155	0	0	46,950	1,600	7,545	7,242	0	309,093
2001	16,277	127,363	48,709	5,426	20,397	14,499	36,141	0	0	137,398	1,552	19,888	7,025	1,940	434,676
2002	12,830	127,049	33,657	4,277	17,820	12,528	70,218	0	0	45,917	1,536	0	6,952	1,920	334,703

Table 3.30 (Continued)

	Distributions (Thousands of Dollars)														
Fiscal Year	University of Wyoming[2]	School Foundation[3]	Highway Fund[3,4,5]	Highway Fund County Roads	Cities and Towns	Cities, Towns, Counties, and Special Districts Capital Construction[4,5,6]	Capital Construction School Dist[5,6]	Counties[4]	State Aid to County Roads[4]	LRI[2,7]	Community Colleges[7]	Other	Transportation Enterprise[8]	General Fund Administrative	Totals[9]
Projected:															
2003	12,462	110,205	57,660	4,185	17,298	12,183	40,455	0	0	55,521	1,488	0	0	1,860	330,894
2004	13,400	118,500	62,000	4,500	18,600	13,100	43,500	0	0	59,700	1,600	0	0	2,000	336,900
2005	13,400	122,300	62,000	4,500	18,600	13,100	43,200	0	0	67,200	1,600	0	0	2,000	347,900
2006	13,400	125,000	62,000	4,500	18,600	13,100	34,200	0	0	72,600	1,600	0	0	2,000	347,000
2007	13,400	128,000	60,100	4,500	18,600	7,400	5,200	0	0	78,600	0	0	0	2,000	317,800
2008	13,400	130,400	60,100	4,500	18,600	7,400	5,200	0	0	83,400	0	0	0	0	325,000

1 Source: CREG (2003). In Year 2000 dollars.

2 Under the distribution formula in place for FY00, 6.75% of all mineral royalties in excess of $200 million would normally flow to the University when that entity's bonded indebtedness necessitated the expenditure of those funds. Because the University's bonds issued under this provision of law were retired, the Legislative Royalty Impact Assistance (LRI) account received the amount that otherwise would have flowed to the University, approximately $12.2 million.

3 In FY99 and FY00, mineral severance taxes and federal mineral royalties were diverted from the Highway Fund to the School Foundation Program account until a total of $20 million was received. This revenue diversion from the Highway fund was offset with additional fuel tax revenue. In FY01 and FY02, the diversion of revenues from these sources continued, however, the amount was not limited to a fixed dollar amount, rather it was a dollar for dollar swap in the amount raised by the fuel tax.

4 Impacted by the *PILT Restoration Act*, beginning in March of FY95. This act effectively diverted federal mineral royalty revenue from the Counties; Cities, Towns, Counties, & Special Districts Capital Construction; and State Aid to County Roads accounts to the Highway Fund; and replaced that revenue with an equal amount of Highway Fund coal severance tax.

5 Since FY93, the state has been receiving approximately $30.0 million per year in coal lease bonus revenue, which has been earmarked for these specific funds. The projected coal lease bonuses for the forecast period are $74.0 million in FY03, $47.3 million in FY04, $47.1 million in FY05, and $38.0 million in FY06.

6 In FY94, a total of $3.0 million of the revenues received by this account was redistributed to cities, towns, and counties in accordance with the sales tax distribution formula. Also in FY94, $4.1 million was redistributed to the General Fund.

7 Beginning in FY98, coal lease bonus revenues normally flowing to the Legislative Royalty Impact Assistance Account have been diverted to the School District Capital Construction Account.

8 In FY99, $4.5 million of Highway Fund federal mineral royalties were diverted to the Transportation Enterprise Account. In FY00, 01, and 02, $7.2 million in highway FMR funds were diverted to this account.

9 The FY95 total includes approximately $9.0 million in additional revenue, which was received as the result of an oil and gas audit settlement.

play an important role in supporting the management of federal lands. In 1976, Congress authorized federal land management agencies to share income with states and counties and provided a PILT program to help offset lost tax revenue (31 *United States Code* [U.S.C.] 6901-6907 [*Public Law* 103-397, October 22, 1994; *Public Law* 104-333, November 12, 1996; and *Public Law* 105-83, November 14, 1997]; 43 *Code of Federal Regulations* [C.F.R.] Part 1880 [65 *Federal Register* 51229-51234, August 23, 2000, effective September 22, 2000]). PILT payments are federal payments to local governments that help offset losses in property taxes due to nontaxable federal lands within their boundaries. PILT payments are administered by the BLM (Coupal et al. 2003).

PILT payments are based on three factors:

- eligible federal acres in the county,
- federal revenue-sharing going to the county the prior year, and
- county population up to the pre-determined ceiling.

These factors are used in two calculations, a standard and a minimum. The different calculations are compared to one another in an approach similar to that of federal income taxes. Instructions direct the use of the smaller or larger of two numbers. The Minimum Method Calculation is used in cases where significant revenue sharing in the previous year would mean no PILT in the current year for the county. The main difference between the Standard and Minimum Method Calculations is that the Minimum Method uses a different per acre rate and does not take into account the prior year's revenue sharing payments (see Coupal et al. [2003] for detailed calculations for each county).

Since 1998, PILT payments received by Wyoming have increased by 63.9% (Table 3.31). The three-county study area has experienced a similar increase. Lincoln County PILT payments have increased 74.2%, Sublette County payments increased 58.9%, and Sweetwater County PILT payments increased 58.0% over the past six years.

Table 3.31 Total PILT Payments and Total Acres.[1]

	PILT Payments/Acres					
Location	1998	1999	2000	2001	2002	2003
Wyoming						
Payment ($)	8,118,173	8,208,280	8,318,110	11,828,099	12,392,400	13,304,416
Acres	29,917,112	29,893,541	29,885,632	29,884,922	29,889,764	29,877,970
Lincoln County						
Payment ($)	384,723	406,667	418,646	598,093	617,577	670,171
Acres	1,946,836	1,946,805	1,946,765	1,946,631	1,947,558	1,947,558
Sublette County						
Payment ($)	258,703	247,508	256,483	360,764	376,237	411,150
Acres	2,432,160	2,432,000	2,431,960	2,431,960	2,431,305	2,431,305
Sweetwater County						
Payment ($)	910,456	929,377	949,649	1,281,416	1,333,882	1,438,845
Acres	4,609,862	4,606,891	4,606,891	4,606,888	4,606,888	4,606,799

[1] Coupal et al. (2003) and BLM (2003c), in year 2000 dollars, adjusted for inflation.

3.4.1.4 Property Taxes (Ad Valorem Taxes)

An ad valorem tax is a tax levied on a commodity as a percentage of its value. Ad valorem taxes on gas and oil in Wyoming go directly to the county in which the commodity is produced. Wyoming ad valorem taxes can be divided into two groups--production and property. Production taxes are levied on the assessed valuation of the amount of the commodity produced. Production ad valorem taxes are based on a percent of assessed value of production, the mineral, and the source (type of well or mine). Property taxes are levied on wells and producing equipment. The property tax rates are levied in mills (thousandths of a percent) set by each county. The overall state average for 2000 was 75.357 mills based on assessed valuation of the property (Foulke et al. 2001).

An ad valorem tax is based on the value of the property; to tax the property, a taxable value must be determined. Taxable value is calculated by determining the fair market value of the property or production, then the fair market value is multiplied by a taxation rate to calculate the taxable value.

The taxation rate depends on how the property is classified. Properties are classified in one of three areas:

- gross production of minerals and mine products (taxed on 100% of value);
- property used for industrial purposes (taxed on 11.5% of value); and
- all other property, real (i.e., land and property permanently attached to the land) and personal (i.e., movable property [e.g., mobile homes, construction equipment, mineral production] (taxed on 9.5% of value).

Once the taxable valuation has been calculated, it is multiplied by the mill levy (1/10 of $0.01 or $1 per $1,000 of taxable value) to determine the amount of taxes due. The number of mills in a tax district depends on how many mills each taxing entity requests. Wyoming state law limits most entities on how many mills they can levy. For example, the county can request a maximum of 8 mills, cities and towns get 8 mills to run their governments, and school districts are limited to 12 mills.

Mill levies vary depending on what tax district the property is in. For example, rural tax districts have levies for rural fire protection, and districts in the city limits have levies for running the city government. Unified school districts (elementary, junior high, and high school) and nonunified school districts (kindergarten through eighth grade) are mandated to collect a 25 mill levy for school purposes (W.S. 21-13-102(i) and (ii)) (some of which may be subject to recapture by the state based on average daily membership calculations) and counties are mandated to collected a 6 mill levy for school purposes (W.S. 21-13-201(a)).

The taxable valuation of all mineral production in Wyoming fell 18% from $12.9 billion in 1980 to $10.5 billion in 2000 (-1.1% average annual decline) (year 2000 dollars adjusted for inflation) (Wyoming Department of Revenue 2002). Foulke et al. (2001) believe that gas production, particularly, will drive future revenues higher for the foreseeable future. Assessed production values are presented in Table 3.32.

Wyoming Department of Revenue reports on property tax values indicate that in 2002 natural gas production contributed the greatest proportion of taxable value to the state (34.8%), followed by residential land and improvements (18.5%), mining production (15.9%), and oil production (9.7%) (Table 3.33).

Table 3.32 Total State-Assessed Mineral Production Valuations.[1]

	Taxable Valuation (Thousands of $)				
Mineral Type	1980	1990	2000	2001	2002
Oil	4,847,711	2,561,672	1,438,976	1,047,618	1,068,000
Natural Gas	1,402,442	1,057,631	3,365,841	3,765,627	1,894,848
Coal	1,616,744	1,487,154	1,336,116	1,461,147	1,500,000
Trona	290,327	236,359	206,219	202,916	203,520
All Other Minerals	256,679	52,660	59,909	59,256	57,600
Total Mineral Taxable Valuation	8,413,904	5,395,476	6,407,060	6,536,564	4,723,968
Other Property	4,493,344	3,019,549	4,135,036	4,297,663	4,466,016
Total	12,907,248	8,415,025	10,542,096	10,834,228	9,189,984

[1] CREG (2003), thousands of year 2000 dollars, adjusted for inflation.

Table 3.33 Proportionate Taxable Valuation of Various Classes of Property in Wyoming, 1998-2002.

	Proportion of Taxable Value[1] (Ranked Highest to Lowest According to 2002 Proportions)				
Property	1998	1999	2000	2001	2002
Natural gas production	19.2%	18.6%	20.6%	31.9%	34.8%
Residential lands and improvements	19.9%	22.6%	22.0%	18.5%	18.5%
Mining (coal, minerals, and non-minerals)	20.0%	41.6%	19.5%	15.2%	15.9%
Oil production	14.7%	8.8%	11.5%	13.7%	9.7%
Industrial and manufacturing property	8.9%	9.8%	8.7%	7.1%	7.4%
Commercial lands and improvements	1.5%	5.6%	5.2%	4.2%	4.4%
Railroads	1.7%	2.0%	2.2%	1.7%	1.8%
Electric/gas-privately owned	2.5%	2.6%	2.3%	1.6%	1.6%
Commercial personal property	1.5%	1.7%	1.6%	1.3%	1.3%
Agricultural lands	1.9%	2.0%	1.8%	1.3%	1.3%
Natural gas pipelines	0.9%	1.1%	1.1%	0.8%	1.0%
Electric-cooperatives	1.5%	1.1%	1.0%	0.7%	0.6%
Major telecommunications	0.7%	0.7%	0.807%	0.7%	0.6%
Residential personal property	0.6%	0.6%	0.572%	0.4%	0.4%
Liquid pipelines	0.6%	0.7%	0.672%	0.4%	0.4%
Rural telecommunications	0.2%	0.3%	0.232%	0.2%	0.2%
Cellular/reseller telecommunications[2]	<0.1%	0.1%	0.162%	0.1%	0.2%
Airlines	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
Electric-municipal	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%

[1] Columns may not total to 100% due to rounding. Wyoming Department of Revenue (1998, 1999, 2000, 2001, 2002).
[2] Designated as radio-telephones in 1998.

3.4.1.5 Sales and Use Tax

Wyoming has had sales and use taxes since 1935. Sales taxes apply to the retail sale of personal property or services within the state. A use tax is levied on any sale of any property outside the state of Wyoming for use, storage, or consumption inside the state of Wyoming.

Wyoming counties, cities, and towns benefit from sales and use tax collections. Each month, the treasurer's office in each county sends the sales tax collections to the Wyoming Department of Revenue, who distributes the money. Currently, two-thirds of the 4% sales tax collections go to the state general fund, and one-third (minus 1% for state administrative purposes) is returned to the cities, towns, and counties. The money returned to the cities and counties is based on where the purchase occurred and the population of the city or county (which is based on the last federal census). Counties that have 1% optional sales taxes or a 1% capital facilities tax keep 100% of the additional 1% collected, less state-imposed administrative costs. The state's share of the sales tax revenue is distributed to the General Fund. The portion returned to the counties and municipalities is distributed based on population. Beginning in 1973, Wyoming counties were granted the option to impose an additional 1% sales tax through public election. During fiscal year 2002, all counties except Fremont, Goshen, Park, Sublette, and Washakie were imposing this optional sales tax. The optional sales tax revenue, less state-imposed administrative costs, is returned to the county of origin.

In addition to the aforementioned county optional tax, any county, through public election, may impose an additional excise tax of up to 1% on retail sales made within the county. The revenue generated from this tax is designated solely for the planning, construction, furnishing, equipping, and debt servicing for any capital improvement project as authorized through public election. This tax is referred to as the 1% capital facilities option tax. During fiscal year 2002, Albany, Goshen, Laramie, Niobrara, Sheridan, Teton, and Uinta Counties were imposing the 1% capital facilities option tax, while Campbell and Sweetwater counties chose to impose 0.25% and 0.5%, respectively. Effective tax rates for the study area as of 2002 are listed in Table 3.34.

To derive an estimate of county gross sales, the specific county tax collection can be divided by the corresponding tax rate. County sales tax rates can fluctuate from year to year because county option taxes originate and expire at varying times; therefore, only the total state imposed sales tax (4%) is used for this analysis.

3.4.1.6 Use Tax

State use tax is imposed on purchases made outside a taxing jurisdiction for first use, storage, or other consumption within that jurisdiction. Thus, the use tax prevents sales tax avoidance or the payment of a lesser tax rate by making purchases outside of the taxing jurisdiction where first use, storage, or other consumption will occur. Wyoming taxing jurisdictions are the State of Wyoming and/or each Wyoming county. Use tax is a complement of sales tax. Effective January 1, 1981, the adoption of an optional sales tax required a change in the use tax rate of equal amount. State use tax is shared between state government and the county of origin (i.e., county where the tax was imposed) on the same distribution basis as sales tax. Therefore, the revised rate and allocation, as mentioned earlier in the sales tax description, applies here as well.

Table 3.34 Sales, Use, and Lodging Tax Rates by County (Effective April 1, 2003).[1]

Tax Rate	Lincoln	Sublette	Sweetwater
State Sales Tax Rate	4.0%	4.0%	4.0%
General Purpose Option Tax	1.0%	--	1.0%
Specific Purpose Option Tax	--	--	0.5%
Subtotal Sales and Use Tax Option	5.0%	4.0%	5.5%
Lodging Tax	2.0%[2]	3.0%	2.0%
Total Tax Rate	7.0%	7.0%	7.5%

1 Wyoming Department of Revenue (2003).
2 Lodging tax is imposed only in Afton (i.e., not on a county-wide base).

3.4.1.7 Lodging Tax

Cities, towns, and counties, by voter approval, may impose a lodging excise tax of up to 4% on all sleeping accommodations for guests staying less than 30 days. This tax extends to mobile accommodations such as tents, trailers, and campers, as well. All collections (less a 2% state administrative cost during the first year the tax is imposed and 1% thereafter) are distributed to the cities, towns, and counties of origin. At least 90% of the tax distributions must be used to promote travel and tourism within the county, city, or town imposing the tax. The amount remaining, not to exceed 10% of the total amount distributed, may be used for general revenue within the governmental entity imposing the tax.

3.4.2 Study Area Overview

3.4.2.1 Availability of Information

Reporting of tax and revenue information has evolved with the development of the internet and the ease of publishing large volumes of information. Most state agencies in Wyoming now distribute reports via the internet, and a significant number publish only on the internet (i.e., no hard copies are produced). This evolution has led to an unavailability of certain reports and information that predate 1998 (personal communication, July 8, 2003, with Christie Yurek, Validation Supervisor, Wyoming Department of Revenue, Administrative Services Division). Therefore, the information presented below covers the years 1998-2002.

Oil and gas field operations support employment in many industries. Firms whose primary activity is operating oil and gas wells, exploring for oil and gas, or providing oil and gas field services are included in SIC 13, mining--oil and gas extraction. But many employers in other industries such as wholesale trade and transportation, communications, and public utilities (TCPU) depend on business from oil and gas service companies (WDERP 1999). According to Bullard in WDERP (1999:Table 1 and Map 1), the Sublette and Sweetwater County economies are highly dependent on oil and natural gas extraction (15.2% and 5.8%, respectively), while Lincoln County is moderately dependent (4.2%) on the oil and gas industry.

While it is not possible to determine the proportion of funds each city and county spends on each item of infrastructure and services derived from oil and gas revenues, example budgets for Big Piney, Pinedale, and Sublette County are presented to illustrate the distribution proportions of all revenues and expenditures (Tables 3.35-3.37); the budget for the town of Marbleton was not available and was stipulated to have insufficient detail to provide the information presented for the other communities (personal communication, May 21, 2004, Alice Griggs, Marbleton Town Clerk). According to Ms. Griggs, all funds received by Marbleton are distributed to infrastructure (streets), the fire department, and the Sheriff's Department. Funds received by Sublette County in recent years have been used for capital improvements, such as a new courthouse, jail, land fill, senior centers, and public clinic upgrade, and surpluses have been placed in reserve accounts to develop savings for future requirements (personal communication, May 20, 2004, with Mary Langford, Sublette County Clerk). Funds received in Big Piney in excess of normal operating costs have also gone to capital improvements (personal communication, May 20, 2004, with Vickie Brown, Big Piney Town Clerk).

3.4.2.2 State Royalties

In total, royalties in Wyoming arising from natural gas production on state lands increased by nearly 62.0% from 1998 to 2002 (Table 3.38) (Wyoming Office of State Lands and Investments [WOSLI] 2002). Oil royalties have been variable, although generally growing. Overall, oil royalties grew 6% from 1998 to 2002.

In Lincoln County, royalties from natural gas production on state lands fell 21.5% from 1998 to 2002 (WOSLI 2002) (Table 3.38). Oil royalties have risen and fallen in Lincoln County, but generally declined (-17.3%) from 1998 to 2002. The only other mineral royalty paid to Lincoln County in 2001 and 2002 from state lands was for sand and gravel (WOSLI 2002).

Table 3.35 Big Piney Example Budgets.[1]

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated[2])	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
REVENUES										
Taxes										
Property Taxes	9,500	1.5	9,500	1.1	17,000	2.0	14,000	1.5	NA	--
Gasoline Tax	12,262	2.0	14,249	1.7	16,833	2.0	11,501	1.2	NA	--
Sales and Use Tax	225,000	36.1	170,072	20.4	303,436	35.7	414,080	44.1	NA	--
Electric Franchise	3,000	0.5	3,000	0.4	3,000	0.4	3,000	0.3	NA	--
Telephone Franchise	1,000	0.2	1,000	0.1	1,000	0.1	1,000	0.1	NA	--
Cable TV Franchise	600	0.1	600	0.1	600	0.1	600	0.1	NA	--
Special Fuels Tax	2,228	0.4	1,920	0.2	2,267	0.3	2,364	0.3	NA	--
Severance Tax	21,335	3.4	41,959	5.0	17,411	2.1	17,397	1.9	NA	--
Mineral Royalty Allocation	62,670	10.1	67,026	8.0	53,263	6.3	53,418	5.7	NA	--
Cigarette Tax	4,042	0.6	4,508	0.5	4,338	0.5	4,288	0.5	NA	--
Motor Vehicle Tax	6,000	1.0	6,000	0.7	5,000	0.6	5,000	0.5	NA	--
Municipal Trust (1 time)	0	0.0	117,744	14.1	0	0.0	0	0.0	NA	--
Total Tax Revenues	347,637	55.8	437,578	52.4	424,148	49.9	526,648	56.1	526,648	56.1
Licenses and Permits										
Business Licenses	1,200	0.2	1,200	0.1	1,500	0.2	500	0.1	NA	--
Building Permits	40	0.0	40	0.0	100	0.0	50	0.0	NA	--
Animal Licenses	50	0.0	50	0.0	50	0.0	50	0.0	NA	--
Totals Licenses and Permits	1,290	0.2	1,290	0.2	1,650	0.2	600	0.1	600	0.1
Other Revenues										
Liquor License Fees	3,750	0.6	3,750	0.4	3,750	0.4	3,750	0.4	3,750	0.4
Fines and Forfeitures	1,500	0.2	1,500	0.2	1,000	0.1	1,000	0.1	1,000	0.1
Interest Earnings	13,000	2.1	20,000	2.4	20,000	2.4	20,000	2.1	NA	--
Rents and Concessions	0	0.0	0	0.0	0	0.0	0	0.0	NA	--

Table 3.35 (Continued)

Government/ Line Item	Fiscal Year Revenues/Disbursements ($) 1999-2000 Revenue/ Expense	1999-2000 % of Total	2000-2001 Revenue/ Expense	2000-2001 % of Total	2001-2002 Revenue/ Expense	2001-2002 % of Total	2002-2003 Revenue/ Expense	2002-2003 % of Total	2003-2004 (Estimated[2]) Revenue/ Expense	2003-2004 (Estimated[2]) % of Total
PP&L Collection Services	600	0.1	600	0.1	600	0.1	600	0.1	NA	--
Sale of Fixed Assets	0	0.0	0	0.0	0	0.0	0	0.0	NA	--
Sundry Revenues	100	0.0	100	0.0	100	0.0	100	0.0	NA	--
Miscellaneous	--	--	--	--	--	--	--	--	20,700	2.2
Contributions and Transfers	254,723	40.9	369,511	44.3	398,000	46.9	386,102	41.1	386,102	41.1
Total Other Revenues	273,673	44.0	395,461	47.4	423,450	49.9	411,552	43.8	411,552	43.8
TOTAL REVENUES	622,600	100.0	834,329	100.0	849,248	100.0	938,800	100.0	938,800	100.0
EXPENDITURES										
Legislative	4,915	0.8	3,715	0.4	4,715	0.6	3,715	0.4	3,715	0.4
Court	6,760	1.1	7,560	0.9	8,215	1.0	8,240	0.9	8,240	0.9
Administrative	53,270	8.6	102,145	12.2	98,123	11.5	104,560	11.1	104,560	11.1
Social Services/Holidays	19,880	3.2	20,100	2.4	23,550	2.8	33,578	3.6	33,678	3.6
Buildings	10,435	1.7	20,735	2.5	25,112	2.9	28,637	3.1	28,637	3.1
Time and Temperature	100	0.0	600	0.1	100	0.0	200	0.0	200	0.0
Parks	3,000	0.5	10,000	1.2	10,000	1.2	18,077	1.9	18,077	1.9
Health and Safety	6,130	1.0	5,130	0.6	5,090	0.6	5,696	0.6	5,696	0.6
Police Department[3]	62,975	10.1	56,080	6.7	61,034	7.2	68,855	7.3	68,866	7.3
Fire Protection[4]	17,000	2.7	17,000	2.0	17,000	2.0	17,000	1.8	17,000	1.8
Airport Board	4,000	0.6	4,000	0.5	4,000	0.5	4,000	0.4	4,000	0.4
Streets	166,075	26.7	167,348	20.1	168,075	19.7	146,545	15.6	146,545	15.6
Capital Expenditures	266,026	42.7	391,390	46.9	420,417	49.3	484,296	51.6	484,296	51.6
Unexpended funds	2,037	0.3	28,527	3.4	6,818	0.8	15,401	1.6	15,401	1.6
Total Expenditures	622,603	100.0	834,330	100.0	852,249	100.0	938,800	100.0	938,911	100.0

Table 3.35 (Continued)

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated[2])	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
WATER FUND										
Fund Revenue	69,500	--	76,500	--	76,500	--	76,500	--	76,500	--
Fund Expenses										
Payroll	11,360	16.3	9,796	12.8	700	0.9	13,876	18.1	19,878	24.1
Administrative	4,315	6.2	4,615	6.0	6,700	8.8	4,700	6.1	4,700	5.7
Operation	43,900	63.2	53,600	70.1	61,615	80.5	56,569	73.9	56,569	68.6
Unexpended Funds	9,925	14.3	8,489	11.1	7,485	9.8	1,355	1.8	1,355	1.6
Total Fund Expenses	69,500	100.0	76,500	100.0	76,500	100.0	76,500	100.0	82,502	100.0
SEWER FUND										
Fund Revenue	30,400	--	30,400	--	31,000	--	31,875	--	31,875	--
Fund Expenses										
Payroll	14,360	47.2	12,126	39.9	835	2.7	13,876	43.5	13,876	43.5
Administrative	2,245	7.4	2,445	8.0	4,230	13.6	2,480	7.8	2,480	7.8
Operation	6,550	21.5	14,650	48.2	18,600	60.0	15,519	48.7	15,519	48.7
Unexpended Funds	7,245	23.8	1,179	3.9	7,335	23.7	0	0.0	0	0.0
Total Fund Expenses	30,400	100.0	30,400	100.0	31,000	100.0	31,875	100.0	31,875	100.0

1 Source: Town of Big Piney budget reports.

2 Totals are as presented on http://www.bigpiney.com/government/bigpiney/budget4.htm (accessed May 20, 2004).

3 All law enforcement is provided by the Sublette County Sheriff's Department.

4 Volunteer Fire Department.

Table 3.36 Pinedale Example Budgets.[1]

Government/ Line Item	1999-2000 Revenue/ Expense	1999-2000 % of Total	2000-2001 Revenue/ Expense	2000-2001 % of Total	2001-2002 Revenue/ Expense	2001-2002 % of Total	2002-2003 Revenue/ Expense	2002-2003 % of Total	2003-2004 Revenue/ Expense	2003-2004 % of Total
	Fiscal Year Revenues/Disbursements ($)									
REVENUES										
Motor Vehicle Tax	16,150	1.6	18,700	1.8	24,700	2.2	24,700	1.5	37,000	1.8
Sales and Use Tax	500,000	50.5	500,000	48.9	588,580	53.0	1,065,510	65.0	1,433,043	68.3
Cigarette Tax	16,700	1.7	12,246	1.2	5,000	0.5	5,394	0.3	6,400	0.3
Gasoline Tax	14,800	1.5	17,423	1.7	53,887	4.9	50,300	3.1	42,127	2.0
Mineral Royalties	137,000	13.8	139,000	13.6	143,697	12.9	147,420	9.0	147,420	7.0
Mineral Severance	41,100	4.2	45,800	4.5	60,340	5.4	60,256	3.7	60,256	2.9
Farm Loan grant	45,000	4.5	45,000	4.4	0	0.0	50,000	3.1	0	0.0
L & WCF Grant	0	0.0	0	0.0	0	0.0	0	0.0	15,000	0.7
WY Highway Park Developm	40,200	4.1	13,181	1.3	0	0.0	13,181	0.8	5,000	0.2
State Forestry Division	0	0.0	0	0.0	1,500	0.1	1,500	0.1	3,000	0.1
Property Tax	70,000	7.1	80,000	7.8	80,000	7.2	85,000	5.2	107,000	5.1
Dog Licenses[2]	1,500	0.2	1,700	0.2	1,700	0.2	1,700	0.1	2,500	0.1
Dog Impound Fees[2]	900	0.1	500	0.0	700	0.1	700	0.0	0	0.0
Building Permits	2,000	0.2	2,000	0.2	2,000	0.2	2,500	0.2	5,000	0.2
Liqour Licenses	10,900	1.1	10,280	1.0	10,919	1.0	11,135	0.7	12,200	0.6
Franchise Fees	20,000	2.0	23,500	2.3	30,000	2.7	35,000	2.1	30,000	1.4
Court Costs and Fines	11,245	1.1	13,745	1.3	13,745	1.2	13,745	0.8	10,100	0.5
Interest	50,000	5.1	56,000	5.5	56,000	5.0	37,500	2.3	37,500	1.8
Fire Department	8,800	0.9	39,785	3.9	34,660	3.1	30,000	1.8	140,120	6.7
Miscellaneous	3,000	0.3	3,000	0.3	3,000	0.3	3,000	0.2	3,000	0.1
Total Revenues	989,295	100.0	1,021,860	100.0	1,110,428	100.0	1,638,541	100.0	2,096,666	100.0
EXPENDITURES										
Administration	217,220	24.6	223,030	21.3	242,544	21.1	311,200	23.1	325,255	21.0
Municipal Court	13,950	1.6	14,090	1.3	15,183	1.3	15,298	1.1	15,874	1.0
Animal Control	31,127	3.5	28,550	2.7	30,716	2.7	30,984	2.3	52,312	3.4

Table 3.36 (Continued)

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
Fire Protection[1]	50,250	5.7	85,625	8.2	86,950	7.6	82,790	6.1	194,060	12.5
Streets	147,248	16.7	257,976	24.6	243,840	21.2	371,340	27.6	381,840	24.6
Pest	14,641	1.7	14,641	1.4	13,841	1.2	9,468	0.7	25,137	1.6
Recreation	17,000	1.9	12,000	1.1	11,000	1.0	11,000	0.8	11,000	0.7
Parks	44,424	5.0	47,424	4.5	77,320	6.7	55,820	4.1	56,900	3.7
Planning	2,000	0.2	2,000	0.2	3,000	0.3	4,500	0.3	4,500	0.3
Maintenance	133,597	15.1	131,853	12.6	110,800	9.6	140,800	10.5	219,500	14.2
Airport	27,500	3.1	36,240	3.5	56,100	4.9	112,200	8.3	32,500	2.1
Sanitation	22,000	2.5	32,000	3.0	62,000	5.4	3,500	0.3	3,000	0.2
Total Expenditures	883,593	100.0	1,049,246	100.0	1,150,374	100.0	1,347,115	100.0	1,549,115	100.0
WATER FUND										
Revenue[4]	1,063,871		489,500		1,912,064		638,975		400,332	
Expenses	237,749		429,500		846,852		302,016		334,745	
SEWER FUND										
Revenue	150,000		150,500		260,500		459,500		493,899	
Expenses	150,000		150,500		103,500		118,800		123,080	

1 Source: Town of Pinedale annual appropriation ordinances.

2 Dog licenses/impound fees were combined in the 2003-2004 appropriation ordinance.

3 All law enforcement is provided by the Sublette County Sheriff's Department.

4 Volunteer Fire Department.

5

Investment Board and associated reallocations of funds.

Table 3.37 Sublette County Example Budgets.[1]

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated--Approved by Board)	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
NON-PROPERTY TAX REVENUES										
Gas Tax	217,092	5.5	187,709	3.7	242,976	3.7	268,475	4.0	275,000	4.1
Forest Service	145,752	3.7	146,270	2.9	177,842	2.7	180,680	2.7	187,202	2.8
Severance Tax	61,616	1.6	152,838	3.0	97,554	1.5	51,410	0.8	64,016	1.0
PILT	240,300	6.1	256,483	5.0	391,914	5.9	442,097	6.6	410,577	6.1
County Attorney	23,000	0.6	23,000	0.5	--	0.0	46,000	0.7	23,000	0.3
URESA	--	0.0	1,008	0.0	--	0.0	--	0.0	--	0.0
Emergency Management & S&R	19,414	0.5	32,643	0.6	31,124	0.5	15,422	0.2	25,000	0.4
County Clerk Fees	68,699	1.7	78,013	1.5	70,877	1.1	124,041	1.9	120,000	1.8
Clerk of Court Fees	9,296	0.2	12,976	0.3	27,000	0.4	17,213	0.3	12,000	0.2
Planning and Zoning Fees	13,850	0.4	16,132	0.3	15,779	0.2	19,574	0.3	19,500	0.3
Sheriff's Fees	29,393	0.7	16,824	0.3	18,200	0.3	23,412	0.4	24,000	0.4
Sales and Use Tax	1,247,050	31.6	2,221,341	43.5	3,142,099	47.5	3,027,793	45.3	3,000,000	44.8
Cigarette Tax	4,059	0.1	3,975	0.1	5,005	0.1	3,602	0.1	4,098	0.1
Interest	308,981	7.8	456,225	8.9	291,118	4.4	380,627	5.7	300,000	4.5
Liquor Licenses	418	0.0	12,735	0.2	563	0.0	13,065	0.2	6,750	0.1
Big Piney & Pinedale Metro	286,960	7.3	273,810	5.4	385,009	5.8	341,248	5.1	352,882	5.3
Miscellaneous Fees	69,658	1.8	27,992	0.5	255,163	3.9	209,740	3.1	30,000	0.4
Special Fuel	274,986	7.0	255,610	5.0	316,517	4.8	369,791	5.5	350,000	5.2
5%	15,123	0.4	26,762	0.5	23,000	0.3	25,418	0.4	20,000	0.3
Nurse	29,096	0.7	28,439	0.6	38,059	0.6	40,360	0.6	35,000	0.5
Motor Vehicles	1,948	0.0	210,633	4.1	290,852	4.4	288,672	4.3	250,000	3.7
Pinedale Preschool	10,395	0.3	--	0.0	--	0.0	--	0.0	--	0.0
Business Licenses	--	0.0	200	0.0	--	0.0	280	0.0	200	0.0
Landfill	323,731	8.2	353,203	6.9	400,000	6.0	422,444	6.3	400,000	6.0
Federal Mineral Royalty	17,922	0.5	15,403	0.3	6,000	0.1	16,004	0.2	10,000	0.1

Table 3.37 (Continued)

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated--Approved by Board)	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
U.S. Forest-Law Enforcement	10,310	0.3	9,500	0.2	9,500	0.1	16,196	0.2	9,500	0.1
Contract-Prisoners from Other Counties	18,909	0.5	39,752	0.8	16,500	0.2	--	0.0	168,000	2.5
Car Rentals	--	0.0	4,916	0.1	2,200	0.0	--	0.0	--	0.0
Sales Tax Penalty	7,051	0.2	10,698	0.2	10,000	0.2	9,837	0.1	8,000	0.1
Fuel Reimbursement (W&P, Fair)	4,994	0.1	7,062	0.1	5,800	0.1	6,728	0.1	6,000	0.1
COPS Universal Grant	217,068	5.5	47,635	0.9	--	0.0	22,215	0.3	48,000	0.7
E-911 Reimbursement	25,448	0.6	26,057	0.5	28,100	0.4	32,925	0.5	30,000	0.4
Donations-SO and DARE	--	0.0	--	0.0	1,800	0.0		0.0	2,000	0.0
Search and Rescue	6,407	0.2	10,841	0.2	--	0.0		0.0	12,000	0.2
County Court Jury and Reimbursement	952	0.0	6,319	0.1	1,800	0.0	13,015	0.2	2,000	0.0
Vaccine	--	0.0	--	0.0	--	0.0		0.0	6,000	0.1
Family Planning	724	0.0	600	0.0	--	0.0		0.0	--	0.0
Health Fair	--	0.0	--	0.0	--	0.0		0.0	7,000	0.1
State-County Road Fund	183,000	4.6	--	0.0	287,910	4.3	252,762	3.8	298,688	4.5
CFM Funds	50,000	1.3	--	0.0	--	0.0	--	0.0	--	0.0
COPS Equipment Grant	--	0.0	16,825	0.3	--	0.0	--	0.0	--	0.0
COPS in School/Resource Office	--	0.0	46,719	0.9	--	0.0	--	0.0	--	0.0
JAIBG 1998-1999	--	0.0	28,406	0.6	--	0.0	--	0.0	95,542	1.4
JAIBG-Resource Grant	--	0.0	--	0.0	--	0.0	--	0.0	--	0.0
WDOT-Speed Grant	--	0.0	6,666	0.1	--	0.0	--	0.0	--	0.0
Sanatarian Inspection Fees	--	0.0	4,605	0.1	3,698	0.1	3,718	0.1	3,000	0.0
Historic Preservation	--	0.0	4,987	0.1	--	0.0	--	0.0	--	0.0
OJJDP Grant	--	0.0	--	0.0	10,640	0.2	--	0.0	--	0.0
WCCA Grant	--	0.0	14,598	0.3	--	0.0	--	0.0	--	0.0
Health Department Initiative	--	0.0	3,000	0.1	--	0.0	--	0.0	--	0.0

Table 3.37 (Continued)

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated--Approved by Board)	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
Historic Preservation	--	0.0	4,987	0.1	--	0.0	--	0.0	--	0.0
LLEBG Grant	--	0.0	--	0.0	14,249	0.2	--	0.0	25,242	0.4
Fire Board Reimbursement	--	0.0	--	0.0	--	0.0	--	0.0	10,000	0.1
Jobs & Growth Reconciliation Distribution	--	0.0	--	0.0	--	0.0	--	0.0	28,729	0.4
VEST Grant	--	0.0	--	0.0	--	0.0	--	0.0	1,500	0.0
Drinking Enforcement Grant	--	0.0	--	0.0	--	0.0	--	0.0	11,000	0.2
Total Revenue Other than Property Taxes [3]	3,943,602	100.0	5,104,397	100.0	6,618,848	100.0	6,684,764	100.0	6,691,426	100.0
PROPERTY TAX REVENUES										
General Fund	3,428,191	60.0	4,616,279	45.2	8,721,419	66.3	10,466,887	79.6	9,616,995	85.7
Fair	112,452	2.0	176,921	1.7	191,156	1.5	293,312	2.2	276,436	2.5
Airport	64,629	1.1	70,244	0.7	101,138	0.8	95,000	0.7	115,500	1.0
Library	349,843	6.1	396,500	3.9	370,291	2.8	517,720	3.9	520,495	4.6
Museum	136,841	2.4	69,495	0.7	105,736	0.8	147,085	1.1	198,865	1.8
Recreation	112,301	2.0	94,645	0.9	251,348	1.9	548,573	4.2	--	0.0
Fire	335,679	5.9	285,989	2.8	466,320	3.5	1,081,648	8.2	487,688	4.3
Total Revenue from Taxes	5,710,073	100.0	10,207,408	100.0	13,150,225	100.0	13,150,225	100.0	11,215,979	100.0
GENERAL FUND APPROPRIATIONS										
Specific Appropriations										
County Commissioners	107,175	1.4	194,486	2.7	181,531	1.6	127,410	0.8	204,700	1.2
County Clerk	128,559	1.7	137,216	1.9	132,612	1.2	134,125	0.8	169,615	1.0
County Treasurer	101,674	1.3	104,790	1.5	130,549	1.2	142,931	0.9	160,378	1.0
County Assessor	171,607	2.3	147,454	2.1	193,893	1.8	200,770	1.3	230,503	1.4
County Attorney	141,772	1.9	148,409	2.1	152,461	1.4	196,732	1.2	214,807	1.3
Clerk of Court	113,383	1.5	108,509	1.5	115,422	1.0	101,164	0.6	174,547	1.1

Table 3.37 (Continued)

Government/ Line Item	1999-2000 Revenue/ Expense	1999-2000 % of Total	2000-2001 Revenue/ Expense	2000-2001 % of Total	2001-2002 Revenue/ Expense	2001-2002 % of Total	2002-2003 Revenue/ Expense	2002-2003 % of Total	2003-2004 (Estimated-- Approved by Board) Revenue/ Expense	2003-2004 (Estimated-- Approved by Board) % of Total
	Fiscal Year Revenues/Disbursements ($)									
Recycling	--	0.0	--	0.0	--	0.0	--	0.0	123,672	0.8
GIS	30,868	0.4	32,570	0.5	43,012	0.4	38,314	0.2	48,171	0.3
County Engineer	4,063	0.1	5,058	0.1	3,300	0.0	9,247	0.1	10,000	0.1
Courthouse and Jail[2]	233,229	3.1	508,689	7.1	3,517,643	32.0	4,326,957	27.3	3,382,200	20.6
Election	2,964	0.0	24,383	0.3	1,880	0.0	28,692	0.2	2,225	0.0
Zoning and Land Planning	81,929	1.1	89,853	1.3	99,206	0.9	118,037	0.7	120,168	0.7
Detention	311,607	4.1	348,275	4.9	342,937	3.1	507,005	3.2	1,278,212	7.8
Communication	245,688	3.3	247,180	3.5	298,268	2.7	250,209	1.6	315,363	1.9
Law Enforcement[2]	1,145,521	15.2	1,208,411	16.9	1,242,653	11.3	1,342,391	8.5	1,843,227	11.2
County Coroner	8,476	0.1	15,768	0.2	19,523	0.2	24,005	0.2	26,857	0.2
County Health	73,454	1.0	75,471	1.1	94,455	0.9	96,415	0.6	124,147	0.8
Health Officer and Sanitarian	26,370	0.3	27,901	0.4	33,461	0.3	33,190	0.2	86,740	0.5
Road and Bridge	1,702,815	22.6	1,987,383	27.9	2,215,692	20.1	2,693,890	17.0	3,651,063	22.2
Transfer Station	61,398	0.8	63,000	0.9	70,426	0.6	108,110	0.7	48,200	0.3
Sanitary Landfill	272,275	3.6	435,992	6.1	501,337	4.6	723,872	4.6	735,023	4.5
Drug Court	--	0.0	--	0.0	--	0.0	--	0.0	91,500	0.6
Emergency Management	33,147	0.4	29,403	0.4	58,109	0.5	51,431	0.3	108,112	0.7
County Extension Office	38,677	0.5	34,440	0.5	59,098	0.5	66,832	0.4	96,484	0.6
Total Specific Appropriations	5,036,651	66.8	5,974,641	83.7	9,507,468	86.4	11,321,729	71.3	13,245,914	80.6
Other General Fund Appropriations										
Financial Administration	31,726	0.4	43,072	0.6	49,174	0.4	59,820	0.4	60,000	0.4
Wyoming Business Council	--	0.0	--	0.0	2,064	0.0	2,064	0.0	--	0.0
FICA, Insurance, Retirement	649,991	8.6	688,882	9.7	1,006,478	9.1	1,149,481	7.2	1,200,000	7.3
County Officer's Expense	7,966	0.1	9,429	0.1	14,311	0.1	19,988	0.1	20,000	0.1
Printing and Publication	36,765	0.5	35,943	0.5	38,654	0.4	30,209	0.2	40,000	0.2
Postage	19,610	0.3	20,120	0.3	20,190	0.2	24,101	0.2	27,000	0.2

Table 3.37 (Continued)

Government/ Line Item	1999-2000 Revenue/ Expense	1999-2000 % of Total	2000-2001 Revenue/ Expense	2000-2001 % of Total	2001-2002 Revenue/ Expense	2001-2002 % of Total	2002-2003 Revenue/ Expense	2002-2003 % of Total	2003-2004 (Estimated--Approved by Board) Revenue/ Expense	2003-2004 (Estimated--Approved by Board) % of Total
Telephone	3,704	0.0	2,882	0.0	2,801	0.0	2,760	0.0	4,000	0.0
CPA Audit	19,700	0.3	20,400	0.3	21,400	0.2	23,497	0.1	22,500	0.1
Grant-Historic Survey	4,824	0.1	2,716	0.0	2,807	0.0	--	0.0	10,023	0.1
Senior Citizens-Big Piney	20,000	0.3	27,470	0.4	31,500	0.3	35,000	0.2	35,000	0.2
Senior Citizens-Pinedale	20,000	0.3	25,000	0.4	30,000	0.3	35,000	0.2	45,000	0.3
Retirement Center	--	0.0	--	0.0	--	0.0	7,569	0.0	--	0.0
SAFV Task Force	9,471	0.1	7,321	0.1	10,000	0.1	10,883	0.1	13,950	0.1
Office Rent	1,968	0.0	5,728	0.1	1,968	0.0	1,968	0.0	1,968	0.0
Worker's Compensation	46,147	0.6	36,371	0.5	83,295	0.8	99,038	0.6	125,000	0.8
Unemployment Compensation	9,920	0.1	1,908	0.0	6,006	0.1	9,680	0.1	10,000	0.1
Pre-School Grant	21,395	0.3	16,000	0.2	10,000	0.1	15,000	0.1	15,000	0.1
Community Food Closet	--	0.0	--	0.0	--	0.0	--	0.0	6,000	0.0
McKenzie Meningitis Foundation	--	0.0	--	0.0	--	0.0	--	0.0	6,000	0.0
Learning Center	107,100	1.4	--	0.0	--	0.0	--	0.0	20,000	0.1
Discovery Center	--	0.0	--	0.0	--	0.0	--	0.0	10,100	0.1
Scholarship	--	0.0	--	0.0	--	0.0	--	0.0	3,100	0.0
Wyoming Community Foundation	--	0.0	--	0.0	--	0.0	4,287	0.0	--	0.0
Skyline Drive Plowing	747	0.0	--	0.0	--	0.0	--	0.0	--	0.0
MAD #2	--	0.0	1,418	0.0	--	0.0	--	0.0	--	0.0
Library Addition	--	0.0	--	0.0	42,444	0.4	1,460,707	9.2	340,000	2.1
Hockey Rink	--	0.0	--	0.0	--	0.0	62,530	0.4	800,000	4.9
Museum Projects	--	0.0	--	0.0	--	0.0	24,063	0.2	38,450	0.2
PDR Working Group	--	0.0	--	0.0	--	0.0	26,161	0.2	30,000	0.2
Industrial Site Road Project	--	0.0	--	0.0	--	0.0	97,500	0.6	--	0.0
Recycling Buildings	--	0.0	--	0.0	--	0.0	128,568	0.8	--	0.0
Mosquito Research	--	0.0	--	0.0	--	0.0	1,258	0.0	50,000	0.3

Table 3.37 (Continued)

	Fiscal Year Revenues/Disbursements ($)									
	1999-2000		2000-2001		2001-2002		2002-2003		2003-2004 (Estimated--Approved by Board)	
Government/ Line Item	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total	Revenue/ Expense	% of Total
New Fork Willow Creek Road	--	0.0	--	0.0	--	0.0	1,038	0.0	--	0.0
CDBG-The Learning Center	250,000	3.3	--	0.0	--	0.0		0.0		0.0
Victim Assistance	1,000	0.0	8,000	0.1	11,022	0.1	11,000	0.1	--	0.0
Multi-purpose Building/Ag. Center	920,550	12.2	101,713	1.4	876	0.0	--	0.0	20,000	0.1
Soil Conservation	63,696	0.8	55,379	0.8	76,310	0.7	86,441	0.5	164,000	1.0
County Court Jury	1,545	0.0	4,404	0.1	2,188	0.0	764	0.0	2,000	0.0
Fine Arts	--	0.0	5,000	0.1	--	0.0	--	0.0	--	0.0
Shelter Park Sewer Line	--	0.0	41,101	0.6	218	0.0	--	0.0	--	0.0
Senior Citizens Facilities	--	0.0	--	0.0	37,709	0.3	1,125,659	7.1	68,000	0.4
CDBG-The Learning Center	250,000	3.3	--	0.0	--	0.0	--	0.0	--	0.0
Total Other General Fund Appropriations	2,497,825	33.2	1,160,257	16.3	1,501,415	13.6	4,556,034	28.7	3,187,091	19.4
Total General Fund Appropriations	7,534,476	100.0	7,134,898	100.0	11,008,883	100.0	15,877,763	100.0	16,433,005	100.0

1 Source: Sublette County annual budget reports.

2 All law enforcement in Sublette County is provided by the Sublette County Sheriff's Department.

3 Official county budget records indicated a different total for fiscal years 1999-2000 ($3,943,601) and 2000-2001 ($5,081,812).

4 "Civil Defense" prior to 2000-2001.

In contrast, Sublette County has experienced significant increases in royalties from natural gas and oil production on state lands. Royalties from natural gas increased by 81.9% from 1998 to 2002 (Table 3.38) (WOSLI 2002). Oil royalties increased even more dramatically (155.9%) from 1998 to 2002. The only other mineral royalty paid to Sublette County in 2001 and 2002 from state lands was for sand and gravel (WOSLI 2002).

Royalties from natural gas production on state lands increased by more than 17.1% (3.2% annual average growth) from 1998 to 2002 (Table 3.38) (WOSLI 2002). Oil royalties also increased (20.6%) in Sweetwater County from 1998 to 2002. Sweetwater County received most of its royalties from (and is the only county in Wyoming to receive royalties from) trona mining, but also received royalties from coal (2000, 2001, 2002); limestone (2000); uranium (2002); and sand and gravel (2001, 2002).

Table 3.38 Schedule of Oil and Natural Gas Royalties from State Lands Received by State and Counties, 1998-2002.[1,2]

	Royalties (Thousands of $)				
Location	1998	1999	2000	2001	2002
Natural Gas					
Wyoming	12,711	11,717	15,906	37,641	20,587
Lincoln County	1,815	1,572	1,753	3,280	1,424
Sublette County	2,736	2,450	3,036	7,125	4,978
Sweetwater County	2,592	2,702	3,276	5,891	3,036
Oil					
Wyoming	8,467	5,307	10,348	11,590	8,937
Lincoln County	156	135	162	169	129
Sublette County	333	258	454	734	852
Sweetwater County	257	199	437	428	310

1 WOSLI (2002), in thousands of year 2000 dollars, adjusted for inflation.
2 Royalty amounts include sales of by products (i.e., natural gas liquids, sulfur, carbon dioxide, and helium) and prior period adjustments.

3.4.3 Ad Valorem Valuation and Taxes Levied

Due to changes in agency reporting methods, information from 1980 and 1990 was only minimally available; therefore, information for a 5-year study period from 1998-2002 is presented in this section. Ad valorem valuations for the study area are presented in Table 3.39, and actual ad valorem taxes levied for 5-year study period are presented in Table 3.40. Taxes and actual mills for sample year 2003 are presented in Table 3.41-3.47 to illustrate source and allocation of ad valorem taxes in the most recent fiscal year. These actual taxes were not adjusted for inflation.

3.4.3.1 Wyoming

Between 1980 and 2000, the total gross real and personal property valuation in Wyoming fell 44.6% (Table 3.39). However, from 1998 to 2002, total gross real and personal property valuation increased 45.7%. Over the 20-year study period, assessed mineral valuation fell 23.1%; however, from 1998 to 2002, there was an increase of 51.9%. Between 1980 and 2000, non-mineral assessments dropped by 84.8%. In contrast to the recovery seen in other areas, non-mineral assessments only increased 5.1% from 1998 to 2002 (see Table 3.39).

Total ad valorem county taxes levied in Wyoming increased 35.5% from 1998 to 2002; total municipal levies increased 9.5%; total special district taxes increased 23.7%; total education taxes increased 31.0%; and total ad valorem taxes levied in the state increased 30.9% (see Table 3.40).

3.4.3.2 Lincoln County

Lincoln County experienced dramatic changes in valuations during the 1998 to 2002 period (Table 3.39). From 1998 to 2002, mining (mineral, coal, non-metal) fell 52.1%, although total state-assessed minerals in Lincoln County increased by 30.8%. Oil and gas were not reported in Lincoln County until 2001; however, there was a 10.7% increase from 2001 to 2002. Assessment for agricultural land fell 10.3% from 1998 to 2002. Commercial land, improvements, and personal property increased by 52.2% during that same time period. Total gross valuation for Lincoln County increased 21.5% from 1998 to 2002, while LaBarge's municipal valuation actually fell by 14.8% (see Table 3.39).

Table 3.39 Assessed Property Valuations for the State and Study Area.[1]

	Assessed Property Values (Thousands of $)						
Location	1980[2]	1990[2]	1998	1999	2000	2001	2002
Wyoming							
Agricultural Land	--	--	147,586	145,384	145,954	137,954	136,668
Commercial Land, Improvements, and Personal Property	--	--	518,249	525,600	534,245	563,080	609,808
Residential Land, Improvements, and Personal Property	--	--	1,615,472	1,678,735	1,779,786	1,937,840	2,031,913
Mining (Mineral, Coal, Non-metal)	--	--	281,160	289,140	256,793	241,247	248,932
Oil and Gas	--	--	135,894	134,468	158,016	173,707	207,408
Non-mineral Industrial	--	--	282,022	286,232	273,231	308,805	336,917
Total Locally Assessed	--	--	2,980,384	3,059,559	3,148,024	3,362,633	3,571,647
State Assessed Mineral	8,413,904	5,395,476	4,258,668	4,168,881	6,407,060	6,536,564	6,469,177
State Assessed Non-mineral	4,493,344	3,019,549	648,907	637,903	673,778	648,352	681,711
Gross Valuation Real and Personal Property	12,907,248	8,415,025	4,907,575	4,806,784	7,080,838	7,184,916	7,150,888
Gross Motor Vehicle Valuation	--	--	1,198,589	1,432,888	1,283,250	1,287,081	1,372,412
Private Railroad Cars Valuation	--	--	28,353	30,908	34,800	35,948	36,291
Total Gross Valuation	--	--	6,134,517	6,270,580	8,398,889	8,507,945	8,559,591
Lincoln County							
Agricultural Land	--	--	5,001	3,604	4,830	4,392	4,484
Commercial Land, Improvements, and Personal Property	--	--	7,015	8,556	8,986	10,326	10,680
Residential Land, Improvements, and Personal Property	--	--	48,738	49,907	51,424	56,159	62,721
Mining (Mineral, Coal, Non-metal)	--	--	12,215	6,793	5,753	5,646	5,848
Oil and Gas	--	--	--	--	--	4,040	4,471
Non-mineral Industrial	--	--	72,249	72,770	70,395	68,276	66,664
Total Locally Assessed	--	--	145,218	141,630	141,389	148,839	154,868
State Assessed Mineral	--	--	290,834	258,845	262,227	377,441	380,409
State Assessed Non-mineral	--	--	35,727	36,082	34,192	30,575	32,746
Gross Valuation Real and Personal Property	--	--	471,779	400,475	437,808	556,855	568,024
Gross Motor Vehicle Valuation	--	--	34,495	33,913	42,433	43,194	46,942
Private Railroad Cars Valuation	--	--	1,249	1,267	1,432	1,443	1,497
Total Gross Valuation	--	--	507,523	1,965,516	481,672	601,492	616,462
LaBarge Municipal Valuation	--	--	2,547	2,537	1,888	2,260	2,170
Sublette County							
Agricultural Land	--	--	4,316	4,334	4,292	4,081	4,140
Commercial Land, Improvements, and Personal Property	--	--	8,415	7,479	7,979	8,814	10,026
Residential Land, Improvements, and Personal Property	--	--	38,896	42,346	44,031	46,756	49,882
Mining (Mineral, Coal, Non-metal)	--	--	--	--	--	--	--
Oil and Gas	--	--	37,585	36,598	38,154	40,883	42,861

Table 3.39 (Continued)

	Assessed Property Values (Thousands of $)						
Location	1980[2]	1990[2]	1998	1999	2000	2001	2002
Non-mineral Industrial	--	--	6,217	5,577	5,335	7,497	10,387
Total Locally Assessed	--	--	95,429	96,334	99,791	108,031	117,296
State-assessed Mineral	--	--	299,812	290,820	372,714	714,807	933,125
State-assessed Non-mineral	--	--	3,714	3,500	3,332	2,926	2,840
Gross Valuation Real and Personal Property	--	--	398,955	390,654	475,836	825,763	1,053,261
Gross Motor Vehicle Valuation	--	--	24,706	25,108	26,373	31,645	30,483
Private Railroad Cars Valuation	--	--	--	--	--	--	--
Total Gross Valuation	--	--	822,615	415,762	502,209	857,408	1,083,744
Big Piney Municipal Valuation	--	--	1,471	1,524	1,515	1,500	1,624
Marbleton Municipal Valuation	--	--	2,119	2,019	2,075	2,144	2,325
Pinedale Municipal Valuation	--	--	9,254	9,259	9,344	9,878	10,930
Sweetwater County							
Agricultural Land	--	--	3,371	2,946	2,868	3,012	3,003
Commercial Land, Improvements, and Personal Property	--	--	30,269	30,507	30,769	31,226	32,174
Residential Land, Improvements, and Personal Property	--	--	95,452	96,787	92,833	106,741	91,783
Mining (Mineral, Coal, Non-metal)	--	--	108,911	105,681	95,569	88,691	86,865
Oil and Gas	--	--	32,155	33,996	39,107	40,896	45,031
Other Industrial	--	--	27,627	27,668	23,356	24,258	23,617
Total Locally Assessed	--	--	297,785	297,584	284,502	294,824	282,473
State Assessed Mineral	--	--	812,202	716,344	372,714	950,780	948,146
State Assessed Non-mineral	--	--	127,543	125,279	3,332	119,164	117,481
Gross Valuation Real and Personal Property	--	--	1,237,531	1,529,861	660,547	1,364,767	1,348,101
Gross Motor Vehicle Valuation	--	--	96,049	98,862	102,166	103,111	107,785
Private Railroad Cars Valuation	--	--	4,168	4,228	4,564	4,600	4,770
Total Gross Valuation	--	--	2,575,279	1,632,951	767,277	1,472,479	1,460,655
Rock Springs Municipal Valuation	--	--	74,581	76,125	74,326	89,821	75,212

[1] Thousands of year 2000 dollars, adjusted for inflation. Cities with no reported values/taxes are omitted from this table, including Bondurant, Boulder, Cora, and Daniel in Sublette County and Eden and Farson in Sweetwater County.
[2] CREG (2003). Due to changes in reporting methods, only gross state totals are available for 1980 and 1990.
[2] Wyoming Department of Revenue (1998).
[3] Wyoming Department of Revenue (1999).
[4] Wyoming Department of Revenue (2000).
[5] Wyoming Department of Revenue (2001).
[6] Wyoming Department of Revenue (2002).

Table 3.40 Total Ad Valorem Taxes Levied, State and Study Area.[1]

	Taxes Levied (Thousands of $)				
Location	1998[2]	1999[3]	2000[4]	2001[5]	2002[6]
Wyoming					
County Taxes Levied	90,917	83,503	91,246	117,658	123,233
Municipal Taxes Levied	9,984	9,932	10,189	10,630	10,931
Special District Taxes Levied	36,402	33,682	35,821	43,607	45,034
Education Taxes Levied	393,282	362,048	392,166	503,162	515,317
Total Ad Valorem Taxes Levied	530,585	489,164	529,422	675,057	694,515
Lincoln County					
County Taxes Levied	4,420	4,036	4,128	5,202	5,326
Municipal Taxes Levied	197	202	206	221	230
Special District Taxes Levied	3,544	2,867	2,346	2,263	2,724
Education Taxes Levied	22,719	20,908	21,144	26,366	26,680
Total Ad Valorem Taxes Levied	30,879	28,013	27,824	34,051	34,960
LaBarge Total Taxes Levied	188	183	132	154	148
Sublette County					
County Taxes Levied	4,482	4,676	5,702	9,902	12,624
Municipal Taxes Levied	118	102	103	108	119
Special District Taxes Levied	1,117	1,082	1,310	2,025	2,473
Education Taxes Levied	18,948	17,963	21,762	37,484	47,265
Total Ad Valorem Taxes Levied	24,664	23,824	28,877	49,519	62,482
Big Piney Total Taxes Levied	103	107	105	103	111
Marbleton Total Taxes Levied	163	142	144	148	158
Pinedale Total Taxes Levied	628	615	625	655	713
Sweetwater County					
County Taxes Levied	14,850	13,670	13,516	16,377	16,177
Municipal Taxes Levied	1,103	1,044	1,039	1,226	1,072
Special District Taxes Levied	4,007	3,682	3,516	3,714	3,605
Education Taxes Levied	64,256	59,317	58,555	69,751	68,611
Total Ad Valorem Taxes Levied	84,216	77,713	76,626	91,068	89,465
Rock Springs Total Taxes Levied	5,354	5,428	5,293	6,340	5,290

1 Thousands of year 2000 dollars, adjusted for inflation. Cities with no reported values/taxes are omitted from this table, including Bondurant, Boulder, Cora, and Daniel in Sublette County and Eden and Farson in Sweetwater County.
2 Wyoming Department of Revenue (1998).
3 Wyoming Department of Revenue (1999).
4 Wyoming Department of Revenue (2000).
5 Wyoming Department of Revenue (2001).
6 Wyoming Department of Revenue (2002).

Table 3.41 Levies for K-12 Education, 2003.[1]

Education Item[2]	All Wyoming ($)	Counties: Lincoln ($)	Counties: Sublette ($)	Counties: Sweetwater ($)
State Foundation Program 12-Mills	124,081,042	5,376,113	11,216,138	13,928,904
6-Mill Mandatory County School Levy	62,040,519	2,688,057	5,608,069	6,964,452
25-Mill Mandatory Level	258,502,173	11,200,235	23,366,955	29,018,550
Boards of Cooperative Education	5,025,437	198,980	512,451	668,766
Vocational and Adult Education[3]	541,880	--	--	73,793
Recreation	6,263,948	296,818	467,339	49,196
Bonds and Interest	15,433,873	1,745,476	849,225	2,920,056
Total K-12 Education	471,888,872	21,505,679	42,020,177	53,623,717

1 Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.
2 None of the study area counties levied taxes for additional operating, capital facilities repair, or building fund in 2003.
3 -- = no tax levy in 2003 for this item.

Table 3.42 Levies for Community Colleges, 2003.[1]

County	Community College Levy Taxes Received ($): Operating (4-mill)	Operating (up to 1 Mill Board Approved)	BOCES (0.5 Mills)	Operating (up to 5 Mills Voter Approved)	Bonds & Interest	Grand Total
Lincoln	-[2]	-	-	-	-	-
Sublette	-	-	-	-	-	-
Sweetwater	4,642,968	1,160,742	-	-	-	5,803,710
All Wyoming	13,538,043	3,384,511	654,514	-	1,353,293	18,930,361

1 Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.
2 -- = no tax levy in 2003 for this item.

Table 3.43 County Taxes Levied, 2003.[1]

Levy	Mills Levied/ Amount of Taxes Received ($)	County[2,3] Lincoln	Sublette	Sweetwater
Airport Operations	Mills	--	0.124	0.200
	Amount Received	--	$115,900	$232,148
Civil Defense	Mills	--	0.330	-
	Amount Received	--	$30,844	-
Fair Operation	Mills	0.872	0.296	1.253
	Amount Received	$269,344	$263,736	$276,665
County Fire Protection	Mills	--	0.522	-
	Amount Received	--	$478,507	-
Other General Fund Levy	Mills	8.817	9.11	4.197
	Amount Received	$3,950,099	$8,514,918	$4,871,170
Library Operation	Mills	1.339	0.557	1.995
	Amount Received	$599,885	$520,616	$2,315,448
Museum Operation	Mills	--	0.213	0.229
	Amount Received	--	$199,086	$265,462
Public Health Purposes	Mills	--	0.027	0.897
	Amount Received	--	$25,236	$1,040,721
Recreation System	Mills	--	--	0.315
	Amount Received	--	--	$365,286
Road and Bridge Purpose Levy	Mills	--	1.118	2.916
	Amount Received	--	$1,044,970	$3,384,607
Grand Total Under 12-Mill Limit	Mills	11.028	12.297	12.000
	Amount Received	$4,940,648	$11,206,742	$13,928,903
Grand Total County Levies	Mills	11.028	12.297	12.000
	Amount Received	$4,940,648	$11,206,742	$13,928,903

1 Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.
2 -- = no tax levy for this item.
3 None of the study area counties levied taxes for: building fund; hospital operation; public assistance and social services; total county bond and interest.

Table 3.44 County and Statewide Average 2003 Mill Levies Applied to 2002 Mineral Production and Taxes Assessed.[1]

County	Average Mineral 2003 Mill Levies	Total Ad Valorem Production Tax Assessed	Percentage of Total Ad Valorem Production Taxes Assessed in Wyoming
Lincoln	63.542	$14,875,737	4.22
Sublette	59.571	$47,432,192	13.46
Sweetwater	66.458	$49,006,739	13.91
Wyoming Total	66.065	$352,376,219	100.00

[1] Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.

Table 3.45 Municipal Taxes Levied for the Year 2003.[1]

				Special County District Taxes Levied for the Year 2003					
				Special Weed and Pest Levies			Other Special County District		
County	Total Municipal Taxes Under 8-Mill Limit ($)	Bonds and Interest ($)	Grand Total Municipal Levies ($)	Mills	Amount ($)	Special County Fire District Taxes ($)	Taxes ($)	District Types[3]	Total Special District Taxes Amount ($)
Lincoln	251,113	-[2]	251,113		351,687	259,937	2,077,679	G,H,J,L,O	2,733,620
Sublette	132,488	-	132,488		280,403	198,170	2,152,670	C,K	2,433,073
Sweetwater	1,156,772	-	1,156,772		405,099	8,329,177	2,461,913	A,C,G,J	3,661,487
Wyoming [4]	12,016,991	187,414	n/a		7,499,369	n/a	31,032,344	n/a	46,860,890

[1] Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.
[2] -- = no tax levy for this item.
[3] District Types:

A - Hospital	I - Weed and Pest
B - Fire	J - Solid Waste Disposal
C - Cemetery	K - Rural Health Care
D - Museum	L - Conservation
E - Recreation	M - Sanitary and Improvement
F - Water Conservancy	N - Flood Control
G - Water and Sewer	O - Downtown Development
H - Improvement and Services	P - Senior Citizens' Service

[4] n/a = not applicable.

Table 3.46 City- and Town-Assessed Valuation and Taxes Levied, 2003.[1]

		County Tax Levy			School Tax Levy Including Foundation		Municipal Tax Levy		Total Tax Levy	
City/Town	Municipal Valuation	Mills	Special District[2]	Amount	Mills	Amount	Mills	Amount	Mills	Amount
Big Piney	1,905,850	14.33	C,I,K	27,311	47.965	91,414	8.000	15,247	70.295	133,972
LaBarge	2,299,884	15.33	A,C,I	35,257	47.965	110,314	8.000	18,399	71.295	163,970
Marbleton	2,875,951	14.33	C,I,K	41,212	47.965	137,945	4.000	11,504	66.295	190,661
Pinedale	13,217,084	13.934	C,I,K	184,167	44.000	581,552	8.000	105,737	65.934	871,456
Rock Springs	81,327,144	13.899	I,J	1,130,366	48.600	3,952,499	8.000	650,617	70.499	5,733,482

1 Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.
2 District Types:

A - Hospital	I - Weed and Pest
B - Fire	J - Solid Waste Disposal
C - Cemetery	K - Rural Health Care
D - Museum	L - Conservation
E - Recreation	M - Sanitary and Improvement
F - Water Conservancy	N - Flood Control
G - Water and Sewer	O - Downtown Development
H - Improvement and Services	P - Senior Citizens' Service

Table 3.47 Grand Total All Taxes Levied, 2003.[1]

	Grand Total County Levies						
County	Mills	Amount ($)	Grand Total Municipal Levies ($)	Total Special District Taxes ($)	Grand Total All Education ($)	Grand Total All Taxes Levied ($)	Average Mill Levy
Lincoln	11.028	4,940,648	251,113	2,733,620	21,505,679	29,431,060	65.693
Sublette	12.297	11,206,742	132,488	2,433,073	42,020,177	55,792,480	59.692
Sweetwater	12.000	13,928,903	1,156,772	3,661,487	59,427,427	78,174,589	67.349
All Wyoming		119,082,631	12,204,405	46,860,890	490,819,233	668,967,159	64.696

1 Source: Wyoming Department of Revenue (2003). In Year 2003 dollars, not adjusted for inflation.

In Lincoln County, ad valorem taxes increased 20.5% over the 5-year study period (see Table 3.40). Total Lincoln County ad valorem taxes levied grew a total of 13.2% between 1998 and 2002. In 2003, the most recent fiscal year, 80% of ad valorem taxes levied by Lincoln County went to the general fund. Total municipal levies increased 16.8%, total special district levies fell at the rate of 23.1%, and total education levies increased 17.4%. LaBarge levies fell a total of 21.3% during the 5-year study period.

3.4.3.3 Sublette County

Sublette County has experienced dramatic changes in valuations during the 5-year study period (see Table 3.39). The gross valuation of all real and personal property in Sublette County has increased 164.0% from 1998 to 2002. Sublette County has no mining (mineral, coal, non-metal) properties to consider in either local- or state-assessed valuations. Only oil and gas properties are included in state-assessed mineral valuations in Sublette County, and they increased 211.2% from 1998 to 2002. Total local assessments increased 22.9% over the 5-year period, although agricultural land fell 4.1%. Non-mineral industrial properties increased 67.1% from 1998 to 2002. Residential lands with improvements increased 28.2%, and commercial lands with improvements increased 19.1% during the 5-year study period. Total gross valuation for Sublette County increased a total 31.7% from 1998 to 2002. Municipal valuations increased in Big Piney (10.4%), Marbleton (9.7%), and Pinedale (18.1%) over the 5-year period.

In Sublette County, levies against property have increased over the 5-year study period (see Table 3.40). Total Sublette County ad valorem taxes levied increased 181.7.3% from 1998 to 2002; municipal levies increased by only 1.8%; special district levies increased 121.4%, and education levies increased 149.4%. Big Piney's municipal levies increased 7.8%; Marbleton's municipal levies dropped by 3.1%; and Pinedale's municipal levies increased 13.5% from 1998 to 2002.

3.4.3.4 Sweetwater County

Gross valuation of all real and personal property in Sweetwater County increased 8.9% from 1998 to 2002 (see Table 3.39). State-assessed mineral valuations increased 16.7% from 1998 to 2001. Locally assessed oil and gas had the greatest overall increase (40.0%). Sweetwater County has mining (mineral, coal, non-metal) properties that decreased (-20.2%) in value over the 5-year study period. Total gross valuation for Sweetwater County declined 43.3% from 1998 to 2002. Rock Springs municipal valuations increased 0.9% from 1998 to 2002.

Total Sweetwater County ad valorem taxes levied increased 8.9% from 1998 to 2002 (see Table 3.40). Municipal levies in Sweetwater County fell 2.8% during the 5-year study period, special district levies decreased by 10.0%; and education levies increased 6.8%. Total ad valorem taxes levied in the entire county increased 6.2%. Rock Springs municipal levies declined 1.2% from 1998 to 2002.

3.4.4 Sales Tax Collections

Sales tax collection information was obtained from WDAI (2002e) and is presented for Wyoming and the three-county study area in Table 3.48.

3.4.4.1 Wyoming

Total sales tax collections for Wyoming increased 27.0% from 1998 to 2002 (Table 3.48). Increases in the mining (61.8%), construction (45.0%), and wholesale trade (41.3%) sectors were the most substantial. Collections from the retail trade sector, which reflects consumers' daily spending, increased 16.8% during the 5-year study period. The retail trade sector is the largest of the industrial sectors in Wyoming, and provided 40.4% of all sales tax collections in 2002, followed by services

Table 3.48 Sales Tax Collections in State and Study Area.[1]

Location/Industrial Sector	Sales Tax Collections (Thousands of $) 1998	1999	2000	2001	2002
Wyoming[2]					
Agriculture	1,399	1,358	1,374	1,347	1,257
Mining[3]	28,651	19,694	22,259	34,163	46,358
Construction	10,228	12,325	11,198	12,136	14,828
Manufacturing	22,877	22,085	22,854	22,127	22,124
Transportation	30,063	30,734	31,708	37,249	37,866
Wholesale Trade	37,060	39,477	43,602	48,086	52,365
Retail Trade	171,014	179,324	190,610	191,510	199,673
Finance	1,611	1,059	1,134	1,009	762
Services	53,876	57,672	60,014	66,634	75,901
Public Administration	31,942	36,609	33,883	38,216	42,589
Total	388,721	400,336	418,635	452,478	493,723
Lincoln[4]					
Agriculture	55	52	45	50	38
Mining[3]	1,234	944	690	818	1,273
Construction	188	186	165	155	170
Manufacturing	705	768	870	670	565
Transportation	844	942	821	833	871
Wholesale Trade	1,933	1,385	2,312	1,782	2,135
Retail Trade	3,112	3,381	3,659	3,389	3,712
Finance	47	45	53	36	24
Services	933	1,148	948	1,185	1,394
Public Administration	710	732	783	797	954
Total Collected	9,761	9,583	10,345	9,716	11,135
Approximate Amount Returned to County	3,221	3,162	3,413	3,206	3,674
Sublette[5]					
Agriculture	27	27	28	26	26
Mining[3]	2,538	2,844	2,591	5,988	9,078
Construction	110	89	125	139	173
Manufacturing	527	396	381	882	1,047
Transportation	383	404	481	459	483
Wholesale Trade	956	1,034	1,145	1,201	1,557
Retail Trade	1,691	1,629	1,923	2,289	2,575
Finance	13	14	13	8	5
Services	927	1,257	1,209	2,457	3,471
Public Administration	460	407	452	451	648
Total	7,632	8,102	8,348	13,901	19,063
Approximate Amount Returned to County	2,518	2,674	2,755	4,587	6,291
Sweetwater[6]					
Agriculture	45	40	34	33	42
Mining[3]	4,868	3,361	3,514	5,683	7,165
Construction	1,379	1,304	1,109	1,008	952
Manufacturing	3,751	3,118	2,916	2,548	2,722
Transportation	3,041	2,773	3,753	3,171	3,620
Wholesale Trade	6,333	5,687	5,449	6,701	7,023
Retail Trade	14,572	14,680	14,552	14,514	15,673
Finance	173	120	128	108	64
Services	5,777	5,829	5,908	6,748	8,192
Public Administration	3,038	3,416	3,180	3,461	3,441
Total	42,975	40,328	40,544	43,975	48,894
Approximate Amount Returned to County	14,182	13,308	13,380	14,512	16,135

1 WDAI (2002e). Thousands of year 2000 dollars, adjusted for inflation.
2 Note: Penalty and interest monies are excluded; collections amounted to $1,751,376 in FY02.
3 Includes oil and gas.
4 Note: Penalty and interest monies are excluded; collections amounted to $39,384 in FY02.
5 Note: Penalty and interest monies are excluded; collections amounted to $27,109 in FY02.
6 Note: Penalty and interest monies are excluded; collections amounted to $134,973 in FY02.

(15.4%), wholesale trade (10.6%) and mining (9.4%). The collections reported in the public administration sector (8.6% of all sales tax collections) were primarily comprised of taxes generated through automobile sales (WDAI 2002e).

3.4.4.2 Lincoln County

Total sales tax collections in Lincoln County increased 14.1% from 1998 to 2002 (see Table 3.48). Collections from the retail trade sector, which reflects consumers' daily spending, increased 19.3%. The largest increases were seen in services (49.4%) and public administration (34.3%). Losses occurred in finance (48.8%), agriculture (31.6%), manufacturing (19.9%), and construction (9.6%).

In 2002, the retail trade sector was the largest of the industrial sectors, providing 33.3% of all sales tax collections in Lincoln County, followed by wholesale trade (19.2%), services (12.5%), and mining (11.4%) (see Table 3.48).

3.4.4.3 Sublette County

Annual sales tax collections in 17 of the state's 23 counties increased over previous year levels, and Sublette County experienced the greatest increase (37.1%) over fiscal year 2001 (WDAI 2002e). Total sales tax collections in Sublette County increased 149.8% from 1998 to 2002 (see Table 3.48). The largest overall increase during that term was seen in services, which expanded by 274.5%, followed by mining (257.7%) and manufacturing (98.5%). Finance and agriculture experienced declines (63.9% and 2.6% respectively) in sales taxes collected over the 5-year study period.

Mining provided 47.6% of sales tax collections in Sublette County in 2002, followed by services (18.2%) and retail trade (13.5%) (see Table 3.48).

3.4.4.4 Sweetwater County

Over the 5-year study period from 1998 to 2002, Sweetwater County's total sales tax collection increased by 13.8% (see Table 3.48). The largest overall increase during that term was seen in mining (47.2%), followed by services (41.8%), and transportation (19.0%). Finance (-62.9%), construction (-30.9%), manufacturing (-27.4%), and agriculture (-5.1%) experienced declines in sales taxes collected over the 5-year study period.

3.4.5 Use Tax Collections

Information on use tax collections was obtained from WDAI (2002e) and is presented in Table 3.49.

3.4.5.1 Wyoming

Use tax collections increased nearly 29.5% from 1998 to 2002 (Table 3.49). Seven of the nine major sectors (wholesale and retail trade sectors are combined and counted as one for use tax reporting) realized increases during the 5-year study period. Use tax collections usually fluctuate considerably from year to year, and from one sector to another. Unlike collections for sales tax, the goods-producing sectors (mining, construction, and manufacturing) typically cover a large portion of use tax collections. Public administration is the largest of the industrial sectors in terms of use tax, and it collected approximately 29.2% of all Wyoming use tax collections in 2002. From 1998 to 2002, the service sector exhibited the largest increase (89.0%), followed by wholesale/retail trade (62.1%), and mining (37.9%). The manufacturing and finance sectors suffered declines of 33.2% and 38.5%, respectively.

Use tax collections reported in the public administration sector were primarily comprised of taxes generated through automobile purchases made out of the state (WDAI 2002e) which increased 36.5% over the 5-year study period (Table 3.49). Annual total use tax collections for 16 Wyoming counties increased over previous year levels and while collections in the remaining counties decreased.

Table 3.49 Use Tax Collections in the State and Study Area.[1]

	Use Tax Collections ($)				
Industrial Sector/Location	1998	1999	2000	2001	2002
Wyoming					
Agriculture	93,382	111,663	127,039	152,240	111,850
Mining[2]	8,139,021	10,074,628	7,232,766	8,643,343	11,220,244
Construction	10,532,112	6,717,700	10,488,778	9,951,474	12,265,909
Manufacturing	2,963,424	2,818,252	3,342,641	2,138,754	1,978,751
Transportation	6,624,357	6,319,928	7,385,411	7,501,867	8,316,000
Wholesale and Retail Trade	3,822,364	5,142,008	6,048,701	4,978,284	6,197,634
Finance	49,164	43,066	31,621	37,531	30,230
Services	1,186,334	853,229	871,877	1,374,900	2,241,715
Public Administration	12,788,608	13,208,328	14,312,741	15,920,514	17,454,299
Total	46,198,767	45,288,804	49,841,575	50,698,909	59,816,633
Lincoln					
Agriculture	555	0	0	20	11
Mining[2]	644,320	799,954	888,052	444,472	1,292,002
Construction	208,598	170,128	599,236	120,078	157,138
Manufacturing	3,337	3,362	6,476	12,436	11,747
Transportation	372,195	406,785	315,849	374,900	572,565
Wholesale and Retail Trade	50,998	135,608	127,355	99,442	116,337
Finance	3,223	3,603	2,746	2,205	3,299
Services	5,951	12,804	6,248	7,587	8,948
Public Administration	630,704	626,041	791,122	643,870	812,841
Total	1,919,880	2,158,285	2,737,084	1,705,013	2,974,888
Sublette					
Agriculture	639	452	903	763	420
Mining[2]	218,581	227,655	209,822	520,867	373,000
Construction	25,641	41,591	43,908	147,526	53,054
Manufacturing	876	1,727	6,928	2,663	9,570
Transportation	34,361	-1,653	10,592	85,822	24,937
Wholesale and Retail Trade	16,529	41,742	40,722	42,935	114,937
Finance	5	6	-6	-1	0
Services	747	1,601	237	1,164	2,463
Public Administration	277,764	246,362	265,268	362,521	390,185
Total	575,143	559,482	578,375	1,164,262	968,565
Sweetwater					
Agriculture	4,374	4,000	3,082	3,144	2,559
Mining[2]	3,874,717	3,837,244	2,397,057	3,348,485	4,080,921
Construction	3,049,513	885,748	1,050,060	1,108,792	492,216
Manufacturing	793,646	535,044	758,768	386,144	394,046
Transportation	1,022,135	1,003,434	1,175,935	1,086,599	1,128,749
Wholesale and Retail	158,663	159,346	546,294	615,474	495,225
Finance	3,499	406	940	412	2,199
Services	33,534	59,357	136,868	418,210	431,734
Public Administration	950,775	909,189	877,057	959,182	1,092,998
Total	9,890,855	7,393,770	6,946,061	7,926,441	8,120,645

[1] WDAI (2002e). In year 2000 dollars, adjusted for inflation.
[2] Includes oil and gas.

3.4.5.2 Lincoln County

Over the 5-year study period (1998-2002), total use tax collections in Lincoln County increased by 55.0% (see Table 3.49). Manufacturing led sector growth over the 5-year period, with a 252.0% increase, followed by wholesale/retail trade (128.1%), and mining (100.5%). Agriculture showed the greatest decline (97.9%), followed by construction (24.7%). Mining was the largest of the industrial sectors in terms of use tax in 2002, with 43.4% of all Lincoln County use tax collections, followed by public administration (27.3%) and transportation (19.3%).

3.4.5.3 Sublette County

Over the 5-year study period (1998-2002), total use tax collections in Sublette County increased by 68.4% (see Table 3.49). Manufacturing led sector growth over the 5-year period, with a 992.7% increase, followed by wholesale/retail trade (595.4%), and services (229.7%). Finance (-100.0%), agriculture (-34.3%), and transportation (-27.4%) declined over the 5-year study period. In 2002, public administration provided the greatest percentage (40.3%) of use tax collections in Sublette County, followed by mining (38.5%) and wholesale/retail trade (11.9%).

3.4.5.4 Sweetwater County

Over the 5-year study period (1998-2002), total use tax collections in Sweetwater County decreased by 17.9% (see Table 3.49). Services led sector growth over the 5-year period, with a 1,187.5% increase from 1998 to 2002, followed by wholesale/retail trade (212.1%) and public administration (15.0%). The greatest declines over the 5-year period occurred in construction (83.9%), manufacturing (50.3%), agriculture (41.5%), and finance (37.2%). In 2002, mining contributed the greatest percentage (50%) of total use tax collections in Sweetwater County, followed by TCPU (14%) and public administration (13%).

3.4.6 Lodging Tax Collections

Lodging tax information was derived from WDAI (2002e), and data for the study area are presented in Table 3.50. All data are provided in year 2000 dollars, adjusted for inflation. All lodging taxes are returned to the city/county of origin, and no tax is imposed at the state level; therefore, Wyoming is not shown in Table 3.50. Lincoln County does not have a county-wide lodging tax, and the towns within Lincoln County that charge a lodging tax are outside the study area; therefore, Lincoln County is not shown in Table 3.50.

3.4.6.1 Sublette County

Sublette County reinstated a lodging tax in 2001. Lodging taxes collected in Sublette County increased 523.2% from 2001 to 2002 (Table 3.50). Collections in Big Piney increased 1,461.5%; Marbleton increased 433.5%; and Pinedale increased 1,583.5%. Total collections for the county and municipalities combined increased 1,045.1% from 2001 to 2002.

3.4.6.2 Sweetwater County

A lodging tax has been imposed in Sweetwater County for the duration of the 5-year study period. Lodging tax collections in 2002 were down 33.8% from 1998 (Table 3.50). However, Rock Springs lodging tax collections increased by 23.8% over the same period. Total collections for the county and municipalities combined increased 9.7% from 1998 to 2002.

3.5 GRAZING ECONOMICS

3.5.1 Grazing Allotments

Table 3.51 summarizes grazing allotment acreages and AUMs in the JIDPA (see BLM 2004c) and SPPA (see BLM 2004b).

Table 3.50 Lodging Tax Collections By County And Local Entity, 2002.[1]

	Lodging Tax Collections ($)				
Collecting Entity	1998[2]	1999[2]	2000[2]	2001	2002
Sublette County	NA	NA	NA	2,028	12,641
Big Piney	NA	NA	NA	261	4,069
Marbleton	NA	NA	NA	2,176	11,609
Pinedale	0	0	0	4,236	71,321
Total	0	0	0	8,701	99,640
Sweetwater County	63,904	57,619	39,936	41,051	42,336
Rock Springs	196,257	197,293	204,703	235,747	243,063
Total	260,161	254,912	239,744	276,798	285,399

1 WDAI (2002e). In year 2000 dollars, adjusted for inflation.
2 NA = no information available.

Table 3.51 Grazing Allotments and AUMs, JIDPA and SPPA.

	Allotment Size (acres)		AUMs		
Allotment Name	Total	In Project Area	Total	In Project Area	Average Acres per AUM
JIDPA Grazing Allotments					
Stud Horse Common	15,590	5,490	1,730	670	8.2
Sand Draw	31,740	20,740	2,324	1,571	13.2
Boundary[1]	31,994	3,630	2,996	363	10.0
Blue Rim Desert	41,273	0[2]	2,826	--	14.6
Unalloted private lands	640	640	--.[3]	--.[3]	--.[3]
Total JIDPA[3]	121,237	30,500	9,876[3]	2,604[3]	11.5[3]
SPPA Grazing Allotments[4]					
Beaver Creek Meadows	1,974	519	20	5	98.7
Beaver Creek Individual	934	707	129	98	7.2
North LaBarge Common	134,574	7,819	19,398	1,127	6.9
South Piney Individual	1,697	176	82	9	20.7
Fish Creek Individual	1,863	1,863	1,687	1,687	1.1
Budd Fish Creek Individual	1,748	1,748	150	150	11.7
Springman Creek	1,250	1,250	155	155	8.1
West Individual	5,446	2,845	1,112	581	4.9
Total SPPA	149,486	16,927	22,733	3,812	6.6

1 Sheep are approved for grazing on the Boundary allotment; however, no sheep use of JIDPA lands has occurred in the past 5 years and none is anticipated.
2 Approximately 35 acres of this allotment would be affected by the Burma Road upgrade.
3 Total does not include unalloted private lands.
4 Only cattle are approved for grazing on the allotments within the SPPA.

3.5.1.1 JIDPA Grazing Allotments

The majority of the JIDPA (94%, 28,580 acres) consists of federal surface/federal minerals administered by the BLM, with the exception of two sections (1,280 acres) of State of Wyoming surface/mineral and one section (640 acres) of private surface/federal minerals (BLM 2004c). Current land use includes energy production and development (i.e., natural gas), livestock grazing, wildlife habitat, and recreation--primarily hunting. Both cattle and sheep are authorized to graze on the Boundary allotment, but sheep have not grazed on the allotment within the last 5 years (personal communication, February 2004, Jay D'Ewart, BLM, RSFO); therefore, sheep are not discussed further.

The JIDPA includes portions of three grazing allotments--Stud Horse Common, Sand Draw, and Boundary--and the Burma Road Upgrade area includes portions the Blue Rim Desert allotment. A section of private unalloted grazing land occurs also within the JIDPA. Of the total 121,237 acres (supporting 9,876 AUMs) of grazing lands included in these allotments, 30,500 acres (25.2%) (supporting 2,604 AUMs; 26.4%) occur within the JIDPA (Table 3.51). Livestock grazing is allocated to two permittees each in the Stud Horse Common and Sand Draw allotments and four permittees in the Desert Blue Rim allotment (personal communication, January 6, 2003, with Steve Laster, BLM PFO) (Table 3.51). The Boundary allotment is allocated to two permittees (personal communication, January 6, 2003, with Jay D'Ewart, BLM RSFO). Additionally, approximately 640 acres (2% of the JIDPA) of fenced private land lie within the boundary of the Sand Draw allotment but are not under federal management, and are reportedly not grazed. Permittees have been billed at the rate of $1.35/AUM since 1998 (personal communication, January 16, 2003, with Steve Laster, BLM PFO).

Utilization of the grazing allotments on the JIDPA has been lower than the allotted number of AUMs due to drought.

3.5.1.2 SPPA Grazing Allotments

Lands within the SPPA are used for livestock grazing. Only cattle have been grazed in the SPPA in the last 5 years. The SPPA occurs across portions of eight federal grazing allotments that cover a total 149,486 acres and provide 22,733 federal AUMs (Table 3.51) (BLM 2004b). The SPPA includes 16,927 acres (11.3%) that provide 3,812 AUMs (22.5%) of these allotments. The remainder of the SPPA is private surface, with grazing as the primary use.

3.5.2 Value of Grazing

The estimated value of grazing in the JIDPA and SPPA is summarized in Tables 3.52-3.55. The method used to determine the value of grazing per AUM is from BLM (2003b).

The value of cattle and sheep grazing per AUM in Wyoming is shown in Tables 3.52 and 3.53. AUM values for grazing cattle were determined from Wyoming Agricultural Statistics Service (2003) values of cattle sold in Wyoming from 1997 to 2003 (presented in year 2000 dollars, adjusted for inflation) (Table 3.52). Total cattle sales were divided by the number of cows that calved, which provided a value per cow. The value per cow was then divided by an AUM conversion factor (Workman 1986), resulting in an estimated nominal value per AUM for 2000. The average value of these AUMs is used in the impact analyses presented in Chapters 5.0 and 6.0.

AUM values for grazing sheep were determined from the Wyoming Agricultural Statistics Service (2003) values of sheep/lambs and wool sold in Wyoming from 1998 to 2002 (presented in year 2000 dollars, adjusted for inflation) (Table 3.53). Total sheep/lamb and wool sales were divided by the number of ewes 1 year and older, which provided a value per ewe. The value per ewe was then divided by an AUM conversion factor (Workman 1986), resulting in an estimated nominal value per AUM for 2000. Because sheep are approved for grazing on the Boundary allotment of the JIDPA, the value of AUMs for sheep was calculated; however, sheep have not been grazed in more than 5 years, therefore, they are not addressed further in this analysis.

Table 3.52 Estimated Value of Cattle Grazing AUMs in Wyoming.

Year	Value of Cattle Production (Thousands of $)[1]	Number of Cows Calved (Thousands of Head)[2]	Value Per Cow[3]	AUM Conversion Factor[4]	Value of Production Per AUM[5] (Year 2000 $)
1997	474,990	870	545.97	16	34.12
1998	423,250	880	480.97	16	30.06
1999	467,253	830	562.96	16	35.18
2000	497,851	830	599.82	16	37.49
2001	527,804	850	620.95	16	38.81
2002	425,776	820	519.24	16	32.45
Average	468,387	842	556.79	--	34.80

1 Thousands of year 2000 dollars, adjusted for inflation. Source: Wyoming Agricultural Statistics Service (2003:42).
2 Source: Wyoming Agricultural Statistics Service (2003:40).
3 Value per cow = value of cattle production ÷ number of cows that have calved.
4 Workman (1986).
5 Value of production per AUM = value per cow ÷ AUM conversion factor.

Table 3.53 Estimated Value of Sheep Grazing AUMs in Wyoming.[1]

Year	Value of Sheep/ Lamb Production[2] (Thousands of $)	Value of Wool Production[3] (Thousands of $)	Total Value of Production[4]	Ewes 1 Year and Older[5] (Thousands of Head)	Value per Ewe[6]	AUM Conversion Factor[7]	Value of Production Per AUM[8] (2000 $)
1998	25,875	4,507	30,382.21	430	70.66	3.2	22.08
1999	23,245	2,497	25,742.14	385	66.86	3.2	20.89
2000	23,479	2,143	25,622.00	365	70.20	3.2	21.94
2001	18,625	1,959	20,584.27	340	60.54	3.2	18.92
2002	20,496	2,621	23,116.34	320	72.24	3.2	22.57
Average	22,344	2,745	25,089.39	368	68.10	--	21.28

1 Because sheep are approved for grazing on the Boundary allotment in the JIDPA the value of sheep production was calculated; however, sheep have not been grazed in more than 5 years; therefore, they are not addressed further herein.
2 Thousands of year 2000 dollars, adjusted for inflation. Source: Wyoming Agricultural Statistics Service (2003:51).
3 Thousands of year 2000 dollars, adjusted for inflation. Source: Wyoming Agricultural Statistics (2003:49).
4 Total value of production = value of sheep/lamb production + value of wool production.
5 Source: Wyoming Agricultural Statistics Service (2003:49).
6 Value per ewe = value of production ÷ number of ewes 1 year and older.
7 Workman (1986).
8 Value of production per AUM = value per ewe ÷ AUM conversion factor.

Table 3.54 Estimated Value of Grazing Activities on Project-Affected Lands.

	Allotment Size[1] (acres)		Estimated AUMs		Value of Grazing Cattle[2] ($)	
Allotment Name	Total Allotment	Allotment Within Project Area	Total	On Project-Affected Lands	Total	On Project-Affected Lands
JIDPA Grazing Allotments						
Stud Horse Common	15,590	5,490	1,730	670	60,204	23,316
Sand Draw	31,740	20,740	2,324	1,571	80,875	54,671
Boundary	31,994	3,630	2,996	363	104,261	12,632
Blue Rim Desert	41,273	0[3]	2,826	2[3]	98,345	1,218[3]
Unalloted private lands	640	640	48[4]	48[4]	1,636[4]	1,636[4]
Total JIDPA	121,237	30,500[3]	9,924	2,654[3,4]	343,685	90,619[3,4]
SPPA Grazing Allotments						
Beaver Creek Meadows	1,974	519	20	5	696	184
Beaver Creek Individual	934	707	129	98	4,489	3,396
North LaBarge Common	134,574	7,819	19,398	1,127	675,050	39,223
South Piney Individual	1,697	176	82	9	2,854	296
Fish Creek Individual	1,863	1,863	1,687	1,687	58,708	58,718
Budd Fish Creek Individual	1,748	1,748	150	150	5,220	5,220
Springman Creek	1,250	1,250	155	155	5,394	5,394
West Individual	5,446	2,845	1,112	581	38,698	20,215
Total SPPA	149,486	16,927	22,733	3,812	791,108	132,647
Total Value Attributable to Grazing on Project Lands in Sublette County					1,134,793	223,266

1 See Table 3.51.
2 Cattle grazing was valued at $34.80/AUM (see Table 3.52).
3 The JIDPA is 30,500 acres; 35 acres in the Blue Rim Desert allotment outside of the project boundary would be disturbed for the Burma Road upgrade (12 mi long x 24 ft wide = 35 acres); AUMs = acres/average acres per AUM (14.6); value excluded from total.
4 Unalloted private lands within the Sand Draw allotment are not under federal control, therefore, they are not shown on Table 3.51; however, AUMs the (47) are estimated based on Sand Draw allotment values for the purposes of valuation in this table.

Table 3.55 Percentage of Agricultural Sales Attributed to Grazing on Project-Affected Lands, 1997.

Sales	Value ($)	Percentage
Sublette County[1]		
Total Agricultural[2]	$29,191,000	
Value from Livestock[2]	$27,809,000	
Percent from Livestock		95.0%
JIDPA		
Sales Attributable to Grazing on the JIDPA[2,3]	$90,619	
Percent of all Sublette County Agricultural Sales arising from Grazing on the JIDPA		0.31%
Percent of All Livestock Sales in Sublette County Arising from Grazing on the JIDPA		0.33%
SPPA		
Sales Attributable to Grazing on the SPPA[2,3]	$132,647	
Percent of all Sublette County Agricultural Sales arising from Grazing on the SPPA		0.45%
Percent of All Livestock Sales in Sublette County Arising from Grazing on the SPPA		0.48%

1 Both the JIDPA and SPPA are entirely within Sublette County; therefore, Lincoln and Sweetwater County sales are unlikely to be affected and are not evaluated.
2 In year 2000 dollars, adjusted for inflation (NASS 1999).
3 See Table 3.51.

Both the JIDPA and SPPA project areas are entirely within Sublette County. Because there would be no impact on grazing activities in Lincoln or Sweetwater Counties as a result of the proposed projects, Sublette County comprises the total study area for grazing analyses.

The value of grazing associated with the JIDPA and SPPA was compared to livestock sales during 1997 for Sublette County. Data on sales was obtained from the 1997 Census of Agriculture published by the National Agricultural Statistical Service (NASS) (1999). Table 3.55 shows that total agricultural sales in Sublette County exceeded $29 million, of which more than 95% was associated with livestock sales. Comparing livestock sales in Sublette County with the value of grazing on the project areas indicates that JIDPA grazing activities would conservatively account for an estimated $90,619 (0.32% of all agricultural sales and 0.33% of all livestock sales in Sublette County in 1997) and that SPPA grazing activities would conservatively account for an estimated $132,647 (0.45% of all agricultural sales and 0.48% of all livestock sales in Sublette County in 1997). Even given these conservative estimates, the JIDPA and SPPA cumulatively provide less than 1.0% of all agricultural and livestock sales in Sublette County.

3.6 RECREATION ECONOMICS

Recreation information is not collected on a county-wide basis in the three-county study area. Recreational activities in Lincoln and Sweetwater Counties are unlikely to be affected by the proposed projects. The JIDPA and SPPA lie primarily within the PFO area and project activities are not expected to affect recreation on any portion of the RSFO area; therefore, recreation economics are evaluated only within the PFO area.

3.6.1 Nonconsumptive Recreation

The volume of nonconsumptive recreational use within the region of the projects was taken from BLM (2003b). In BLM (2003b), recreational use was estimated using recreational visitor days (RVDs) as a unit of measure (a recreational visitor day is defined as a 12-hour period). The RVDs for the planning area (PFO) were estimated with data from BLM's Recreational Management

Information System (RMIS) (BLM 2003b). In this system, the BLM tracks recreational use for several areas within Wyoming including the PFO area. Using this data, Table 3.56 was constructed, which shows the RVDs per activity for the PFO for a 4-year period from 1998 to 2002. During this time, over 300,000 RVDs occurred annually within the PFO area. The most popular recreational activities were float or raft trips, fishing, camping, and hiking/walking/running. Hunting is addressed in separately in Section 3.6.2.

3.6.2 Hunting

Hunting is also popular within the PFO area. Much of this activity occurs on BLM-managed lands since these lands provide habitat for many species, including big game, small game, and upland game birds. Big game hunting was estimated from WGFD data since it regulates the sport and keeps data on hunting use by animal and by area throughout Wyoming. Hunting days reported in this section are not directly comparable with BLM recreation days, given the differences in estimation procedures and the definition of a recreation day.

BLM (2003b) utilized WGFD's Annual Report of Big Game Harvest (published from 1991 to 2000), to estimate the average hunting days by big game species over a 10-year period. The WGFD data was adjusted for that analysis by the percentage of acreage within each hunt area contained within the PFO area. The adjusted data indicate that, on an average annual basis, residents and nonresidents of Wyoming spend an estimated 40,000 days hunting in the PFO area (Table 3.57) (BLM 2003b).

Over the same 10-year period, BLM estimated that hunters were primarily from Wyoming in the PFO area and accounted for over 80% of the hunting days on average. Elk was the most popular species hunted--nearly 23,000 hunting days--followed by mule deer, pronghorn, moose, and then bighorn sheep (BLM 2003b).

Table 3.56 Estimated Annual Recreational Visitor Days, PFO.[1]

Activity	Annual Recreational Visitor Days	Percent of Total Activity
Archery	760	0.24
Backpacking	4,118	1.29
Bicycling–Mountain	5,066	1.58
Bicycling–Road	16	0.01
Camping	35,168	10.99
Climbing–Mountain/Rock	458	0.14
Driving for Pleasure	4,182	1.31
Environmental Education	55	0.02
Fishing	73,227	22.89
Hiking/Walking/Running	30,581	9.56
Horseback Riding	732	0.23
Nature Study	880	0.28
Off-highway vehicles (OHVs)–All-terrain vehicles (ATVs)	1,268	0.40
OHVs–Cars/Trucks/Sport Utility Vehicles	155	0.05
Pack Trips	2,746	0.86
Photography	880	0.28
Picnicking	1,366	0.43
Power Boating	789	0.25
Row/Float/Raft	138,630	43.32
Skiing – Cross Country	2,123	0.66
Snowmobiling	12,368	3.87
Staging/Comfort Stop	829	0.26
Swimming/Water Play	854	0.27
Viewing Wildlife	2,727	0.85
Total Recreational Visitor Days	319,978	100.00

[1] From BLM (2003b). Source: Annual average of data collected by RMIS from October 1, 1998-September 30, 2002.

Table 3.57 BLM-Estimated Big Game Hunter-Days, PFO Area.[1]

	Big Game Hunter-Days per Year					
Hunter Designation	Pronghorn	Mule Deer[2]	Elk	Moose	Bighorn sheep	Hunter-Days
Residents	1,318	11,414	19,811	539	11	33,093
Non-Residents	433	3,359	3,142	96	2	7,032
Total Hunter Days	1,750	14,774	22,953	635	13	40,125

[1] Based on 10-year average. From BLM (2003b).
[2] Averages for mule deer are for 2000 only.

Information concerning wildlife, herd units, and surface ownership in the JIDPA and SPPA are from BLM (2004b, 2004c) (Table 3.58). Table 3.59 presents a summary of big game hunting in the herd units that may potentially be impacted by the proposed projects. Four species of big game--pronghorn, mule deer, elk, and moose--occur in hunt units that are on or adjacent to the JIDPA or SPPA and all these species are likely to frequent the SPPA (BLM 2004b). Pronghorn are the only big game species likely to occur on the JIDPA (BLM 2004c). Bighorn sheep may rarely occur on the SPPA. Two trophy game species--black bear and mountain lion--also inhabit the area but are not managed for hunting on the JIDPA or SPPA (BLM 2004b, 2004c). WGFD determines range classifications for big game species. It is in the process of revising big game range boundaries across the state, but the range designations that have been in place for the last several years are used herein. Table 3.60 presents a summary of small game and upland bird hunting in those areas that may potentially be impacted by the proposed projects.

Elk. Elk in the SPPA are part of the 2,587-square mile Piney Herd Unit, which extends from the east slope of the Wyoming Range east to Highway 189 and the Green River (BLM 2004b). The SPPA is completely encompassed within the Piney Herd Unit. BLM is responsible for management of 38% of the surface in the Piney Herd Unit; the U.S. Forest Service is responsible for management of 30% of the surface; and the remaining 32% of the surface is in state and private ownership. Approximately 23,000 acres (2.3%) of the Piney Herd Unit have been disturbed by wells, roads, towns, etc.

Table 3.58 Herd Units and Landownership in the PFO Area.[1]

		Ownership/Management (acres)		
Herd Unit Name	Total Acres	Federal	State/Private	Disturbed within Unit (acres)
Piney Elk Herd Unit	1,655,680	1,125,862	529,818	23,000
Wyoming Range Mule Deer Herd Unit	3,577,600	2,683,200	894,400	61,000
Sublette Antelope Herd Unit	6,749,440	4,994,586	1,754,854	85,000
Sublette Moose Herd Unit	3,710,720	2,857,254	853,466	87,000

1 BLM (2004b).

Table 3.59 Summary of Hunters and Hunter-Days for Potentially Project-Affected Big Game Species in the PFO Area, 2002.[1]

	Wyoming						Potentially-Affected Herd Units[2]					
	Hunters per Year[3]			Hunter-Days per Year[3,4]			Hunters per Year[3]			Hunter-Days per Year[3,4]		
Species[5]	Total	Resident	Non-resident	Total	Resident	Non-resident	Total	Resident	Non-resident	Total	Resident	Non-resident
Antelope	33,569	15,776	17,793	101,989	51,208	50,781	4,382	2,881	1,501	13,490	9,356	4,134
Mule deer	84,589	52,710	31,879	342,670	213,182	129,488	7,158	5,169	1,989	42,752	29,554	13,198
Elk	67,828	56,087	11,741	423,409	353,022	70,387	2,536	2,279	257	17,535	15,817	1,718
Moose	1,350	1,136	214	9,071	7,861	1,210	614	522	92	4,008	3,407	601
Total[4]	187,336	125,709	61,627	877,139	625,273	251,866	14,690	10,851	3,839	77,785	58,134	19,651

1 WGFD (2002, 2003a).
2 The proposed project areas are encompassed within several herd units, including: Sublette Antelope Herd Unit, Wyoming Range Mule Deer Herd Unit, Piney Elk Herd Unit, Sublette Moose Herd Unit.
3 Calculated from Harvest, Hunting Pressure, Hunter Success By Hunt Area 2002 reports for each species. Totals may not match state-wide summary tables.
4 WGFD defines a "hunter-day" as any day hunting occurred, regardless of actual time spent hunting. This data is based on licensed hunter survey reports.
5 Species that may occur infrequently within the JIDPA/SPPA hunt areas that WGFD does not manage for hunting in the project areas include bighorn sheep, Rocky Mountain goat, black bear, mountain lion, and bison.

Table 3.60 Summary of Potentially Project-Affected Small Game and Upland Bird Hunters and Hunter-Days in the PFO Area, 2002.[1]

	Total Wyoming		Area 7[2] (Eden)		Area 3[3] (Bridger)		Waterfowl Area 5B[2,3] (Upper Green River Basin)	
Species	Number of Hunters per Year	Hunter-Days per Year	Number of Hunters per Year	Hunter-Days per Year	Number of Hunters per Year	Hunter-Days per Year	Number of Hunters per Year	Hunter-Days per Year
Blue grouse	4,898	21,102	73	476	330	2,432	--	--
Bobcat (trap and rifle)	199	6,956	--	--	63	1,596	--	--
Chukar	1,369	3,921	6	6	--	--	--	--
Cottontail	5,814	25,566	316	1,981	152	535	--	--
Duck	6,239	44,850	--	--	--	--	185	839
Goose	5,708	32,110	--	--	--	--	99	363
Gray partridge	1,086	3,807	7	7	--	--	--	--
Mourning dove	2,648	14,470	46	73	--	--	--	--
Pheasant	6,816	28,999	26	20	--	--	--	--
Ruffed grouse	2,175	10,565	106	562	350	2,148	--	--
Greater sage-grouse	2,947	7,164	271	938	231	615	--	--
Sharp-tail grouse	821	3,658	7	7	--	--	--	--
Snowshoe hare	385	1,505	7	7	16	192	--	--
Squirrel	455	1,313	7	13	33	119	--	--
Totals	41,560	205,986	872	4,090	1,175	7,637	284	1,202

1 WGFD (2003b).
2 Encompasses the JIDPA in its entirety.
3 Encompasses the SPPA in its entirety.

The JIDPA is not within the WGFD-designated range for this species (BLM 2004c). Therefore, recreational activity related to elk is unlikely to occur in the JIDPA. Elk hunting on the JIDPA is not addressed further herein.

Mule Deer. Wyoming Range Mule Deer Herd Unit encompasses 5,590 square miles in portions of Sublette, Lincoln, and Sweetwater Counties in western Wyoming, and encompasses the entire SPPA (BLM 2004b). BLM is responsible for management of 35% of the surface of the Wyoming Range Herd Unit; the USFS is responsible for management of 40% of the surface; and the remaining 25% is primarily in state and private ownership. Approximately 61,000 acres (1.7%) of the Wyoming Range Herd Unit have been disturbed by wells, roads, towns, etc.

Mule deer have been observed on the JIDPA; however, no WGFD-designated mule deer range has been delineated on the project area. Therefore, recreational activity related to mule deer is unlikely to occur in the JIDPA (BLM 2004c). Mule deer hunting on the JIDPA is not addressed further herein.

Pronghorn. The JIDPA and SPPA are entirely encompassed within the Sublette Pronghorn Antelope Herd Unit, which occupies approximately 10,546 square miles (BLM 2004b, BLM 2004c). BLM is responsible for management of 64% of the surface of the Sublette Herd Unit; the USFS is responsible for management of 4% of the surface; 4% is managed by the Bureau of Reclamation; and 26% is in state and private ownership. Approximately 85,000 acres (1.3%) of the Sublette Herd Unit have been disturbed by wells, roads, towns, etc.

Moose. Moose in the SPPA are part of the 5,798-square mile Sublette Herd Unit, which extends roughly from the Continental Divide west to the Wyoming-Utah state line and from approximately Jackson south to the northeastern corner of Lincoln County (BLM 2004b). The SPPA is entirely encompassed within the Sublette Herd Unit. BLM is responsible for management of 8% of the surface in the Sublette Herd Unit; the USFS is responsible for management of 69% of the surface; and the remaining 23% is in state and private ownership. Approximately 87,000 acres (2.3%) of the Sublette Herd Unit have been disturbed by wells, roads, towns, etc.

The JIDPA is not within any WGFD-designated range for this species. Therefore, recreational activity related to moose is unlikely to occur in the JIDPA (BLM 2004c). Moose hunting on the JIDPA is not addressed further herein.

Bighorn Sheep. No bighorn sheep herd unit occurs within the JIDPA or SPPA and the project areas are not within the WGFD-designated range for this species. However, the eastern boundary of the Darby Mountain Herd Unit abuts the western boundary of the SPPA, and bighorn sheep may occasionally occur in the area. Recreational activity related to bighorn sheep is unlikely to occur in the project areas (BLM 2004b, 2004c). Bighorn sheep hunting on the JIDPA and SPPA is not addressed further herein.

Black Bear. Black bear may occur in the vicinity of the SPPA but are unlikely to be hunted in the vicinity of the project area; black bear are unlikely to occur in the vicinity of the JIDPA (BLM 2004b, 2004c). Therefore, black bear hunting on the areas is not addressed further herein.

Mountain Lion. Mountain lion may infrequently occur on the SPPA but are unlikely to be hunted in the vicinity of the project area (BLM 2004b). Mountain lion do not occur on the JIDPA (BLM 2004a). Therefore, mountain lion hunting on the JIDPA and SPPA is not addressed further herein.

Furbearers, Small Game, Upland Birds, and Waterfowl. Furbearers are likely occur within the JIDPA and SPPA. Weasel, badger, skunk, coyote, red fox, and bobcat are likely to occur and may be hunted/trapped in the vicinity of the project areas. However, the WGFD has not collected hunter expenditure information for these species (WGFD 2003d); therefore, they are not addressed further herein.

The JIDPA lies entirely within Small Game Management Area 7 (WGFD 2003b); however, due to habitat limitations, only greater sage-grouse and desert cottontail are likely to occur and be hunted on the JIDPA. The SPPA is within Management Area 4 for bobcats and Management Area 3 for other furbearers and the SPPA is within Management Area 3 for small game (WGFD 2003b). Blue grouse, bobcat, cottontail, ruffed grouse, greater sage-grouse, snowshoe hare, and squirrel may occur in the vicinity of the project area and may be hunted on the SPPA. The WGFD has not collected hunter expenditure information for all small game species that may potentially occur and may occasionally be hunted and trapped on the JIDPA and SPPA (WGFD 2003d); therefore, impact analysis is provided only for cottontail and greater sage-grouse.

Waterfowl Area 5B encompasses the JIDPA and SPPA, and duck and goose may be hunted in the vicinity of the project areas (BLM 2004b, 2004c). The WGFD has not collected hunter expenditure information for the waterfowl species that may potentially occur and may occasionally be hunted on the JIDPA and SPPA (WGFD 2003d); therefore, these species are not addressed further herein.

3.6.3 Value of Recreational Use

Recreational activities (nonconsumptive and hunting) have important economic value both in terms of the satisfaction provided to local residents and visitors and the economic activity it generates for the regional economy. Recreation generates additional spending in the local economy that supports jobs and income. Economic stimuli occur as non-residents visit the area and spend money in the local economy, which in turn generates additional spending by local residents. It is assumed that if local residents were not participating in recreation, they probably would have spent their money on something else in the region's economy. Thus, expenditures by local residents are seen as a shifting of dollars from one sector to another within the local economy and not a net gain to the region. However, dollars that remain within the community when local residents have satisfactory recreational opportunities are important. Keeping dollars within the local economy helps maintain jobs, thus reducing employment and income fluctuations that may result if those dollars became an outflow from (i.e., are spent outside) the local economy. Outdoor recreation in general is important to the region both in terms of satisfaction to residents and economic stimulus for the regional economy.

3.6.3.1 Value of Nonconsumptive Recreation

The value of recreation was estimated using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). Nonconsumptive recreation was derived from UWAED (1997), and is presented in year 2000 dollars adjusted for inflation. The estimated per day value of recreation in the PFO is summarized in Table 3.61.

3.6.3.2 Value of Hunting

The method used to determine the value of hunting is based that used by UWAED (1997) updated with 2002 hunting and hunter expenditure data from WGFD (2003a, 2003b, 2003c), and is presented in year 2000 dollars, adjusted for inflation. The JIDPA and SPPA are fully encompassed by the Sublette Antelope Herd Unit, Wyoming Range Mule Deer Herd Unit, and Piney Elk Herd Unit, and for the purposes of this report, each species that occurs within a potentially affected herd unit in the study area will be assumed to be evenly hunted across the herd unit because it is not possible to derive from existing data exactly where any individual hunts. This method results in a conservative overestimate of the value of hunting in a particular area because in actual practice, hunting liekly does not occur evenly across all areas of a hunt unit. The value of hunting for each species managed for hunting and potentially occurring on the proposed project areas is presented in Table 3.62. Species that may occur infrequently within the hunt areas encompassing the JIDPA and SPPA or that WGFD does not manage for hunting in the project areas are not analyzed herein (BLM 2004b, 2004c).

The value per hunter-day was established by dividing the total estimated hunter expenditures per species by total hunter-days (Table 3.62). The total value of hunter expenditures attributable to the potentially affected herd units was determined for each species by multiplying the hunter days for each species in the potentially affected hunt areas by the value per hunter day for that species. According to WGFD (2003a, 2003b, 2003c), the percentage of hunter expenditures contributed to all hunter expenditures in Wyoming by each species in the potentially affected hunt areas were antelope (13.2%), mule deer (12.5%), elk (4.1%), moose (44.2%), cottontail (9.8%), and greater sage-grouse (21.7%). The potentially affected hunting areas contributed 10.0% of all hunting expenditures in Wyoming.

Table 3.61 Value of Recreation, PFO Area, 1997.[1]

Recreation Activity	Value per Visitor-Day ($)
General recreation	10.18
Developed camping	15.73
Primitive camping	19.85
Day hiking	33.01
Picnicking	14.32
Sightseeing	16.68
Gathering forest products	15.17
Wilderness recreation	14.45
Big game hunting	77.25
Trout fishing	30.04
Wildlife watching	30.04
Snowmobiling	51.50
Average value per visitor day	27.35

1 In Year 2000 dollars, adjusted for inflation. Source: UWAED (1997). Categories defined by this source vary from RMIS categories; therefore, some differences may exist in actual value per visitor day.

Table 3.62 Value of Hunting of Species Potentially Occurring on the Project Area, Wyoming and Study Area, 2002.

	Wyoming					Attributable to Potentially Affected Hunt Areas					
	Hunter-Days[1,2]			Hunter Expenditures[3] ($)	Average Value/ Hunter Day ($)	Hunter-Days[4]			Hunter Expenditures ($)		
Species[5]	Total	Resident	Non-resident			Total	Resident	Non-resident	Total	Resident	Non-resident
Antelope	101,989	51,208	50,781	38,888,895	381.30	13,490	9,356	4,134	5,143,737	3,567,443	1,576,294
Mule Deer	342,670	213,182	129,488	113,662,555	331.70	42,752	29,554	13,198	14,180,838	9,803,062	4,377,777
Elk	423,409	353,022	70,387	79,984,175	188.91	17,535	15,817	1,718	3,312,537	2,987,989	324,547
Moose	9,071	7,861	1,210	1,788,620	197.18	4,008	3,407	601	790,297	671,882	118,416
Cottontail[6]	25,566	NA	NA	4,424,464	173.06	2,516	NA	NA	435,419	--	--
Greater sage-grouse[6]	7,164	NA	NA	933,437	130.30	1,553	NA	NA	202,356	--	--
Total	877,139	625,273	251,866	239,682,147	273.25	81,854	NA	NA	24,065,185	--	--

1 WGFD (2003a, 2003b). Calculated from Harvest, Hunting Pressure, Hunter Success By Hunt Area 2002 reports for each species. Totals may not match state-wide summary tables or WGFD (2003c).
2 WGFD defines a "hunter-day" as any day hunting occurred, regardless of actual time spent hunting. This data is based on licensed hunter survey reports.
3 WGFD (2003c). In year 2000 dollars, adjusted for inflation. WGFD does not distinguish between resident and non-resident expenditures.
4 Refer to Tables 3.59 and 3.60.
5 Species that may occur infrequently within the affected areas that WGFD does not manage for hunting in the project areas may include bighorn sheep, Rocky Mountain goat, black bear, and mountain lion (BLM 2004b, 2004c).
6 WGFD does not separate resident and non-resident hunter days for small and upland game.

The value attributable to each project area was determined by multiplying the percent of the herd unit occurring on the project area (Table 3.63) by the number of hunter-days for the entire herd unit. That number was multiplied by the average value/hunter-day for a particular species to arrive at the potential value of hunting for a particular species likely to be hunted on each project area. The value was not calculated for species unlikely to occur or to be hunted on the project areas.

<u>JIDPA Hunting Value</u>

Because elk, mule deer, and moose are unlikely to occur on the JIDPA, there is no value attributable to the project area for those species. Antelope occur on the JIDPA, and an estimated 61.0 hunter days (0.4% of the Sublette Antelope Herd Unit hunter days) are attributed to the JIDPA. At a value of approximately $381.30/hunter day, approximately $23,244 of hunter expenditures for antelope annually is attributable to hunting on the JIDPA. Approximately 1.0% of hunting in Small Game Management Area 7 for cottontail and greater sage-grouse each are attributable to hunting on the JIDPA. Cottontail account for 26.4 hunter days for a value of approximately $4,569.84 of hunter expenditures attributable to annual cottontail hunting on the JIDPA. Greater sage-grouse account for 16.3 hunter days for a value of approximately $2,123.78 of hunter expenditures attributable to greater sage-grouse hunting annually on the JIDPA.

<u>SPPA Hunting Value</u>

Elk are likely to occur on the SPPA, and an estimated 330.8 hunter days (1.9% of the Piney Elk Herd Unit hunter days) are attributable to the SPPA. At a value of approximately $188.91/hunter day, approximately $62,484 of hunter expenditures for elk annually is attributable to hunting on the SPPA. Mule deer are likely to occur on the SPPA, and an estimated 373.2 hunter days (0.9% of the Wyoming Range Mule Deer Herd Unit hunter days) are attributable to the SPPA. At a value of approximately $331.70/hunter day, approximately $123,793 of hunter expenditures for mule deer annually is attributable to hunting on the SPPA. Antelope are likely to occur on the SPPA, and an estimated 62.4 hunter days (0.5% of the Sublette Antelope Herd Unit hunter days) are attributable

Table 3.63 Contribution of JIDPA and SPPA to Hunting Revenues.[1]

Species	Herd Unit Name	Total Acres	Hunter-Days Attributable to Unit	Average Value/ Hunter-Day ($)	Project Area (acres)	% Acres of Unit in Project Area	Hunter-Days in Project Area	Annual Value Attributable to Hunting on Project Area ($)
JIDPA								
Elk	--[2]	n/a[3]	n/a[3]	n/a[3]	0[2]	--	--	--
Mule deer	--[2]	n/a[3]	n/a[3]	n/a[3]	0[2]	--	--	--
Antelope	Sublette Antelope Herd Unit	6,749,440	13,490	381.30	30,500	0.5%	61.0	23,244.00
Moose	--[2]	n/a[3]	n/a[3]	n/a[3]	0[2]	--	--	--
Cottontail	Small Game Management Area 7	2,906,068	2,516	173.06	30,500	1.0%	26.4	4,569.84
Greater sage-grouse	Small Game Management Area 7	2,906,068	1,553	130.30	30,500	1.0%	16.3	2,123.78
Total	--	n/a[3]	n/a[3]	n/a[3]	n/a[3]	n/a	103.7	29,937.63
SPPA								
Elk	Piney Elk Herd Unit	1,655,680	17,535	188.91	31,231	1.9%	330.8	62,484.20
Mule deer	Wyoming Range Mule Deer Herd Unit	3,577,600	42,752	331.70	31,231	0.9%	373.2	123,792.98
Antelope	Sublette Antelope Herd Unit	6,749,440	13,490	381.30	31,231	0.5%	62.4	23,801.09
Moose	Sublette Moose Herd Unit	3,710,720	4,008	197.18	31,231	0.8%	33.7	6,651.48
Cottontail	Small game management area 7	2906068	2,516	173.06	31,231	1.1%	27.0	4,679.37
Greater sage-grouse	Small game management area 7	2906068	1,553	130.30	31,231	1.1%	16.7	2,174.68
Total	--	n/a[3]	n/a[3]	n/a[3]	n/a[3]	n/a[3]	843.9	223,583.81

1 In year 2000 dollars, adjusted for inflation.
2 This species not likely to be hunted on project area.
3 n/a = column is not additive.

to the SPPA. At a value of approximately $381.30/hunter day, approximately $23,801.09 of hunter expenditures for antelope annually is attributable to hunting on the SPPA. Moose are likely to occur on the SPPA, and an estimated 33.7 hunter days (0.8% of the Sublette Moose Herd Unit hunter days) are attributable to the SPPA. At a value of approximately $197.18/hunter day, approximately $6,651 of hunter expenditures for moose annually is attributable to hunting on the SPPA. Approximately 1.1% of hunting in small game management area 7 for cottontail and greater sage-grouse each are attributable to hunting on the SPPA. Cottontail account for 27.0 hunter days for a value of approximately $4,679 of hunter expenditures is attributable to cottontail hunting on the SPPA. Greater sage-grouse account for 16.7 hunter days for a value of approximately $2,175 of hunter expenditures is attributable to greater sage-grouse hunting annually on the SPPA.

4.0 IMPACT ANALYSIS

4.1 ECONOMIC ANALYSIS OVERVIEW

Regional economic activity is little influenced by political boundaries. Typically, it is difficult to describe anything smaller than a county, and more often a group of counties or a metropolitan area, as constituting a functioning economy.

The economic study area for this analysis includes the counties and communities most likely to be affected, including LaBarge in Lincoln County; Pinedale, Big Piney, Marbleton, and Boulder in Sublette County; and Eden, Farson, and Rock Springs in Sweetwater County.

An area's economic base is comprised of industries that are primarily responsible for bringing outside income into the local economy. These industries typically export their goods and services outside the region and in turn support ancillary industries such as retail trade, housing construction, and personal services within the region. The location of important industries in certain areas has traditionally been tied to such factors as natural resource base, cost factors (transportation and labor), and existing transportation infrastructure. However, technology has affected these location factors.

Existing documents and documents in preparation that were utilized to estimate potential and cumulative economic impacts for the study area included the following reports:

- SWREE (UWAED 1997);
- the economic effect analysis developed for the JMHCAP (UWAED 2003);
- the JMHCAP Draft EIS (BLM 2003a);
- BLM's *Socioeconomic Profile-Pinedale* (BLM 2003b);
- the economic impact analysis currently being prepared for the PFO RMP (UWAED [2004]);
- BLM's reasonable foreseeable development information; and
- the existing county planning documents (SCBC and SCPC 2003).

Additional information was obtained from BLM and Operators as necessary.

4.1.1 Methods of Economic Analysis

4.1.1.1 Time Series and Cross-Sectional Analysis

In economic analysis, the two most commonly used tools are time series analysis and cross-sectional comparisons. Time series analysis, as the name implies, involves plotting data trends over time for one or more geographic areas or other units (e.g., industries) of analysis. Options for the nature of this analysis include nominal data (i.e., the actual numbers), percentage change over time from some base year (e.g., where the base year figure is converted to 100), and the ratio between two figures (e.g., a state's per capita income as a percentage of the national figure). Time series analysis provides the basis for understanding how an economy is evolving over time, and in relation to other areas. While time series tracks trends over time, cross-sectional analysis examines the distribution of one variable in relation to other variables at one point in time. Typical visual tools include bar graphs and pie charts. Examples of cross-sectional analysis include the distribution of jobs by industry, of population by race, and of income by source. Cross-sectional analysis allows an understanding of the economic structure.

4.1.1.2 Location Quotient

Location quotients are used to measure the extent to which the contribution of one subgroup of economic factors (e.g., an industry, occupational group) to a regional economy is greater or lesser than the contribution of that subgroup to a larger, reference economy (usually, the U.S.). For instance, if the manufacturing sector provided 18% of all jobs in a region, and the U.S. figure was 15%, the location quotient would be 1.2 (i.e., 18/15). When used to measure industry concentration, a location quotient is taken as a rough indicator of a region's competitiveness in that industry. The higher the location quotient, the greater the competitive advantage a region appears to have. Plotting location quotients over time for key industries in an economic base is one visual way to gauge changes in relative competitiveness.

However, the location quotient can be spurious. For example, if a region suffers a major job loss with the closure of a large employer that is not replaced, other economic base industries' share of total jobs (and their location quotients) would rise even if their employment is stable, because the total number of jobs (the denominator) has fallen. In this case, an apparent increase in competitiveness is in fact illusory.

To assess the importance of major industries as a basic industry, BLM calculated location quotients on nine major industries as listed in Table 4.1 (BLM 2003a). A location quotient was calculated for both employment and income and compares each industry's share of total local employment or income (PFO area) to the industry's state or national share. This quotient yields a value generally between 0 and 2, where 1 indicates an equal share percentage between the local and state or national economies. Location quotients greater than 2 indicate a strong industry concentration while those less than 0.50 indicate a weak concentration. Table 4.1 indicates the PFO area mirrors the state's economy as a whole in many ways. However, there are industries that show a stronger concentration in the area compared to the state's economy, including mining, manufacturing, and transportation and utilities.

Two industries that are weak in this area compared with the state are services and FIRE. When compared to the national economy, mining (includes oil and gas) shows an extremely high concentration in both employment and earnings. This is true for the earnings in the transportation and utilities sector as well. Alternatively, earnings for farm and agriculture services, manufacturing, trade, and FIRE for the area show a weak concentration compared to the national economy.

4.1.1.3 Shift-Share Analysis

Shift-share analysis is a means of attributing change in a region's economy (e.g., change in jobs or earnings) to various factors--change in the nation's economy, the particular industry mix in the region, and the competitiveness of the region's economic base industries compared to

Table 4.1 Location Quotients, 2000.[1]

	Location Quotient			
	Employment		Earnings	
Industry	Wyoming	U.S.	Wyoming	U.S.
Farm and Agricultural Services	1.12	1.53	0.43	0.23
Mining	2.22	26.20	2.09	182.63
Construction	1.17	1.53	0.99	1.80
Manufacturing	1.79	0.66	1.78	0.27
Transportation and Utilities	1.54	1.68	1.21	12.55
Trade	0.96	0.95	0.78	0.31
FIRE	0.76	0.65	0.59	0.38
Services	0.74	0.60	0.60	3.86
Government	0.90	1.30	0.71	1.53

[1] Source: BLM (2003a).

similar industries elsewhere. Shift-share analysis is complex and if insufficient data exists for particular economic factors, the analysis is meaningless.

4.1.1.4 Economic Modeling

Modeling encompasses a variety of analytic approaches, such as input-output analysis and economic simulation, that forecast how an economy would behave under certain circumstances. These circumstances may be a specific event in the regional economy (e.g., opening of a new mill, closure of an old one, building of a convention center), a particular type of policy intervention (e.g., change in the property tax rate), or macroeconomic in nature (e.g., shift in the prime rate).

Economic impact analysis is defined as an assessment of change in overall economic activity as a result of some change in one or several economic activities. It involves applying a final demand change to a predictive I/O model, then analyzing the resulting changes in the economy. This study primarily utilizes I/O analysis performed by the UWAED.

4.2 IMPLAN® MODELING SYSTEM

IMPLAN® (**IM**pact **A**nalysis for **PLAN**ning) was originally developed by the U.S. Department of Agriculture, Forest Service (USFS) in cooperation with the Federal Emergency Management Agency and the BLM to assist in land and resource management planning (Minnesota IMPLAN Group, Inc. 2000). IMPLAN® provides estimates of the additional economic activity associated with sales of goods or services. This methodology has been packaged, along with the necessary data files, as IMPLAN® Pro by the Minnesota IMPLAN Group, Inc. (MIG) of Stillwater, Minnesota, and is the basis for the analysis in this report. Some of the conventions used by IMPLAN® are discussed below.

4.2.1 Database Components

The IMPLAN® databases consist of two major parts: 1) national-level matrices and tables and 2) economic and physical data at the county and/or state level. The national matrices are combined with regional data to create a regional model which can be edited to reflect local conditions. For this analysis, UWAED used updated calibrated county-specific data to more accurately reflect activities in the study area.

The IMPLAN® data is divided into four main categories:

1. industry output,
2. employment,
3. value added (includes employee compensation), and
4. final demands.

Industry output represents the dollar value of an industry's total production. The data is derived from a number of sources including U.S. Census Bureau economic censuses and the BLS employment projections.

Employment is listed as a single number of jobs for each industry. The data is derived from ES202 employment security data supplemented by county business patterns and Regional Economic

Information System (REIS) data. All IMPLAN® databases (after 1985) include both full-time and part-time workers in employment estimates.

Value added includes employee compensation, proprietor income, other property type income, and indirect business taxes. Employee compensation includes the total payroll costs (including benefits) of each industry in the region. Proprietary income consists of payments received by self-employed individuals (includes private business owners, doctors, and lawyers). Other property type income consists of payments from rents, royalties, dividends, and interest. Indirect business taxes consist primarily of excise and sales taxes paid by individuals to businesses.

Final demands are the dollar value of goods and services purchased by consumers and institutions (federal, state, and local government). Personal consumption expenditures are the largest component of final demand, and consists of payments by individuals/households to industries for goods and services used for personal consumption. IMPLAN® final demands are measured in terms of producer prices.

4.2.2 Multipliers

Each industry that produces goods and services generates demands for other goods and services. Other producers, in turn, purchase goods and services. These indirect purchases (indirect effects) continue until "leakage" from the region (imports, wages, profits, etc.) stop the cycle. These iterations are described by multipliers.

Each of these multiplier types can be calculated for output, employment, and income (value added). Output multipliers are derived by dividing the total (direct, indirect, and induced) output effects by the direct output. An output multiplier provides an indicator of the total output created (direct, indirect, and induced) for each dollar of direct output.

Income multipliers (or any of the value added components) are derived by dividing the total (direct, indirect, and induced) income effects by the direct income. An income multiplier provides an indicator of the total income created (direct, indirect, and induced) for each dollar of direct income. Employment multipliers are created in the same manner as the income multiplier, but using employment rather than income. An employment multiplier provides an indicator of the total jobs (direct, indirect, and induced) for each direct job.

4.2.3 Key Assumptions

IMPLAN® bases I/O modeling on several assumptions (MIG 2000).

- Constant returns to scale. Production functions are considered linear; if additional output is required, all inputs increase proportionately.
- No supply constraints. An industry has unlimited access to raw materials and its output is limited only by the demand for its products.
- Fixed commodity input structure. Assumes that price changes will not cause a firm to buy substitute goods. This structure assumes that changes in the economy will affect the industry's output, but not the mix of commodities and services it requires to make its product.
- Homogenous sector output. The proportions of all the commodities produced by the industry remain the same, regardless of total output (i.e., an industry will not increase the output of one product without proportionately increasing the output of all its other products).
- Industry technology. An industry uses the same technology to produce all its products (i.e., an industry has a primary or main product and all other products are byproducts of the primary product).

4.2.4 Wyoming Data and Analysis Conventions

This analysis makes use of a data set representing Wyoming for the Year 2000. All impact amounts expressed in 2000 dollars were adjusted to 2002 dollars using IMPLAN deflators based on the BLS's

CPI. Through IMPLAN, direct employment from the model was used to estimate all of the associated indirect and induced effects.

4.3 IMPACT ANALYSIS

Project-specific economic activity analyses were prepared using the methods developed for the SWREE (UWAED 1997) and the economic effect analysis developed for the JMHCAP (UWAED 2003; BLM 2003a). Additional information was obtained from the Operators, BLM, BLM's pertinent reasonable foreseeable development documents, Wyoming Agricultural Statistics, WGFD, or other sources as necessary.

The economic impacts of the JIDP and SPP and alternatives on the economic study area were analyzed using IMPLAN® as directed by BLM (personal communication, October 14 and 17, 2003, with Roy Allen, Economist, BLM Wyoming State Office). IMPLAN® I/O modeling provides a mathematical accounting of the flow of dollars and commodities through a region's economy. These types of models provide estimates of how a given amount of a particular economic activity translates into jobs and income in a region. This I/O analysis used coefficients specifically calibrated by the UWAED for the study area. The coefficients were developed as part of the SWREE from a combination of primary and secondary data specific to the region. The calibrated county-specific coefficients have been updated for Lincoln, Sublette, and Sweetwater Counties for the new Pinedale RMP (UWAED 2004; BLM 2004a). The Year 2000 was used as the base year for this analysis.

TRC Mariah, in consultation with the Operators, BLM, and UWAED, developed estimates of physical outputs for selected commodities associated with the various alternatives and determined the appropriate values for these commodities. UWAED then used the output and value data in IMPLAN® to estimate the economic impacts of the projects on the economic study area.

The economic analysis for the projects focused on three types of commodities, including natural gas, cattle grazing, and recreation activities (nonconsumptive and hunting). The I/O models used county-specific calibrated coefficients updated from the model developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). The model used 2000 data for Lincoln, Sublette, and Sweetwater Counties, and provides a reasonable estimate of the structure of the economy for the study area. The I/O model estimated aggregate changes in employment and earnings across all counties; however, it is not possible to estimate where these impacts will occur within each of the counties. Some secondary and induced impacts may occur outside the study area in the state, region, or nation.

Prior to modeling, input data was adjusted for inflation and converted to 2000 dollars. After modeling, impact dollar values were discounted using a 3.25% real discount rate as recommended by the OMB (2004). The OMB recommended using a real discount rate of 3.25% for constant-dollar benefit-cost analysis to approximate the marginal pretax rate of return on an average investment in the private sector in recent years (BLM 2003a).

The I/O model required a series of inputs and assumptions specific to the study area. Assumptions included the value of production resulting from land uses within the JIDPA and SPPA under each alternative (see Sections 3.5 and 3.6). BLM staff and cooperating agencies provided information on current project area uses and how those uses may change under each alternative. This provided a physical quantitative measure of inputs necessary for the economic impact analysis (e.g., number of gas wells, AUMs, RVDs).

Estimates of inputs, including prices, were used to evaluate the potential sales from uses of the JIDPA and SPPA under each alternative. This is the direct sales estimate that serves as the input into the I/O model to obtain an estimate of total economic impact for each alternative (changes in direct and indirect income and employment).

The economic impact analysis for the No Action Alternatives was the first model prepared to provide a baseline for the alternatives analysis. It contains a discussion of impacts that were used for comparison with other alternatives. Where impacts are the same among alternatives, reference was made to those alternatives so that impact discussions are not repeated. Cumulative impacts for the Proposed Actions and each alternative are discussed and include the social and economic impacts of the Proposed Actions and alternatives in combination with other proposed, existing, or reasonable foreseeable developments.

The SPP analysis was based on a 20-year development horizon (2004-2024) and a 47-year production horizon (2004-2051), with year 2000 being used as the base year. Cumulative economic effects are expressed as both short-term (2004-2013) and long-term (2014-2051).

The JIDP analysis was based on a 3- to 42-year (2004-2046) development horizon and a 43- to 85-year (2004-2089) production horizon, with year 2000 being used as the base year. Cumulative effects are expressed both as short-term (2004-2013) and long-term (2014-2089). It was assumed for the purposes of analysis that production from all wells would follow an average decline curve (see Chapter 5) over a 40-year life of well based on actual Jonah Field production information provided by Operators. It was assumed that 4.2% of production would be derived from state minerals (to calculate severance taxes) and 95.8% of production would be derived from federal minerals (to calculate federal royalties).

5.0 JONAH INFILL DRILLING PROJECT ECONOMIC IMPACT ANALYSIS

EnCana Oil and Gas (USA), Inc. [EnCana], BP America Production Company, and other companies (collectively referred to as "Operators") propose to expand existing Jonah Field natural gas drilling and development operations in south-central Sublette County approximately 32 mi southeast of Pinedale, 28 mi northwest of Farson, and 1.5 to 11 mi west of U.S. Highway 191. Expanded development is proposed in portions of Townships (T) 28 and 29 North (N), Range (R) 107, 108, and 109 West (W). The proposed project is described in detail in BLM (2004c).

5.1 PROPOSED ACTION AND ALTERNATIVE DESCRIPTIONS

The Proposed Action, No Action, and seven alternative actions are evaluated in this document:

- the No Action Alternative (assumes production only from 533 existing wells on 497 well pads),
- the Proposed Action (assumes up to 3,100 new wells [2,825 conventional, 275 directional] on up to 16,200 acres new disturbance);
- Alternative A (maximum recovery) (assumes up to 3,100 new [all conventional] from 3,100 new well pads);
- Alternative B (assumes up to 3,100 new wells [all directional] from the existing 497 well pads);
- Alternative C (assumes up to 1,250 new [975 conventional, 275 directional] wells from a maximum of 1,250 new well pads);
- Alternative D (assumes up to 2,200 new [1,925 conventional, 275 directional] wells from a maximum of 2,200 new well pads, respectively);
- Alternative E (assumes up to 3,100 new [266 conventional, 2,834 directional] wells on up to 266 new well pads);
- Alternative F (assumes up to 3,100 new [1,028 conventional, 2,072 directional] wells on up to 1,028 new well pads);

- Alternative G (assumes up to 3,100 new [2,553 conventional, 547 directional] wells on up to 2,553 new well pads); and
- Preferred Alternative (approximately the same as Alternative G).

A detailed description of the Proposed Action and alternatives is provided in BLM (2004c).

The PFO and RSFO RMP RODs (BLM 1988b, 1997, 2004a) and land use plans for both the state (WSLUC 1979) and local areas (SCBC and SCPC 2003) identify the following management objectives associated with socioeconomics:

- to coordinate land use decisions with economic factors and needs;
- to mitigate economic, social, and environmental impacts on communities caused by rapid or large-scale growth and development;
- to plan for the provision of public facilities and services, including safe and efficient transportation and utility systems, in coordination with local land use policies, goals, and objectives; and
- to provide adequate, suitable land to meet housing needs of all residents.

BLM (2004a) criteria stipulate that impacts to socioeconomic resources would be considered potentially significant if any of the following were to occur:

- changes in total employment in Lincoln, Sublette, and Sweetwater Counties exceed an increase or decrease of 1% of the trend or
- changes in local tax revenues exceed an increase or decrease of 15% of the trend.

The SCBC and SCPC (2003) emphasize the following values specific to the social traditions and socioeconomic base of Sublette County.

- Sublette County's unique local culture should be preserved and enriched, a culture characterized by a rural Wyoming flavor, a thriving private business community, an atmosphere friendly to working families, and the security of friendly crime-free communities.
- There should be an abundance of economic freedom and diverse opportunities for residents old and new to pursue prosperity and happiness--complemented and

sustained by a business-friendly atmosphere, reasonable taxation, a low cost of living, limited regulation, wise development of its natural resources, and a strong tradition of a good work ethic.

BLM defines a significant change as any change that would result in a 15% or greater change of any affected factor. The following analyses show that the Proposed Action and alternatives are compatible with BLM management objectives. Socioeconomic impacts are anticipated as a result of increased local taxes and revenues. Under the No Action Alternative, the effects of increased employment, economic activity, and substantial federal, state, local, and county revenues would not occur; therefore, this alternative would not be in accord with BLM, state, and local land use plans. Cumulative impacts are likely to have some economic and social in the CIAA.

Depending upon the number of wells authorized (1,250, 2,200, or 3,100) and the number of wells developed per year (75, 150, or 250), project construction, drilling, completion, and production would require from 43 to 82 years to complete (the LOP). The fewer the number of wells and/or the faster the pace of development, the shorter the LOP. The estimated number of years to complete the project under each alternative is shown in Table 5.1. Production for the LOP could range from 3,366 billion cubic feet (BCF) under the No Action Alternative (no new development) to 8,191 BCF under the Alternative A (3,100 new wells and new well pads). The anticipated gas and condensate recovery volumes are shown in Table 5.2.

The economic impact of the Proposed Action, alternatives, and cumulative actions on the study-area economy were analyzed in two phases using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). Phase I was the development phase, which considered the economic impacts associated with drilling and completion of infill wells. Due to the large price fluctuations in natural gas, the economic impacts of production were estimated based on cost of production rather than total output. Phase II considered the economic impact of natural gas and condensate production as a result of the production from the wells completed under Phase I.

Table 5.1 Estimated Years to Complete Project, All Alternatives.[1]

Wells Completed/ Year	No Action Alternativ e	Proposed Action 3,100 Wells/ 2,825 Pads	Alternative A (Maximum Recovery) 3,100 Wells/ 3,100 Pads	Alternative B 3,100 Wells/ No New Pads	Alternative C 1,250 Wells	Alternative D 2,200 Wells	Alternative E 3,100 Wells/ 266 Pads	Alternative F 3,100 Wells/ 1,028 Pads	Alternative G 3,100 Wells/ 2,553 Pads
75	NA	42.0[2]	42.0	42.0	17.0	30.0	42.0	42.0	42.0
150	NA	21.0[2]	21.0	21.0	9.0	15.0	21.0	21.0	21.0
250	NA	12.5	12.5	12.5	5.0	9.0	12.5	12.5	12.5

1 Well production operations will continue for an estimate of 40 years post-development; therefore, the estimated LOP is from 43 to 85 years (includes final reclamation).
2 Operators propose a 250 well/year development rate; however, BLM may require alternate development rates of 75 or 150 wells/year.

Table 5.2 Anticipated Gas and Condensate Recovery Volumes for Each Alternative, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.[1]

Alternative	Approximate Natural Gas Recovered (billion cubic feet [BCF])[2]	Approximate Condensate (Oil) Recovered[2] (millions of barrels)
No Action	3,366	31.98
Proposed Action[3]	7,947	75.50
Alternative A (Maximum Recovery)	8,191	77.81
Alternative B[3]	6,124	58.18
Alternative C	6,657	63.24
Alternative D	7,554	71.76
Alternative E[3]	6,302	59.87
Alternative F[3]	7,186	68.27
Alternative G[3]	7,876	74.82

1 Data provided by EnCana.
2 Assumes 10,500 BCF of gas in place; 1 BCF corresponds to the annual use by approximately 13,700 residences (EIA 2004). Typical gas field recoveries range from 75%-85% of gas in place.
3 Assumes 10% of directional wells do not reach total depth and 1,000 ft of formation cannot be developed. Does not fully account for losses/unrecovered resources associated with undeveloped wells (assumed uneconomic).

In the long-term, all alternatives would likely result in economic impacts; however, population is not likely to be affected over the life of project (LOP), although there may be short-term (development phase) population impacts as a result of cumulative impacts from in-migration associated with this project in combination with other regional projects (e.g., Pinedale Anticline). Secondary employment AJEs may occur locally [i.e., within the study area], but would be distributed across the state, region, and nation, depending on the patterns of production and distribution associated with the secondary activity.

5.2 ASSUMPTIONS

5.2.1 Labor

The estimated direct-hire labor force is presented in Table 5.3. An estimated 7,011-16,863 worker-years of direct employment would be provided by the proposed project during the LOP.

5.2.2 Natural Gas Drilling and Completion Assumptions

For this analysis, it was assumed that all wells would be drilled and completed and there would be no dry holes.

The cost of drilling, completing, and setting production equipment is shown in Table 5.4. The total estimated cost to drill and complete a conventional well in the JIDPA is $2,186,684. Directional drilling adds an estimated $243,610 to the cost of drilling and completion; thus, the total estimated cost to drill and complete a directionally drilled well in the JIDPA is $2,430,294.

5.2.3 Natural Gas Production Assumptions

Natural gas economic activity will depend upon three primary authorizations: 1) total number of wells authorized, 2) total number of pads on which wells can be placed, and 3) rate of development.

Table 5.3 Estimated Work Force Requirements, All Alternatives, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.[1]

Employment Category	Worker-Days per Well	Worker-Years for 1,250 Wells[2]	Worker-Years for 2,200 Wells[2]	Worker-Years for 3,100 Wells[2]
Well Construction and Development				
Well pad and Access Road Construction (4 days x 4 workers)	16	77	136	191
Rig Transportation/Setup (5 days x 15 workers)	75	361	635	895
Drilling[3] (Straight Hole) (22 days x 11 workers x 2 shifts)	528	2,539	4,468	6,296
Completion Testing (17 days x 11 workers)	187	900	1,583	2,230
Pipeline Construction (4 days x 6 workers)	24	116	203	287
Total Well Construction and Development	830	3,984	7,025	9,899
Production and Maintenance Activities				
Production[4,5]	305	1,767	2,881	3,863
Workovers[6] (every 10 to 20 years) (10 days x 7 workers)	210	1,010	1,777	2,504
Total Production and Maintenance Activities	515	2,767	4,658	6,367
Abandonment and Reclamation (5 days x 10 workers)	50	241	423	597
Total	1,395	7,011	12,106	16,863

1 Assumes all wells are drilled and completed as producers.
2 260 worker-days = 1 worker-year.
3 Assumes all vertical (straight) wells.
4 Assumes 1 pumper can visit 20 wells/day, all pads are visited every 3 days, and a productive well life of 40 years.
5 Assumes six full-time production foremen and six full-time field clerks in addition to pumpers.
6 Assumes three workovers per well.

Table 5.4 Average Per Well Drilling and Completion Costs of Natural Gas Development, Jonah Infill Drilling Project, Sublette County, Wyoming.[1,2]

Cost Item	Cost to Drill (Dry Hole Without Pipe) ($)	Cost to Complete Well[3] ($)
INTANGIBLE DRILLING COSTS		
Surveys, permits, and fees	$ 5,000	--
Location and roads	42,620	--
Drilling contractor services	260,834	--
Drilling rig, mob/demob	59,250	--
Drill bits	43,100	--
Surface cementing service and equipment	16,000	--
BOP testing	1,500	--
Open hole logging	18,000	--
Contract supervision	18,900	--
Company supervision	6,000	--
Mud logging and geology	10,500	--
Drilling mud and chemicals	43,290	--
Surface rentals	19,660	--
Downhole rentals	31,500	--
Casing crews	4,500	--
Drilling water	20,000	--
Contract labor	5,000	--
Drilling admin overhead	7,500	--
Transportation and hauling	7,000	--
Total drilling intangible costs	$620,154	--
INTANGIBLE COMPLETION COSTS		
Completion rig and auxiliary services	--	$ 16,225
Snubbing unit	--	18,000
Contract supervision	--	12,500
Professional services	--	12,000
Cased hole slick line service	--	3,000
Casing crews	--	17,010
Cementing service and equip	--	50,000
Cased hole e-line services	--	82,000
Pumping services	--	36,000
Stimulation	--	860,048
Transportation and hauling	--	5,000
Location and roads	--	4,500
Completion water	--	106,752
Installation labor (battery construction)	--	8,500
Surface rentals	--	43,525
Downhole rentals	--	32,800
Frac flowback	--	30,000
Miscellaneous	--	1,000
Total intangible completion costs	--	$1,338,860

Table5.4 (Continued)

Cost Item	Cost to Drill (Dry Hole Without Pipe) ($)	Cost to Complete Well[3] ($)
TANGIBLE COSTS (DRILLING AND COMPLETION)		
Tubulars		
Surface[4]	$ 29,500	--
Production[5]	--	63,180
Tubing[6]	--	19,320
Wellhead equipment	3,920	23,000
Flowline	--	6,500
Storage tanks	--	12,500
Treating equipment (gas dehydrator and separator)	--	62,750
Combustors - emission controls	--	7,000
Total Tangible Costs	33,420	194,250
Total drilling cost	$653,574	--
Total completion cost	--	1,533,110
Total Cost (Drilling + Completion) for Conventional Wells	--	**$2,186,684**
Directional Drilling (average additional cost per well)		$243,610
Total Cost (Drilling + Completion) for Directionally Drilled Wells		**$2,430,294**

1 Source: Operators. Presented in year 2000 dollars, adjusted for inflation.
2 Source: Operators. Enumerated costs are for conventional drilling. Directional drilling would increase the total by an average of $243,610 per well.
3 Average assumed depth of 9,000 ft.
4 2,500 ft of 9 5/8-inch pipe at $11.80/ft.
5 11,700 ft of 4 1/2-inch pipe at $5.40/ft.
6 8,000 ft of 2 3/8-inch pipe at $2.30/ft.

Total recovery will depend upon the number of wells authorized (1,250, 2,200, or 3,100) and the number of pads they are placed on. Some combinations of conventional/directional drilling may make full recovery uneconomical. The fewer the number of wells and the faster the pace of development, the shorter the LOP (Table 5.4). An estimated 10,500 billion cubic feet (BCF) of natural gas and 99.8 million barrels (MBO) of Jonah Field condensate (oil) are assumed to be present beneath the JIDPA (Table 5.2). No alternative anticipates total recovery of all natural gas or condensate resources present in the field. Total annual per well cost of operation is estimated to be $229,548 (includes $16,831 of direct labor costs), or approximately $0.32/thousand cubic feet (MCF) of natural gas (Table 5.5).

Table 5.5 Annual Cost of Natural Gas Production, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.[1]

Annual Production Operating Costs	Annual Cost per Well
Annual Production (MCF)	717,232
Direct Labor and Overhead	16,831
Nonlabor Annual Costs	
Fuel, Chemicals, and Disposal	9,850
Surface Maintenance	5,847
Subsurface Maintenance	5,979
Electricity	--
Gas Compression Costs	--
Gas Transportation Costs	191,041
Total Annual Costs	229,548
Nonlabor Annual Costs	212,717
Total Annual Cost Per MCF	$0.32
Nonlabor Cost Per MCF	$0.30

1 Source: EnCana. Assumes natural gas recovery costs include recovery of condensate.

5.3 NATURAL GAS DEVELOPMENT AND PRODUCTION ECONOMIC ACTIVITY

Estimates of the economic activity resulting from oil and gas development on the southwest Wyoming economy in terms of total direct expenditures, secondary (non-project-required) labor earnings, and secondary job creation were based on the updated calibrated county-specific model from the SWREE and JMHCAP reports. The employment estimates were expressed as AJEs, based on BEA methodology (personal communication, February 20, 2004, with David T. Taylor, Professor, UWAED) (see Section 2.1.1). Activity is described both in terms of nominal dollars and real dollars (i.e., present value calculated by discounting) (see Section 2.2).

5.3.1 Drilling and Completion

As shown in Table 5.6, expenditures made to drill and complete one conventional well ($2,186,684), would generate economic activity (direct and secondary) of $2,719,091 (includes $532,407 of

Table 5.6 Per Well Economic Activity from Natural Gas Development, Jonah Infill Drilling Project, Sublette County, Wyoming.

Estimated Activity	Conventional Well	Directionally Drilled Well
Direct Expenditures[1,2]		
Drilling ($)	$653,574	$897,184
Completion ($)	$1,533,110	$1,533,110
Total Direct Expenditures ($)	$2,186,684	$2,430,294
Secondary Labor Earnings		
Drilling ($)	$239,402	$328,287
Completion ($)[2]	$293,005	$293,005
Total Secondary Labor Earnings ($)	$532,407	$621,292
Total Economic Activity per Well	**$2,719,091**	**$3,051,586**
Annual Job Equivalents (AJEs)		
Drilling	7.3	3.3
Completion[2]	9.4	1.2
Total AJEs per Well[3]	16.7	19.4
Average Earnings Per Created Job[4] ($)	$31,881	$32,025

1 Includes project-required labor costs.
2 Completion includes the cost of completion plus the setting of production equipment (see Table 5.2).
3 AJEs are jobs indirectly created as a result of the activity. Project-required jobs are presented in Table 5.1.
4 This estimated average annual starting wage per job would not necessarily be the actual wage paid for each created job. Actual wages are determined on an individual basis by employers as influenced by market forces.

secondary labor earnings) and would generate 16.7 AJEs (does not include project-required labor [see Table 5.1]). Expenditures made to drill and complete one directionally drilled well ($2,430,294) would generate economic activity (direct and secondary) of $3,051,586 (includes $621,292 of secondary labor earnings) and would generate 19.4 AJEs (does not include project-required jobs). This activity is assumed to remain constant across all alternatives on a per well basis. The timing of economic activity would depend on the approved number of wells and the rate of development.

Tables 5.7-5.13 show both the nominal and present value of annual and LOP activity anticipated from each development rate scenario. Alternatives are summarized in Table 5.14.

Table 5.7 Economic Activity Resulting from Natural Gas Development Under the Proposed Action, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate	Years to Develop Field	Economic Activity Resulting from Proposed Action (3,100 New Wells on 2,825 New Pads): 2,825 Conventional Wells Drilled – Annual	2,825 Conventional Wells Drilled – LOF	275 Directional Wells Drilled – Annual	275 Directional Wells Drilled – LOF	Total – Annual	Total – LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (69 conventional/6 directional)[1]	42.0						
Direct Economic Activity from Development[2] (millions of $)		150.9	6,337.0	14.6	612.4	165.5	6,949.4
Secondary Labor Earnings[3] (millions of $)		36.7	1,542.9	3.7	156.6	40.5	1,699.5
Total Economic Activity (millions of $)		187.6	7,879.9	18.3	769.0	205.9	8,648.9
Annual Job Equivalents (AJEs)[4]		1,152.3	48,396.6	116.4	4,888.8	1,268.7	53,285.4
150 Wells/Year (137 conventional/13 directional)[1]	21.0						
Direct Economic Activity from Development[2] (millions of $)		299.6	6,291.1	31.6	663.5	331.2	6,954.6
Secondary Labor Earnings[3] (millions of $)		72.9	1,531.7	8.1	169.6	81.0	1,701.3
Total Economic Activity (millions of $)		372.5	7,822.8	39.7	833.1	412.2	8,655.9
AJEs[4]		2,287.9	48,045.9	252.2	5,296.2	2,540.1	53,342.1
250 Wells/Year (228 conventional/22 directional)[1]	12.5						
Direct Economic Activity from Development[2] (millions of $)		498.6	6,232.0	53.5	668.3	552.0	6,900.4
Secondary Labor Earnings[3] (millions of $)		121.4	1,517.4	13.7	170.9	135.1	1,688.2
Total Economic Activity (millions of $)		620.0	7,749.4	67.1	839.2	687.1	8,588.6
AJEs[4]		3,807.6	47,595.0	426.8	5,335.0	4,234.4	52,930.0
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	42.0	187.6	4,096.6	18.3	399.8	205.9	4,496.4
150 Wells/Year (millions of $)	21.0	372.5	5,475.2	39.7	583.1	412.2	6,058.3
250 Wells/Year (millions of $)	12.5	620.0	5,983.8	67.1	648.0	687.1	6,631.8

[1] The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

[2] Based on costs presented in Table 5.2.

[3] Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

[4] Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

[5] See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.8 Economic Activity Resulting from Natural Gas Development Under Alternative A (Maximum Recovery) and Alternative B, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate	Years to Develop Field	Economic Activity Resulting from Alternative A Maximum Recovery (3,100 Conventional Wells) Annual	LOF	Economic Activity Resulting from Alternative B (3,100 Directionally Drilled Wells) Annual	LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY					
75 Wells/Year	42.0				
Direct Economic Activity from Development[2] (millions of $)		164.0	6,888.1	182.3	7,655.4
Secondary Labor Earnings[3] (millions of $)		39.9	1,677.1	46.6	1,957.1
Total Economic Activity (millions of $)		203.9	8,565.1	228.9	9,612.5
Annual Job Equivalents (AJEs)[4]		1,252.5	52,605.0	1,455.0	61,110.0
150 Wells/Year	21.0				
Direct Economic Activity from Development[2] (millions of $)		328.0	6,888.1	364.5	7,655.4
Secondary Labor Earnings[3] (millions of $)		79.9	1,677.1	93.2	1,957.1
Total Economic Activity (millions of $)		407.9	8,565.1	457.7	9,612.5
AJEs[4]		2,505.0	52,605.0	2,910.0	61,110.0
250 Wells/Year	12.5				
Direct Economic Activity from Development[2] (millions of $)		546.7	6,833.4	607.6	7,594.7
Secondary Labor Earnings[3] (millions of $)		133.1	1,663.8	155.3	1,941.5
Total Economic Activity (millions of $)		679.8	8,497.2	762.9	9,536.2
AJEs[4]		4,175.0	52,187.5	4,850.0	60,625.0
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	42.0	203.9	4,452.8	228.9	4,997.3
150 Wells/Year (millions of $)	21.0	407.9	5,994.8	457.7	6,727.8
250 Wells/Year (millions of $)	12.5	679.8	6,561.2	762.9	7,363.5

1 The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

2 Based on costs presented in Table 5.2.

3 Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

4 Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

5 See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.9 Economic Activity Resulting from Natural Gas Development Under Alternative C, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate	Years to Develop Field	Economic Activity Resulting from Alternative C (1,250 New Wells Scenario): 975 Conventional Wells – Annual	975 Conventional Wells – LOF	275 Directionally Drilled Wells – Annual	275 Directionally Drilled Wells – LOF	Total – Annual	Total – LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (57 conventional/18 directional)[1]	17.0						
Direct Economic Activity from Development[2] (millions of $)		124.6	2,118.9	43.7	743.7	168.4	2,862.6
Secondary Labor Earnings[3] (millions of $)		30.3	515.9	11.2	190.1	41.5	706.0
Total Economic Activity (millions of $)		155.0	2,634.8	54.9	933.8	209.9	3,568.6
Annual Job Equivalents (AJEs)[4]		951.9	16,182.3	349.2	5,936.4	1,301.1	22,118.7
150 Wells/Year (108 conventional/42 directional)[1]	9.0						
Direct Economic Activity from Development[2] (millions of $)		236.2	2,125.5	102.1	918.7	338.2	3,044.1
Secondary Labor Earnings[3] (millions of $)		57.5	517.5	26.1	234.8	83.6	752.3
Total Economic Activity (millions of $)		293.7	2,643.0	128.2	1,153.5	421.8	3,796.5
AJEs[4]		1,803.6	16,232.4	814.8	7,333.2	2,618.4	23,565.6
250 Wells/Year (195 conventional/55 directional)[1]	5.0						
Direct Economic Activity from Development[2] (millions of $)		426.4	2,132.0	133.7	668.3	560.1	2,800.3
Secondary Labor Earnings[3] (millions of $)		103.8	519.1	34.2	170.9	138.0	690.0
Total Economic Activity (millions of $)		530.2	2,651.1	167.8	839.2	698.1	3,490.3
AJEs[4]		3,256.5	16,282.5	1,067.0	5,335.0	4,323.5	21,617.5
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	17.0	155.0	1,960.8	54.9	694.9	209.9	2,655.7
150 Wells/Year (millions of $)	9.0	293.7	2,234.1	128.2	975.1	421.8	3,209.1
250 Wells/Year (millions of $)	5.0	530.2	2,394.0	167.8	757.8	698.1	3,151.8

[1] The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

[2] Based on costs presented in Table 5.2.

[3] Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

[4] Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

[5] See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.10 Economic Activity Resulting from Natural Gas Development Under Alternative D, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate	Years to Develop Field	Economic Activity Resulting from Alternative D (2,200 New Wells Scenario): 1,925 Conventional Wells, Annual	1,925 Conventional Wells, LOF	275 Directionally Drilled Wells, Annual	275 Directionally Drilled Wells, LOF	Total, Annual	Total, LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (64 conventional/11 directional)	30.0						
Direct Economic Activity from Development[2] (millions of $)		139.9	4,198.4	26.7	802.0	166.7	5,000.4
Secondary Labor Earnings[3] (millions of $)		34.1	1,022.2	6.8	205.0	40.9	1,227.2
Total Economic Activity (millions of $)		174.0	5,220.7	33.6	1,007.0	207.6	6,227.7
Annual Job Equivalents (AJEs)[4]		1,068.8	32,064.0	213.4	6,402.0	1,282.2	38,466.0
150 Wells/Year (128 conventional/22 directional)	15.0						
Direct Economic Activity from Development[2] (millions of $)		279.9	4,198.4	53.5	802.0	333.4	5,000.4
Secondary Labor Earnings[3] (millions of $)		68.1	1,022.2	13.7	205.0	81.8	1,227.2
Total Economic Activity (millions of $)		348.0	5,220.7	67.1	1,007.0	415.2	6,227.7
AJEs[4]		2,137.6	32,064.0	426.8	6,402.0	2,564.4	38,466.0
250 Wells/Year (213 conventional/37 directional)	9.0						
Direct Economic Activity from Development[2] (millions of $)		465.8	4,191.9	89.9	809.3	555.7	5,001.2
Secondary Labor Earnings[3] (millions of $)		113.4	1,020.6	23.0	206.9	136.4	1,227.5
Total Economic Activity (millions of $)		579.2	5,212.5	112.9	1,016.2	692.1	6,228.7
AJEs[4]		3,557.1	32,013.9	717.8	6,460.2	4,274.9	38,474.1
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	30.0	174.0	3,200.6	33.6	617.4	207.6	3,818.0
150 Wells/Year (millions of $)	15.0	348.0	4,008.6	67.1	773.2	415.2	4,781.8
250 Wells/Year (millions of $)	9.0	579.2	4,406.1	112.9	859.0	692.1	5,265.1

[1] The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

[2] Based on costs presented in Table 5.2.

[3] Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

[4] Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

[5] See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.11 Economic Activity Resulting from Natural Gas Development Under Alternative E, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

		Economic Activity Resulting from Alternative E (3,100 New Wells on 266 New Well Pads)					
	Years to Develop	266 Conventional Wells		2,834 Directionally Drilled Wells		Total	
Development Rate[1]	Field	Annual	LOF	Annual	LOF	Annual	LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (7 conventional/68 directional)	42.0						
Direct Economic Activity from Development[2] (millions of $)		15.3	642.9	165.3	6,940.9	180.6	7,583.8
Secondary Labor Earnings[3] (millions of $)		3.7	156.5	42.2	1,774.4	46.0	1,930.9
Total Economic Activity (millions of $)		19.0	799.4	207.5	8,715.3	226.5	9,514.7
Annual Job Equivalents (AJEs)[4]		116.9	4,909.8	1,319.2	55,406.4	1,436.1	60,316.2
150 Wells/Year (15 conventional/135 directional)	21.0						
Direct Economic Activity from Development[2] (millions of $)		32.8	688.8	328.1	6,889.9	360.9	7,578.7
Secondary Labor Earnings[3] (millions of $)		8.0	167.7	83.9	1,761.4	91.9	1,929.1
Total Economic Activity (millions of $)		40.8	856.5	412.0	8,651.2	452.8	9,507.8
AJEs[4]		250.5	5,260.5	2,619.0	54,999.0	2,869.5	60,259.5
250 Wells/Year (23 conventional/227 directional)	12.5						
Direct Economic Activity from Development[2] (millions of $)		50.3	628.7	551.7	6,896.0	602.0	7,524.6
Secondary Labor Earnings[3] (millions of $)		12.2	153.1	141.0	1,762.9	153.3	1,916.0
Total Economic Activity (millions of $)		62.5	781.7	692.7	8,658.9	755.2	9,440.6
AJEs[4]		384.1	4,801.3	4,403.8	55,047.5	4,787.9	59,848.8
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	42.0	19.0	415.6	207.5	4,530.9	226.5	4,946.5
150 Wells/Year (millions of $)	21.0	40.8	599.5	412.0	6,055.0	452.8	6,654.5
250 Wells/Year (millions of $)	12.5	62.5	603.6	692.7	6,686.1	755.2	7,289.7

[1] The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

[2] Based on costs presented in Table 5.2.

[3] Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

[4] Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

[5] See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.12 Economic Activity Resulting from Natural Gas Development Under the Alternative F, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

		Economic Activity Resulting from Alternative F (3,100 New Wells on 1,028 New Well Pads Scenario)					
	Years to Develop Field	1,028 Conventional Wells		2,072 Directionally Drilled Wells		Total	
Development Rate[1]		Annual	LOF	Annual	LOF	Annual	LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (25 conventional/50 directional)	42.0						
Direct Economic Activity from Development[2] (millions of $)		54.7	2,296.0	121.5	5,103.6	176.2	7,399.6
Secondary Labor Earnings[3] (millions of $)		13.3	559.0	31.1	1,304.7	44.4	1,863.7
Total Economic Activity (millions of $)		68.0	2,855.0	152.6	6,408.3	220.6	9,263.4
Annual Job Equivalents (AJEs)[4]		417.5	17,535.0	970.0	40,740.0	1,387.5	58,275.0
150 Wells/Year (49 conventional/201 directional)	21.0						
Direct Economic Activity from Development[2] (millions of $)		107.1	2,250.1	488.5	10,258.3	595.6	12,508.4
Secondary Labor Earnings[3] (millions of $)		26.1	547.8	124.9	2,622.5	151.0	3,170.3
Total Economic Activity (millions of $)		133.2	2,797.9	613.4	12,880.7	746.6	15,678.7
AJEs[4]		818.3	17,184.3	3,899.4	81,887.4	4,717.7	99,071.7
250 Wells/Year (83 conventional/167 directional)	12.5						
Direct Economic Activity from Development[2] (millions of $)		181.5	2,268.7	405.9	5,073.2	587.4	7,341.9
Secondary Labor Earnings[3] (millions of $)		44.2	552.4	103.8	1,296.9	147.9	1,849.3
Total Economic Activity (millions of $)		225.7	2,821.1	509.6	6,370.2	735.3	9,191.2
AJEs[4]		1,386.1	17,326.3	3,239.8	40,497.5	4,625.9	57,823.8
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	42.0	68.0	1,484.3	152.6	3,331.6	220.6	4,815.8
150 Wells/Year (millions of $)	21.0	133.2	1,958.3	613.4	9,015.3	746.6	10,973.6
250 Wells/Year (millions of $)	12.5	225.7	2,178.3	509.6	4,918.8	735.3	7,097.1

1 The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

2 Based on costs presented in Table 5.2.

3 Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

4 Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

5 See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.13 Economic Activity Resulting from Natural Gas Development Under the Alternative G and the Preferred Alternative, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate[1]	Years to Develop Field	Economic Activity Resulting from Alternative G and Preferred Alternative (3,100 New Wells on 2,553 New Well Pads Scenario)					
		2,553 Conventional Wells		547 Directionally Drilled Wells		Total	
		Annual	LOF	Annual	LOF	Annual	LOF
NOMINAL VALUE OF ECONOMIC ACTIVITY							
75 Wells/Year (61 conventional/14 directional)	42.0						
Direct Economic Activity from Development[2] (millions of $)		133.4	5,602.3	34.0	1,429.0	167.4	7,031.3
Secondary Labor Earnings[3] (millions of $)		32.5	1,364.0	8.7	365.3	41.2	1,729.3
Total Economic Activity (millions of $)		165.9	6,966.3	42.7	1,794.3	208.6	8,760.6
Annual Job Equivalents (AJEs)[4]		1,018.7	42,785.4	271.6	11,407.2	1,290.3	54,192.6
150 Wells/Year (122 conventional/28 directional)	21.0						
Direct Economic Activity from Development[2] (millions of $)		266.8	5,602.3	68.0	1,429.0	334.8	7,031.3
Secondary Labor Earnings[3] (millions of $)		65.0	1,364.0	17.4	365.3	82.3	1,729.3
Total Economic Activity (millions of $)		331.7	6,966.3	85.4	1,794.3	417.2	8,760.6
AJEs[4]		2,037.4	42,785.4	543.2	11,407.2	2,580.6	54,192.6
250 Wells/Year (204 conventional/46 directional)	12.5						
Direct Economic Activity from Development[2] (millions of $)		446.1	5,576.0	111.8	1,397.4	557.9	6,973.5
Secondary Labor Earnings[3] (millions of $)		108.6	1,357.6	28.6	357.2	137.2	1,714.9
Total Economic Activity (millions of $)		554.7	6,933.7	140.4	1,754.7	695.1	8,688.3
AJEs[4]		3,406.8	42,585.0	892.4	11,155.0	4,299.2	53,740.0
PRESENT VALUE OF ECONOMIC ACTIVITY[5]	Years	Annual Activity	Present Value	Annual Activity	Present Value	Annual Activity	Present Value
75 Wells/Year (millions of $)	42.0	165.9	3,621.6	42.7	932.8	208.6	4,554.5
150 Wells/Year (millions of $)	21.0	331.7	4,875.7	85.4	1,255.9	417.2	6,131.6
250 Wells/Year (millions of $)	12.5	554.7	5,353.9	140.4	1,354.9	695.1	6,708.8

[1] The total number of conventional and directional wells may not exactly match the number of wells/year under the different development rates due to rounding. Operators propose the 250 wells/year development rate; however, BLM may require an alternate development rate.

[2] Based on costs presented in Table 5.2.

[3] Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs.

[4] Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs.

[5] See Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

Table 5.14 Summary of Economic Activity Resulting from Natural Gas Development under Each Alternative over the Life of Field, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Development Rate[2]	Economic Activity Resulting from Development									
	No Action Alternative[1]	Proposed Action	Alternative A Maximum Development	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
NOMINAL VALUE OF ECONOMIC ACTIVITY										
75 Wells/Year										
Direct Economic Activity from Development[3] (millions of $)	--	6,949.4	6,888.1	7,655.4	2,862.6	5,000.4	7,583.8	7,399.6	7,031.3	--
Secondary Labor Earnings[4] (millions of $)	--	1,699.5	1,677.1	1,957.1	706.0	1,227.2	1,930.9	1,863.7	1,729.3	--
Total Economic Activity (millions of $)	--	8,648.9	8,565.1	9,612.5	3,568.6	6,227.7	9,514.7	9,263.4	8,760.6	--
Annual Job Equivalents (AJEs)[5]	--	53,285	52,605	61,110	22,119	38,466	60,316	58,275	54,193	--
150 Wells/Year										
Direct Economic Activity from Development[3] (millions of $)	--	6,954.6	6,888.1	7,655.4	3,044.1	5,000.4	7,578.7	12,508.4	7,031.3	--
Secondary Labor Earnings[4] (millions of $)	--	1,701.3	1,677.1	1,957.1	752.3	1,227.2	1,929.1	3,170.3	1,729.3	--
Total Economic Activity (millions of $)	--	8,655.9	8,565.1	9,612.5	3,796.5	6,227.7	9,507.8	15,678.7	8,760.6	--
AJEs[5]	--	53,342.1	52,605.0	61,110.0	23,565.6	38,466.0	60,259.5	99,071.7	54,192.6	--
250 Wells/Year										
Direct Economic Activity from Development[3] (millions of $)	--	6,900.4	6,833.4	7,594.7	2,800.3	5,001.2	7,524.6	7,341.9	6,973.5	Approximately the same as Alternative G
Secondary Labor Earnings[4] (millions of $)	--	1,688.2	1,663.8	1,941.5	690.0	1,227.5	1,916.0	1,849.3	1,714.9	
Total Economic Activity (millions of $)	--	8,588.6	8,497.2	9,536.2	3,490.3	6,228.7	9,440.6	9,191.2	8,688.3	
AJEs[5]	--	52,930.0	52,187.5	60,625.0	21,617.5	38,474.1	59,848.8	57,823.8	53,740.0	
PRESENT VALUE OF ECONOMIC ACTIVITY[6]										
75 Wells/Year (millions of $)	--	4,496.4	4,452.8	4,997.3	2,655.7	3,818.0	4,946.5	4,815.8	4,554.5	Approximately the same as Alternative G
150 Wells/Year (millions of $)	--	6,058.3	5,994.8	6,727.8	3,209.1	4,781.8	6,654.5	10,973.6	6,131.6	
250 Wells/Year (millions of $)	--	6,631.8	6,561.2	7,363.5	3,151.8	5,265.1	7,289.7	7,097.1	6,708.8	

1 Assumes no new development would occur under the No Action Alternative.

2 Operator propose the 250 well/year development rate; however, BLM may require an alternate development rate. See Table 5.3 for development rates for each alternative.

3 Based on costs presented in Table 5.2. Also see Tables 5.7-5.13.

4 Nonproject labor earnings resulting from secondary economic activity induced by development. These earnings do not include actual development labor earnings. See Table 5.2 for development wages included in direct costs. Also see Table 5.7-5.13.

5 Nonproject-required jobs resulting from secondary economic activity induced by development. These do not include project-required jobs. See Table 5.1 for estimated project workforce requirements. Average earnings per job would be approximately $31,881 for conventional drilling-induced jobs and $32,025 for directional drilling-induced jobs. Also see Tables 5.7-5.13.

6 The discount rate used for this analysis was 5.5%. Conservatively assumes revenues are received as a lump sum at year end. See Section 2.2 for a discussion of discounting.

5.3.1.1 No Action Alternative

Under the No Action Alternative, no additional development would occur. This would reduce the number of rigs, crews, and associated services operating in the project area. Currently, one oilfield service operator employs over 300 people and employs local contractors from over 30 companies within the town of Rock Springs (Schlumberger Oil Field Services Companies [Schlumberger] 2003). It is estimated that between 1996 and 2002, 59.3% of all exploration and production oilfield service fees paid in the state were spent on services in the Jonah Field (Schlumberger 2003). These services and associated jobs would likely be reduced or eliminated under the No Action Alternative. No additional economic activity from development would occur under this alternative--no additional secondary labor earnings or jobs would be created, and no additional taxes or revenues from development would be realized. All action alternatives would have impacts greater than those described for the No Action because of increased development and longer LOP.

5.3.1.2 Proposed Action

Under the Proposed Action, up to 3,100 new wells (assumed at 2,825 conventional and 275 directional) would be developed. The economic activity under the 250 well/year development rate (12.5 years) would be $8,588.6 million ($6,631.8 million present value) ($687.1 million annually) including $1,688.2 million secondary labor income ($135.1 million annually) and 52,930.0 AJEs (4,234.4 AJEs annually) for the development period (Table 5.7).

5.3.1.3 Alternative A (Maximum Recovery)

Under Alternative A, up to 3,100 new conventional wells would be developed. Economic activity from Alternative A would be less than that expected from the Proposed Action due to the removal of directional drilling. Nominally, the greatest economic activity for Alternative A (not including tax revenues) would occur in terms of dollars under either the 75 or 150 well/year development rates--resulting in $8,565.1 million of economic activity ($203.9 and $407.9 million annually, respectively) including $1,677.1 million secondary labor earnings ($39.9 million and $79.9 million annually, respectively) over the development period (Table 5.8). The greatest number of AJEs (52,605) would occur under both the 75 and 150 well/year development rate [1,252.5 and 2,505.0 annually, respectively]). The greatest annual economic activity ($679.8 million [$133.1 million secondary labor earnings]) would occur under the 250 well/year development rate. The greatest real (present) value of economic activity ($6,561.2 million) would occur under the 250 well/year development rate because dollars would flow into the community in a shorter period of time (12.5 years); however, the number of AJEs (52,187.5) would be reduced as a result of efficiencies realized by a compressed development schedule (Table 5.8).

5.3.1.4 Alternative B

Under Alternative B, up to 3,100 new directionally drilled wells would be developed. Economic activity from Alternative B would be more than that expected from the Proposed Action due to the increased amount of directional drilling. The greatest nominal economic activity for Alternative B (not including tax revenues) would most likely occur in terms of dollars under the either the 75 or 150 well/year development rates--resulting in $9,612.5 million of economic activity ($228.9 million [$46.6 million secondary labor earnings] and $457.7 million [$93.2 million secondary labor earnings] annually, respectively) over the development period; however, the greatest annual economic activity ($762.9 million [$155.3 million secondary labor earnings]) would occur under the 250 well/year development rate (Table 5.8). The greatest number of AJEs (61,110) would occur under both the 75 and 150 well/year development rate [1,455 and 2,910 annually, respectively]). The greatest real (present) value of economic activity ($7,363.5 million) would occur under the 250 well/year development rate because dollars would flow into the community in a shorter period of time (12.5 years); however, the number of AJEs (60,625) would be reduced as a result of efficiencies realized by a compressed development schedule (Table 5.8).

5.3.1.5 Alternative C

Under Alternative C, up to 1,250 new wells (assumed to be 975 conventional and 275 directional) would be developed. Economic activity from Alternative C would be less than half that expected from the Proposed Action due to the reduced number of wells developed. The greatest nominal economic activity for Alternative C (not including tax revenues) for the development period would most likely occur in terms of dollars and jobs under the 150 well/year development rate--resulting in $3,796.5 million ($421.8 million annually) of economic activity (including $752.3 million [$83.6 million annually]) of secondary labor earnings (Table 5.9). The greatest annual activity ($698.1 million [$138.0 million secondary labor earnings]) would occur under the 250 well/year development rate. The greatest number of AJEs (23,565.6 [2,618.4 annually]) would occur under the 150 well/year development rate; however, on an annual basis, the 250 well/year development rate would create 4,323.5 AJEs. The greatest real (present) value of economic activity ($3,209.1 million) over the LOP would occur under the 150 well/year development rate because of the combination of time (9.0 years) and effort (Table 5.9).

5.3.1.6 Alternative D

Under Alternative D, up to 2,200 new wells (assumed to be 1,925 conventional and 275 directional) would be developed. Economic activity from Alternative D would be less than that expected from the Proposed Action due to the reduced number of wells developed. The greatest nominal economic activity for Alternative D (not including tax revenues) for the development period, would most likely occur in terms of dollars and jobs under the 250 well/year development rate--resulting in $6,228.7 million ($692.1 million annually) of economic activity including $1,227.5 million ($136.4 million annually) of secondary labor earnings and 38,474 AJEs (4,274.9 annually) (Table 5.10). The greatest real (present) value of economic activity ($5,265.1 million) would occur under the 250 well/year development rate because of the compressed rate of time (9.0 years) over which dollars would flow into the community (Table 5.10).

5.3.1.7 Alternative E

Under Alternative E, up to 3,100 new wells (assumed to be 266 conventional and 2,834 directional) would be developed. Economic activity from Alternative E would be more than that expected from the Proposed Action due to the increased number of directionally drilled wells. The greatest nominal economic activity for Alternative E (not including tax revenues) for the development period, would most likely occur in terms of dollars and jobs under the 75 well/year development rate--resulting in $9,514.7 million ($226.5 million annually) of economic activity (including $1,930.9 million [$46.0 million annually]) of secondary labor earnings and 60,316.2 AJEs (4,274.9 annually) (Table 5.11). However, the greatest annual economic activity ($755.2 million [153.3 million secondary labor earnings], 4,787.9 AJEs) would occur under the 250 well/year development rate. The greatest real (present) value of economic activity ($7,289.7 million) over the LOP would occur under the 250 well/year development rate because of the compressed rate of time (12.5 years) over which dollars would flow into the community (Table 5.11).

5.3.1.8 Alternative F

Under Alternative F, up to 3,100 new wells (assumed to be 1,028 conventional and 2,072 directional) would be developed. Economic activity from Alternative F would be more than that expected from the Proposed Action due to the increased number of directionally drilled wells. The greatest nominal economic activity from development for all alternatives would most likely be realized from Alternative F (not including tax revenues) for the development period, in terms of dollars and jobs under the 150 well/year development rate--resulting in $15,678.7 million ($746.6 million annually) of economic activity (including $3,170.3 million [$151.0 million annually]) of secondary labor earnings and 99,071.7 AJEs (4,717.7 annually) (Table 5.12). The greatest real (present) value of economic activity ($10,973.6 million) also occurs under the 150 well/year development rate. This development rate (when compared to all other alternatives) optimizes the combination of straight and directional drilling as well as time of development to maximize economic activity (Table 5.12)

5.3.1.9 Alternative G

Under Alternative G, up to 3,100 new wells (assumed to be 2,553 conventional and 574 directional) would be developed. Economic activity from Alternative G would similar to but slightly higher than that described for the Proposed Action due to the slightly increased number of directionally drilled wells. The greatest nominal economic activity for Alternative G (not including tax revenues) for the development period, would occur in terms of dollars and jobs under either the 75 or 150 well/year development rate--resulting in $8,760.6 million ($1,729.3 million secondary labor earnings) and 54,192.6 AJEs (208.6 and 417.2 AJEs annually, respectively) (Table 5.13). However, the highest annual economic activity ($695.1 million [including $137.2 million secondary labor earnings] and 4,299.2 AJEs would most likely occur under the 250 wells/year rate. The greatest real (present) value of economic activity ($6,708.8 million) over the LOP would occur under the 250 well/year development rate because of the compressed rate of time (12.5 years) over which dollars would flow into the community (Table 5.13).

5.3.1.10 Preferred Alternative

Under the Preferred Alternative, up to 3,100 new wells (assumed to be 2,553 conventional and 574 directional) would be developed. Economic activity from the Preferred Alternative would be approximately the same as that described for Alternative G at the 250 wells/year development rate.

5.3.2 Natural Gas Production Impacts

The value of natural gas production is based on revenues less cost of operation. Table 5.15 shows that production from one BCF of natural gas would generate total economic activity (direct and secondary) of $3,632,083 (includes $132,083 of secondary labor earnings) and would create 3.92 AJEs. One million barrels of condensate are assumed to generate total economic activity (direct and secondary) of $21,792,498 (includes $792,498 of secondary labor earnings) and would create 23.52 AJEs. The economic activity associated with condensate production is likely conservatively underestimated because condensate from the Jonah Field is of particularly high quality and generally sells for a price higher than the price of crude oil. Assumed production rates, decline curves, and discounting tables are presented in Appendix A.

Table 5.15 Gas Production Impacts from One BCF of Natural Gas and One MBO, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Resource	Economic Activity
Natural Gas	Activity per BCF
Revenue[1]	$3,500,000
Secondary Labor Earnings	$132,083
Total Economic Activity per BCF	$3,682,083
AJEs	3.92
Condensate	Activity per MBO
Revenue[2]	$21,000,000
Secondary Labor Earnings	$792,498
Total Economic Activity per MBO	$21,792,498
AJEs	23.52

1 Price is $3.50/MCF based on CREG (2004). The value of production is based on revenues less cost of operation.
2 Price is $21/bbl based on CREG (2004). Assumes natural gas recovery costs include recovery of condensate.

5.3.2.1 No Action Alternative

Under the No Action Alternative, 533 currently authorized wells would be expected to produce 3,366 BCF of natural gas and 31.98 MBO, which would result in nominal economic activity of $12,922.5 million (including $469.9 million of secondary labor earnings) and 13,947 AJEs (Table 5.16). Production would result in $9,275.7 million present value economic activity (including $319.8 million in labor earnings) to the local economy over the LOP (Table 5.16). The anticipated LOP for the No Action Alternative could be up to 40 years.

It would be likely that, under the No Action Alternative, Jonah Operators also would produce at a slower pace. This would further reduce the number of crews and associated services employed in the area. Employment would likely be decreased, and these changes in employment might serve to decrease study area populations as disaffiliated workers might seek to leave the area in search of new

Table 5.16 Economic Activity Resulting from Natural Gas Production Over the Life of Field, Jonah Infill Drilling Project, Sublette County, 2005.

Impact	No Action Alternative[2]	Proposed Action[1]	Alternative A[1]	Alternative B[1]	Alternative C[1]	Alternative D[1]	Alternative E[1]	Alternative F[1]	Alternative G[1]	Preferred Alternative[1]
Total Anticipated Natural Gas Recovery over the LOF (BCF)	3,366	7,947	8,191	6,124	6,657	7,554	6,302	7,186	7,876	Same as Alternative G
Total Anticipated Condensate Recovery over the LOF (million bbls)	31.98	75.50	77.81	58.18	63.24	71.76	59.87	68.27	74.82	
MAXIMUM ANNUAL ACTIVITY (250 WELLS/YEAR DEVELOPMENT RATE)										
Value of Natural Gas Production[3] (millions of $)	294.5	529.8	546.1	408.3	517.8	539.6	420.1	479.1	525.1	Approximately the same as Alternative G
Value of Condensate Production[4] (millions of $)	16.8	30.2	31.1	23.3	29.5	30.8	23.9	27.3	29.9	
Secondary Labor Earnings[5] (millions of $)	11.7	21.1	21.8	16.3	20.7	21.5	16.8	19.1	20.9	
Total Economic Activity (millions of $)	323.1	581.1	599.0	447.8	567.9	591.8	460.8	525.5	575.9	
NOMINAL VALUE OF ECONOMIC ACTIVITY										
Value of Natural Gas Production[3] (millions of $)	11,781.0	27,814.5	28,668.5	21,434.0	23,299.5	26,439.0	22,057.0	25,151.0	27,566.0	Approximately the same as Alternative G
Value of Condensate Production[4] (millions of $)	671.6	1,585.5	1,634.0	1,221.8	1,328.0	1,507.0	1,257.3	1,433.7	1,571.2	
Secondary Labor Earnings[5] (millions of $)	469.9	1,109.5	1,143.6	855.0	929.4	1,054.6	879.8	1,003.3	1,099.6	
Total Economic Activity (millions of $)	12,922.5	30,509.5	31,446.1	23,510.8	25,556.9	29,000.6	24,194.1	27,587.9	30,236.8	
AJEs	13,947	32,928	33,939	25,374	27,583	31,299	26,112	29,775	32,634	
Average Earnings Per Job	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	
PRESENT VALUE OF ECONOMIC ACTIVITY[6]										
75 WELLS PER YEAR DEVELOPMENT RATE[2]										
Value of Natural Gas Production[3] (millions of $)	8,473.0	11,053.8	11,093.6	8,518.1	12,907.2	12,065.7	8,765.6	9,995.2	10,955.0	¦
Value of Condensate Production[4] (millions of $)	483.0	630.1	632.3	485.5	735.7	687.7	499.6	569.7	624.4	¦
Secondary Labor Earnings[5] (millions of $)	319.8	417.1	418.7	321.5	487.1	455.3	330.8	377.2	413.4	¦
Total Economic Activity (millions of $)	9,275.7	12,101.0	12,144.6	9,325.1	14,130.0	13,208.8	9,596.1	10,942.1	11,992.8	¦
150 WELLS PER YEAR DEVELOPMENT RATE[2]										
Value of Natural Gas Production[3] (millions of $)	8,473.0	14,491.3	14,935.0	11,167.1	14,660.7	15,111.4	11,491.7	13,103.6	14,361.9	¦
Value of Condensate Production[4] (millions of $)	483.0	826.0	851.3	636.5	835.7	861.4	655.0	746.9	818.6	¦
Secondary Labor Earnings[5] (millions of $)	319.8	546.9	563.6	421.4	553.3	570.3	433.7	494.5	542.0	¦
Total Economic Activity (millions of $)	9,275.7	15,864.2	16,349.9	12,225.0	16,049.7	16,543.1	12,580.4	14,345.1	15,722.5	¦
250 WELLS PER YEAR DEVELOPMENT RATE[2]										
Value of Natural Gas Production[3] (millions of $)	8,473.0	16,409.2	16,909.2	12,644.7	15,661.6	16,636.1	13,012.4	14,837.6	16,262.4	Approximately the same as Alternative G
Value of Condensate Production[4] (millions of $)	483.0	935.3	963.8	720.8	892.7	948.3	741.7	845.7	927.0	
Secondary Labor Earnings[5] (millions of $)	319.8	619.3	638.1	477.2	591.0	627.8	491.1	559.9	613.7	
Total Economic Activity (millions of $)	9,275.7	17,963.8	18,511.2	13,842.7	17,145.3	18,212.2	14,245.2	16,243.3	17,803.0	

1 Includes wells currently in production (i.e., No Action Alternative wells).

2 All wells under the No Action Alternative are currently under production, therefore, the rate of development will not affect the production values. Well life is assumed to be 40 years.

2 Price is $3.50/MCF of natural gas based on CREG (2004). The value of production is based on revenues less cost of operation.

4 No additional cost of operation and no additional labor earnings or employment are attributable to condensate.

Price is $21.00/bbl of condensate based on CREG (2004).

5 Nonproject labor earnings resulting from secondary economic activity induced by production. These earnings do not include actual production labor earnings. See Table 5.5 for production wages included in direct costs.

6 All wells are assumed to have a 40-year life. See Appendix B for decline curves and expected annual production. Present value is the real value of production with

Based on annual production calculated using decline curves provided by Operators. See Section 2.2 for a discussion of discounting.

discounting applied.

employment. A declining population would result in a reduction in housing pressure. Potential increases in taxes and revenues would not be realized, and population-based disbursements (some royalties, severance, and PILT payments based on county and city populations) would likely decrease. Production impacts from all action alternatives would be higher than that described for the No Action Alternative due to the increased number of wells, higher production volume rates, and extended LOP.

5.3.2.2 Proposed Action

Under the Proposed Action, it is assumed that recovery for the LOP would be up to 7,947 BCF of natural gas and 75.50 MBO, which would result in nominal economic activity of $30,509.5 million (including $1,109.5 million of secondary labor earnings) and 32,928 AJEs (Table 5.16). Production would result in $17,963.8 million present value in economic activity (including $619.3 million in labor earnings) to the local economy over the LOP (Table 5.16). The LOP (excluding final reclamation) for the Proposed Action could be up to 52.5 years (12.5 years to develop, 40-year life of well).

This alternative would have more nominal economic activity in terms of production than the No Action Alternative because of the higher level of resource recovery.

5.3.2.3 Alternative A (Maximum Recovery)

Under Alternative A (maximum recovery), it is assumed that recovery for the LOP would be up to 8,191 BCF of natural gas and 77.81 MBO, which would result in nominal economic activity of $31,446.1 million (including $1,143.6 million of secondary labor earnings) and 33,939 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $18,511.2 million in present value economic activity (including $638.1 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (52.5-year LOP, excluding final reclamation) (Table 5.16). The LOP, excluding final reclamation, for Alternative A could be up to 82 years (42 years to develop, 40-year life of well) under the 75 well/year development rate. This alternative would have more nominal economic activity in terms of production than the Proposed Action because of the higher level of resource recovery.

5.3.2.4 Alternative B

Under Alternative B, it is assumed that recovery for the LOP would be up to 6,124 BCF of natural gas and 58.18 MBO, which would result in nominal economic activity of $23,510.8 million (including $855.0 million of secondary labor earnings) and 25,374 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $13,842.7 million in present value economic activity (including $477.2 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (52.5-year LOP, excluding final reclamation) (Table 5.16). The LOP, excluding final reclamation, for Alternative B could be up to 82 years (42 years to develop, 40-year life of well) under the 75 well/year development rate (Table 5.16). This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.5 Alternative C

Under Alternative C, it is assumed that recovery for the LOP would be up to 6,657 BCF of natural gas and 63.24 MBO, which would result in nominal economic activity of $25,556.9 million (including $929.4 million of secondary labor earnings) and 27,583 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $17,145.3 million in present value economic activity (including $591.0 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (45-year LOP, excluding final reclamation) (Table 5.16). The LOP, excluding final reclamation, for Alternative C could be up to 57 years (17.0 years to develop, 40-year life of well) under the 75 well/year development rate. This alternative would have ess nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.6 Alternative D

Under Alternative D, it is assumed that recovery for the LOP would be up to 7,554 BCF of natural gas and 71.76 MBO, which would result in nominal economic activity of $29,000.6 million (including $1,054.6 million of secondary labor earnings) and 31,299 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $18,212.2 million in present value economic activity (including $627.8 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (49-year LOP, excluding final reclamation) (Table 5.16). The maximum anticipated LOP, excluding final reclamation, for Alternative D could be up to 70 years (30 years to develop, 40-year life of well) under the 75 well/year development rate. This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.7 Alternative E

Under Alternative E, it is assumed that recovery for the LOP would be up to 6,302 BCF of natural gas and 59.87 MBO, which would result in nominal economic activity of $24,191.1 million (including $879.8 million of secondary labor earnings) and 26,112 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $14,245.2 million in present value economic activity (including $491.1 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (52.5-year LOP, excluding final reclamation) (Table 5.16). The maximum anticipated LOP, excluding final reclamation, for Alternative E could be up to 82 years (42 years to develop, 40-year life of well) under the 75 well/year development rate. This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.8 Alternative F

Under Alternative F, it is assumed that recovery for the LOP would be up to 7,186 BCF of natural gas and 68.27 MBO, which would result in nominal economic activity of $27,587.9 million (including $1,003.3 million of secondary labor earnings) and 29,775 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $16,243.3 million in present value economic activity (including $559.9 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (52.5-year LOP, excluding final reclamation) (Table 5.16). The maximum anticipated LOP, excluding final reclamation, for Alternative F could be up to 82 years (42 years to develop, 40-year life of well) under the 75 well/year development rate (Table 5.16). This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.9 Alternative G

Under Alternative G, it is assumed that recovery for the LOP would be up to 7,876 BCF of natural gas and 74.82 MBO, which would result in nominal economic activity of $30,236.8 million (including $1,099.6 million of secondary labor earnings) and 32,634 AJEs (Table 5.16). The greatest economic activity from this alternative would result in $17,803.0 million in present value economic activity (including $613.7 million in labor earnings) to the local economy over the LOP under the 250 well/year development rate (52.5-year LOP, excluding final reclamation) (Table 5.16). The maximum anticipated LOP, excluding final reclamation, for Alternative G could be up to 82 years (42 years to develop, 40-year life of well) under the 75 well/year development rate (Table 5.16). This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.2.10 Preferred Alternative

Under the Preferred Alternative, it recovery and economic impacts from production for the LOP would be approximately the same as that described for Alternative G at the 250 wells/year development rate. This alternative would have less nominal economic activity in terms of production than the Proposed Action because of the lower level of resource recovery.

5.3.3 Government Revenues

The project would generate substantial revenues for state, county, and local governments, as well as area school districts, through state sales tax, federal income tax, ad valorem taxes, severance taxes, federal minerals royalties, and other taxes on facilities and production. The assumed severance tax rates for both natural gas (base rate) and condensate is 6%, and approximately 4.2% of production is expected to come from state lands and would result in revenues from severance tax. The other 95.8% of production would be from federal lands and would result in revenues from federal mineral royalties at the rate of 12.5%. Secondary labor earnings would be subject to federal income tax at an assumed rate of 15% based on estimated average wages and the current (2004) Internal Revenue Service tax rate tables.

The estimated revenues and taxes resulting from the project, as well as their present value, for the LOP are presented in Table 5.17. The likely distribution of those funds to the U.S., Wyoming, affected counties, cities, and towns based on current statutes and distribution trends presented in Chapter 3 are presented in Table 5.18. For the purposes of this analysis, the rate of development and an average decline curve for individual well production was used to estimate total annual field production; well life was assumed to be 40 years (see Appendix A). Increases in taxes and revenues would have the effect of providing counties and communities with more discretionary dollars to develop infrastructure and provide for the needs of low-income residents; thus, the dependence on federal or state grant monies would be reduced.

Table 5.17 Government Taxes and Revenues Resulting from the Jonah Infill Drilling Project (Life of Field), Sublette County, Wyoming, 2005.

Development Rate[1]	No Action Alternative[3]	Proposed Action[2]	Alternative A Maximum Recovery[2]	Alternative B[2]	Alternative C[2]	Alternative D[2]	Alternative E[2]	Alternative F[2]	Alternative G[2]	Preferred Alternataive
	Economic Activity Resulting from Development (LOF)									
	NOMINAL VALUE OF TAX REVENUES FROM ECONOMIC ACTIVITY									
75 Wells/Year										
State Sales Taxes from Development[3] (millions of $)	0.0	266.9	264.5	294.0	109.9	192.0	291.2	284.1	270.0	¦
Federal Income Tax from Development Labor[4] (millions of $)	0.0	41.7	41.3	45.9	17.2	30.0	45.5	44.4	42.2	¦
Taxes from Secondary Development Labor Earnings[4] (millions of $)	0.0	254.9	251.6	293.6	105.9	184.1	289.6	279.6	259.4	¦
Severance Revenues from Production[5] (millions of $)	31.4	74.1	76.4	57.1	62.1	70.4	58.8	67.0	73.4	¦
Federal Mineral Royalties from Production[5] (millions of $)	1,491.2	3,520.7	3,628.7	2,713.0	2,949.1	3,346.5	2,791.9	3,183.5	3,489.2	¦
Ad Valorem Taxes on Production[6] (millions of $)	741.8	1,751.4	1,805.1	1,349.6	1,467.1	1,664.7	1,388.8	1,583.6	1,735.7	¦
Federal Income Taxes from Secondary Production Labor Earnings[4] (millions of $)	70.5	166.4	171.5	128.2	139.4	158.2	132.0	150.5	164.9	¦
Total Taxes and Revenues[7] (millions of $)	2,334.9	6,076.0	6,239.1	4,881.4	4,850.7	5,646.0	4,997.8	5,592.7	6,034.8	¦
150 Wells/Year										
State Sales Taxes from Development[3] (millions of $)	0.0	267.1	264.5	294.0	116.9	192.0	291.0	480.3	270.0	¦
Federal Income Tax from Development Labor[4] (millions of $)	0.0	41.7	41.3	45.9	18.3	30.0	45.5	75.1	42.2	¦
Taxes from Secondary Development Labor Earnings[4] (millions of $)	0.0	255.2	251.6	293.6	112.9	184.1	289.4	475.5	259.4	¦
Severance Revenues from Production[5] (millions of $)	31.4	74.1	76.4	57.1	62.1	70.4	58.8	67.0	73.4	¦
Federal Mineral Royalties from Production[5] (millions of $)	1,491.2	3,520.7	3,628.7	2,713.0	2,949.1	3,346.5	2,791.9	3,183.5	3,489.2	¦
Ad Valorem Taxes on Production[6] (millions of $)	741.8	1,751.4	1,805.1	1,349.6	1,467.1	1,664.7	1,388.8	1,583.6	1,735.7	¦
Federal Income Taxes from Secondary Production Labor Earnings[4] (millions of $)	70.5	166.4	171.5	128.2	139.4	158.2	132.0	150.5	164.9	¦
Total Taxes and Revenues[7] (millions of $)	2,334.9	6,076.5	6,239.1	4,881.4	4,865.7	5,646.0	4,997.3	6,015.6	6,034.8	¦
250 Wells/Year										
State Sales Taxes from Development[3] (millions of $)	0.0	265.0	262.4	291.6	107.5	192.0	288.9	281.9	267.8	
Federal Income Tax from Development Labor[4] (millions of $)	0.0	41.4	41.0	45.6	16.8	30.0	45.1	44.1	41.8	
Taxes from Secondary Development Labor Earnings[4] (millions of $)	0.0	253.2	249.6	291.2	103.5	184.1	287.4	277.4	257.2	
Severance Revenues from Production[5] (millions of $)	31.4	74.1	76.4	57.1	62.1	70.4	58.8	67.0	73.4	Approximately the same as Alternative G
Federal Mineral Royalties from Production[5] (millions of $)	1,491.2	3,520.7	3,628.7	2,713.0	2,949.1	3,346.5	2,791.9	3,183.5	3,489.2	
Ad Valorem Taxes on Production[6] (millions of $)	741.8	1,751.4	1,805.1	1,349.6	1,467.1	1,664.7	1,388.8	1,583.6	1,735.7	
Federal Income Taxes from Secondary Production Labor Earnings[4] (millions of $)	70.5	166.4	171.5	128.2	139.4	158.2	132.0	150.5	164.9	
Total Taxes and Revenues[7] (millions of $)	2,334.9	6,072.1	6,234.7	4,876.4	4,845.5	5,646.1	4,992.9	5,588.0	6,030.1	

Table 5.17 (Continued)

Development Rate[1]	No Action Alternative[3]	Proposed Action[2]	Alternative A Maximum Recovery[2]	Alternative B[2]	Alternative C[2]	Alternative D[2]	Alternative E[2]	Alternative F[2]	Alternative G[2]	Preferred Alternataive
	Economic Activity Resulting from Development (LOF)									
	PRESENT VALUE OF REVENUES AND TAXES FROM ECONOMIC ACTIVITY[8]									
75 Wells/Year										
State Sales Taxes from Development (millions of $)	0.0	145.7	144.4	160.5	60.0	104.8	159.0	155.1	147.4	¦
Federal Income Tax from Development Labor (millions of $)	0.0	22.8	22.6	25.1	9.4	16.4	24.8	24.2	23.0	¦
Taxes from Secondary Development Labor Earnings (millions of $)	0.0	139.2	137.3	160.2	57.8	100.5	158.1	152.6	141.6	¦
Severance Revenues from Production (millions of $)	22.6	29.4	29.5	22.7	34.4	32.1	23.3	26.6	29.2	¦
Federal Mineral Royalties from Production (millions of $)	1,072.5	1,399.1	1,404.2	1,078.2	1,633.7	1,527.2	1,109.5	1,265.2	1,386.6	¦
Ad Valorem Taxes on Production (millions of $)	533.5	696.0	698.5	536.3	812.7	759.7	551.9	629.4	689.8	¦
Federal Income Taxes from Secondary Production Labor Earnings (millions of $)	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	125.1	¦
Total Taxes and Revenues (millions of $)	1,753.7	2,557.3	2,561.7	2,108.2	2,733.2	2,665.9	2,151.9	2,378.2	2,542.8	¦
150 Wells/Year										
State Sales Taxes from Development (millions of $)	0.0	98.1	97.2	108.0	43.0	70.6	106.9	176.5	99.2	¦
Federal Income Tax from Development Labor (millions of $)	0.0	15.3	15.2	16.9	6.7	11.0	16.7	27.6	15.5	¦
Taxes from Secondary Development Labor Earnings (millions of $)	0.0	93.8	92.4	107.9	41.5	67.6	106.3	174.7	95.3	¦
Severance Revenues from Production (millions of $)	22.6	38.6	39.8	29.7	39.1	40.3	30.6	34.9	38.3	¦
Federal Mineral Royalties from Production (millions of $)	1,072.5	1,834.2	1,890.4	1,413.5	1,855.7	1,912.7	1,454.6	1,658.6	1,817.9	¦
Ad Valorem Taxes on Production (millions of $)	533.5	912.5	940.4	703.1	923.1	951.5	723.6	825.1	904.3	¦
Federal Income Taxes from Secondary Production Labor Earnings (millions of $)	125.1	164.1	164.1	164.1	164.1	164.1	164.1	164.1	164.1	¦
Total Taxes and Revenues (millions of $)	1,753.7	3,156.6	3,239.5	2,543.2	3,073.1	3,217.8	2,602.8	3,061.5	3,134.5	¦
250 Wells/Year										
State Sales Taxes from Development (millions of $)	0.0	63.9	63.3	70.4	25.9	46.3	69.7	68.0	64.6	Approximately the same as Alternative G
Federal Income Tax from Development Labor (millions of $)	0.0	10.0	9.9	11.0	4.1	7.2	10.9	10.6	10.1	
Taxes from Secondary Development Labor Earnings (millions of $)	0.0	61.1	60.2	70.3	25.0	44.4	69.3	66.9	62.1	
Severance Revenues from Production (millions of $)	22.6	43.7	45.0	33.7	41.7	44.3	34.7	39.5	43.3	
Federal Mineral Royalties from Production (millions of $)	1,072.5	2,077.0	2,140.3	1,600.5	1,982.4	2,105.7	1,647.1	1,878.1	2,058.4	
Ad Valorem Taxes on Production (millions of $)	533.5	1,033.2	1,064.7	796.2	986.1	1,047.5	819.3	934.3	1,024.0	
Federal Income Taxes from Secondary Production Labor Earnings (millions of $)	125.1	185.8	191.4	143.2	177.3	188.3	147.3	168.0	184.1	
Total Taxes and Revenues (millions of $)	1,753.7	3,474.7	3,574.9	2,725.2	3,242.5	3,483.9	2,798.3	3,165.4	3,446.6	

1
2 Assumes no new development.
3 Includes wells currently in production (i.e., No Action Alternative wells). Assumes 96% of development cost is materials and supplies subject to state sales tax. Assumes state sales tax rate is 4%. Counties where materials are purchased may impose additional sales tax.
4 Based on costs presented in Table 5.2. Nonproject labor earnings resulting from secondary economic activity are assumed to be taxed at a federal income tax rate of 15% (rate for head of household in 2004, assuming average wage of $37,228.
5 Assumes 4.2% of production is from state minerals with severance taxes at a rate of 6% on production value; 95.8% of production is from federal minerals and with federal royalty at a rate of 12.5% on production value.
6
7 Assumes 59.57 mills levied as ad valorem tax rate on production in Sublette County. This analysis does not present an exhaustive analysis of all possible taxes and revenues. This is an estimate of most likely consistent taxes and revenues.
8 The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.
See Section 2.2 for a discussion of discounting.

Table 5.18 Taxes and Revenues Received by Governments From the Jonah Infill Drilling Project (Life of Project), Sublette County, Wyoming, 2005.[1]

	Taxes and Revenues Received by Governments									
Development Rate/Government	No Action Alternative	Proposed Action	Alternative A Maximum Recovery	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
75 Wells/Year										
Federal										
Federal Income Tax from All Labor (millions of $)	70.49	463.04	464.42	467.74	262.49	372.28	467.12	474.45	466.53	--
Federal Mineral Royalties from Production (millions of $)	1,491.20	3,520.65	3,628.73	2,713.03	2,949.15	3,346.53	2,791.88	3,183.51	3,489.18	--
Total Federal Taxes and Revenues	1,561.69	3,983.69	4,093.15	3,180.77	3,211.64	3,718.81	3,259.00	3,657.96	3,955.71	--
State										
State Sales Taxes from Development[2] (millions of $)	0.00	266.86	264.50	293.97	109.92	192.02	291.22	284.15	270.00	--
Severance Revenues from Production (millions of $)	31.38	74.09	76.36	57.09	62.06	70.42	58.75	66.99	73.43	--
Federal Mineral Royalties from Production Returned to State (millions of $)	745.60	1,760.33	1,814.36	1,356.51	1,474.57	1,673.26	1,395.94	1,591.76	1,744.59	--
Total State Taxes and Revenues	776.98	2,101.27	2,155.23	1,707.58	1,646.56	1,935.70	1,745.91	1,942.90	2,088.02	--
Sublette County										
State Sales Taxes from Development Returned to County[2] (millions of $)	0.00	88.06	87.29	97.01	36.27	63.37	96.10	93.77	89.10	--
Severance Revenues from Production Returned to County[3] (millions of $)	0.02	0.04	0.05	0.03	0.04	0.04	0.04	0.04	0.04	--
Ad Valorem Taxes on Production[5] (millions of $)	741.80	1,751.36	1,805.12	1,349.60	1,467.06	1,664.74	1,388.83	1,583.65	1,735.70	--
Total County Taxes and Revenues	741.82	1,839.47	1,892.45	1,446.65	1,503.37	1,728.15	1,484.97	1,677.46	1,824.85	--
Lincoln County										
Severance Revenues from Production Returned to County[3] (millions of $)	0.05	0.11	0.11	0.08	0.09	0.10	0.09	0.10	0.11	--
Sweetwater County										
Severance Revenues from Production Returned to County[3] (millions of $)	0.12	0.28	0.29	0.22	0.24	0.27	0.22	0.25	0.28	--
LaBarge										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.10	0.01	0.26	0.19	0.21	0.24	0.20	0.22	0.25	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.20	4.60	4.75	0.35	0.39	0.44	0.37	0.42	0.46	--
Total Town Taxes and Revenues	0.30	4.61	5.00	0.55	0.59	0.67	0.56	0.64	0.70	--
Big Piney										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.10	0.01	0.24	0.18	0.20	0.22	0.19	0.21	0.23	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.19	4.54	4.68	0.35	0.38	0.43	0.36	0.41	0.45	--
Total Town Taxes and Revenues	0.29	4.55	4.92	0.53	0.58	0.66	0.55	0.62	0.68	--
Marbleton										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.18	0.02	0.43	0.32	0.35	0.39	0.33	0.38	0.41	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.30	7.10	7.31	0.55	0.59	0.67	0.56	0.64	0.70	--
Total Town Taxes and Revenues	0.48	7.11	7.74	0.87	0.94	1.07	0.89	1.02	1.11	--

Table 5.18 (Continued)

Development Rate/Government	No Action Alternative	Proposed Action	Alternative A Maximum Recovery	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
	Taxes and Revenues Received by Governments									
Pinedale										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.34	0.01	0.26	0.62	0.68	0.77	0.64	0.73	0.80	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.54	4.60	4.75	0.98	1.06	1.21	1.01	1.15	1.26	--
Total Town Taxes and Revenues	0.88	4.61	5.00	1.60	1.74	1.98	1.65	1.88	2.06	--
Rock Springs										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	4.56	0.01	0.26	8.30	9.02	10.24	8.54	9.74	10.67	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	3.47	4.60	4.75	6.32	6.87	7.80	6.50	7.42	8.13	--
Total Town Taxes and Revenues	8.04	4.61	5.00	14.62	15.89	18.03	15.05	17.16	18.80	--
Federal Mineral Royalties from Production Allocated to School Capital Account[4] (millions of $)	20.13	47.53	48.99	36.63	39.81	45.18	37.69	42.98	47.10	--
150 Wells/Year										
Federal										
Federal Income Tax from All Labor (millions of $)	70.49	463.35	464.42	467.74	270.53	372.28	466.81	701.09	466.53	--
Federal Mineral Royalties from Production (millions of $)	1,491.20	3,520.65	3,628.73	2,713.03	2,949.15	3,346.53	2,791.88	3,183.51	3,489.18	--
Total Federal Taxes and Revenues	1,561.69	3,984.00	4,093.15	3,180.77	3,219.67	3,718.81	3,258.69	3,884.60	3,955.71	--
State										
State Sales Taxes from Development[2] (millions of $)	0.00	267.06	264.50	293.97	116.89	192.02	291.02	480.32	270.00	--
Severance Revenues from Production (millions of $)	31.38	74.09	76.36	57.09	62.06	70.42	58.75	66.99	73.43	--
Federal Mineral Royalties from Production Returned to State(millions of $)	745.60	1,760.33	1,814.36	1,356.51	1,474.57	1,673.26	1,395.94	1,591.76	1,744.59	--
Total State Taxes and Revenues	776.98	2,101.47	2,155.23	1,707.58	1,653.53	1,935.70	1,745.72	2,139.07	2,088.02	--
Sublette County										
State Sales Taxes from Development Returned to County[2] (millions of $)	0.00	88.13	87.29	97.01	38.57	63.37	96.04	158.51	89.10	--
Severance Revenues from Production Returned to County[3] (millions of $)	0.02	0.04	0.05	0.03	0.04	0.04	0.04	0.04	0.04	--
Ad Valorem Taxes on Production[5] (millions of $)	741.80	1,751.36	1,805.12	1,349.60	1,467.06	1,664.74	1,388.83	1,583.65	1,735.70	--
Total County Taxes and Revenues	741.82	1,839.53	1,892.45	1,446.65	1,505.67	1,728.15	1,484.90	1,742.20	1,824.85	--
Lincoln County										
Severance Revenues from Production Returned to County[3] (millions of $)	0.05	0.11	0.11	0.08	0.09	0.10	0.09	0.10	0.11	--
Sweetwater County										
Severance Revenues from Production Returned to County[3] (millions of $)	0.12	0.28	0.29	0.22	0.24	0.27	0.22	0.25	0.28	--
LaBarge										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.10	0.01	0.26	0.19	0.21	0.24	0.20	0.22	0.25	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.20	4.60	4.75	0.35	0.39	0.44	0.37	0.42	0.46	--
Total Town Taxes and Revenues	0.30	4.61	5.00	0.55	0.59	0.67	0.56	0.64	0.70	--

Table 5.18 (Continued)

Development Rate/Government	No Action Alternative	Proposed Action	Alternative A Maximum Recovery	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
	Taxes and Revenues Received by Governments									
Big Piney										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.10	0.01	0.24	0.18	0.20	0.22	0.19	0.21	0.23	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.19	4.54	4.68	0.35	0.38	0.43	0.36	0.41	0.45	--
Total Town Taxes and Revenues	0.29	4.55	4.92	0.53	0.58	0.66	0.55	0.62	0.68	--
Marbleton										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.18	0.02	0.43	0.32	0.35	0.39	0.33	0.38	0.41	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.30	7.10	7.31	0.55	0.59	0.67	0.56	0.64	0.70	--
Total Town Taxes and Revenues	0.48	7.11	7.74	0.87	0.94	1.07	0.89	1.02	1.11	--
Pinedale										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.34	0.01	0.26	0.62	0.68	0.77	0.64	0.73	0.80	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.54	4.60	4.75	0.98	1.06	1.21	1.01	1.15	1.26	--
Total Town Taxes and Revenues	0.88	4.61	5.00	1.60	1.74	1.98	1.65	1.88	2.06	--
Rock Springs										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	4.56	0.01	0.26	8.30	9.02	10.24	8.54	9.74	10.67	--
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	3.47	4.60	4.75	6.32	6.87	7.80	6.50	7.42	8.13	--
Total Town Taxes and Revenues	8.04	4.61	5.00	14.62	15.89	18.03	15.05	17.16	18.80	--
Federal Mineral Royalties from Production Allocated to School Capital Account[4] (millions of $)	20.13	47.53	48.99	36.63	39.81	45.18	37.69	42.98	47.10	--
250 Wells/Year										
Federal										Approximately the same as Alternative G
Federal Income Tax from All Labor (millions of $)	70.49	461.06	462.10	465.05	259.70	372.33	464.52	471.94	464.01	
Federal Mineral Royalties from Production (millions of $)	1,491.20	3,520.65	3,628.73	2,713.03	2,949.15	3,346.53	2,791.88	3,183.51	3,489.18	
Total Federal Taxes and Revenues	1,561.69	3,981.71	4,090.83	3,178.08	3,208.85	3,718.86	3,256.40	3,655.45	3,953.19	
State										
State Sales Taxes from Development[2] (millions of $)	0.00	264.97	262.40	291.64	107.53	192.04	288.95	281.93	267.78	
Severance Revenues from Production (millions of $)	31.38	74.09	76.36	57.09	62.06	70.42	58.75	66.99	73.43	
Federal Mineral Royalties from Production Returned to State(millions of $)	745.60	1,760.33	1,814.36	1,356.51	1,474.57	1,673.26	1,395.94	1,591.76	1,744.59	
Total State Taxes and Revenues	776.98	2,099.39	2,153.13	1,705.24	1,644.17	1,935.73	1,743.64	1,940.68	2,085.80	
Sublette County										
State Sales Taxes from Development Returned to County[2] (millions of $)	0.00	87.44	86.59	96.24	35.49	63.37	95.35	93.04	88.37	
Severance Revenues from Production Returned to County[3] (millions of $)	0.12	0.28	0.29	0.22	0.24	0.27	0.22	0.25	0.28	
Ad Valorem Taxes on Production[5] (millions of $)	741.80	1,751.36	1,805.12	1,349.60	1,467.06	1,664.74	1,388.83	1,583.65	1,735.70	
Total County Taxes and Revenues	741.92	1,839.08	1,892.00	1,446.06	1,502.78	1,728.38	1,484.41	1,676.94	1,824.35	
Lincoln County										
Severance Revenues from Production Returned to County[3] (millions of $)	0.05	0.11	0.11	0.08	0.09	0.10	0.09	0.10	0.11	

Table 5.18 (Continued)

Development Rate/Government	No Action Alternative	Proposed Action	Alternative A Maximum Recovery	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
	Taxes and Revenues Received by Governments									
Sweetwater County										Approximately the same as Alternative G
Severance Revenues from Production Returned to County[3] (millions of $)	0.12	0.28	0.29	0.22	0.24	0.27	0.22	0.25	0.28	
LaBarge										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.20	4.60	4.75	0.35	0.39	0.44	0.37	0.42	0.46	
Total Town Taxes and Revenues	0.20	4.61	4.76	0.36	0.39	0.45	0.37	0.43	0.47	
Big Piney										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.10	0.01	0.24	0.18	0.20	0.22	0.19	0.21	0.23	
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.19	4.54	4.68	0.35	0.38	0.43	0.36	0.41	0.45	
Total Town Taxes and Revenues	0.29	4.55	4.92	0.53	0.58	0.66	0.55	0.62	0.68	
Marbleton										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.18	0.02	0.43	0.32	0.35	0.39	0.33	0.38	0.41	
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.30	7.10	7.31	0.55	0.59	0.67	0.56	0.64	0.70	
Total Town Taxes and Revenues	0.48	7.11	7.74	0.87	0.94	1.07	0.89	1.02	1.11	
Pinedale										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	0.34	0.01	0.26	0.62	0.68	0.77	0.64	0.73	0.80	
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	0.54	4.60	4.75	0.98	1.06	1.21	1.01	1.15	1.26	
Total Town Taxes and Revenues	0.88	4.61	5.00	1.60	1.74	1.98	1.65	1.88	2.06	
Rock Springs										
Severance Revenues from Production Returned Cities and Towns[3] (millions of $)	4.56	0.01	0.26	8.30	9.02	10.24	8.54	9.74	10.67	
Federal Mineral Royalties from Production Returned to Cities and Towns[4] (millions of $)	3.47	4.60	4.75	6.32	6.87	7.80	6.50	7.42	8.13	
Total Town Taxes and Revenues	8.04	4.61	5.00	14.62	15.89	18.03	15.05	17.16	18.80	
Federal Mineral Royalties from Production Allocated to School Capital Account[4] (millions of $)	20.13	47.53	48.99	36.63	39.81	45.18	37.69	42.98	47.10	

1 See Table 5.17 for present value of taxes.

2 This analysis does not present all possible taxes and revenues; it is an estimate of the most likely taxes and revenues. It is likely that some taxable development costs will occur in other counties; for purposes of this analysis, all sales taxes are attributed to Sublette County.

3 Sales tax returns to the county of origin. Counties would also receive a percentage of severance for road construction funds (see Table 3.23).

4 Based on 2003 proportions. See Table 3.27 for distribution formulas. For the purposes of this analysis all revenues are allocated to Sublette County; however, actual distribution is likely to vary.

5 Based on 2003 proportions.

Assumes 59.57 mills levied as ad valorem tax rate on production in Sublette County.

All counties in the study area would benefit from increased revenues from federal royalties, severance taxes, sales taxes, and presumably use and lodging taxes, although the latter are not discussed further herein.

Because development and production would occur within Sublette County, directly related increases in ad valorem production and property taxes would impact only Sublette County and its communities. Ad valorem taxes on production were estimated herein; however, real property values are likely to change if populations fluctuate, which could result in fluctuating receipts from ad valorem taxes on property. Real property value changes are beyond the scope of this analysis and are not addressed further.

5.3.3.1 No Action Alternative

Under the No Action Alternative, total nominal taxes and royalties would amount to \$2,334.9 million over the LOP (Table 5.17). These returns would provide \$741.82 million to Sublette County (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of \$123,144 (approximately \$3,079 annually) for each person in the county. This alternative would generate approximately \$20.13 million for the school capital account to be distributed by the state (Table 5.18).

This alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action and other alternatives and may result in higher consumer prices and increased dependence on foreign supplies over the long term. The additional taxes and revenues generated by the Proposed Action and other alternatives would remain unrealized. Local community government operating budgets would likely remain essentially static under this alternative.

Because revenues from development would not be realized under the No Action Alternative, this alternative would return the least amount of revenues (\$2,334.9 million nominal; \$1,753.7 million present value) to affected governments (Table 5.17).

5.3.3.2 Proposed Action

Under the Proposed Action, total nominal taxes and royalties would amount to $6,072.1 million ($3,474.7 million present value) over the LOP (Table 5.17). Nominal taxes and royalties to Sublette County would be $1,839.08 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $305,292 (approximately $5,815 annually) for each person in the county. This alternative would generate approximately $47.53 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would likely increase due to the increased tax base resulting from capital improvements in the JIDPA. Additional natural gas production could affect consumers because retail prices for natural gas are driven by supply and demand. As supply increases in relation to demand, prices of natural gas tend to fall. Reduced energy costs would also affect the local, state, and national economies. While, conceptually, changes in production for this field could impact pricing of natural gas for consumers, given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP.

Tables 5.19-5.21 present speculative examples of what budgets for Big Piney, Pinedale, and Sublette County may be in year 10 of development under the Proposed Action. These budgets are calculated on a straight line annual average increase based on the current budgets for these governments as presented in Chapter 3, adjusted for the expected increase in revenues resulting from project activities. Expenses were calculated as a percentage of total revenues based on the last budget year (2003-2004) presented in Chapter 3. While these budgets are merely speculative due to the variability of appropriations and taxes within governments from year to year, they are illustrative of the potential funds that could be available to the towns and county as natural gas development and production proceeds.

5.3.3.3 Alternative A (Maximum Recovery)

Under Alternative A, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $6,234.7 million ($3,574.9 million present value) over the LOP (Table 5.17).

Table 5.19 Speculative Big Piney Budget in Year 10 under the Proposed Action.

Government/Line Item	2003-2004[1] (Estimated--Approved by Board) ($)	Project Year 10[2] (Estimated Available $)
REVENUES		
Taxes		
Property Taxes	14,000	40,667
Gasoline Tax	11,501	9,643
Sales and Use Tax	414,080	3,733,739
Electric Franchise	3,000	3,000
Telephone Franchise	1,000	1,000
Cable TV Franchise	600	600
Special Fuels Tax	2,364	2,782
Severance Tax	17,397	14,391
Mineral Royalty Allocation	53,418	231,678
Cigarette Tax	4,288	5,044
Motor Vehicle Tax	5,000	3,028
Total Tax Revenues	526,648	4,045,574
Licenses and Permits		
Business Licenses	500	45
Building Permits	50	92
Animal Licenses	50	50
Totals Licenses and Permits	600	73
Other Revenues		
Liquor License Fees	3,750	3,750
Fines and Forfeitures	1,000	328
Interest Earnings	20,000	65,391
PP&L Collection Services	600	600
Sundry Revenues	100	100
Contributions and Transfers	386,102	1,211,840
Total Other Revenues	411,552	1,282,009
TOTAL REVENUES	938,800	5,327,656
EXPENDITURES		
Legislative	3,715	3,145
Court	8,240	25,963
Administrative	104,560	1,221,150
Social Services/Holidays	33,678	262,349
Buildings	28,637	840,620
Time and Temperature	200	2,459
Parks[3]	18,077	857,624
Health and Safety	5,696	8,508
Police Department	68,866	160,983
Fire Protection	17,000	31,076
Airport Board	4,000	7,312
Streets	146,545	189,902
Total Expenditures	439,214	3,611,092

1 Only line items that had sufficient data to calculate annual average growth rates appear in this table. It does not entirely reflect the actual Big Piney Budget shown in Table 3.35.

2 Assumes straight line annual average growth rate of revenues from 1999 to 2003 except where otherwise noted, then adds additional revenues from sales tax, severance, and federal mineral royalties distributed in the same proportion as in year 2003 (see Chapter 3); however, it is unlikely that budget growth or budget items will remain constant over time.

3 Applied growth rate from 2001-2003.

Table 5.20 Speculative Pinedale Budget in Year 10 under the Proposed Action.

Government/Line Item	2003-2004[1] (Estimated--Approved by Board) ($)	Project Year 10[2] (Estimated Available $)
REVENUES		
Motor Vehicle Tax	37,000	361,645
Sales and Use Tax	1,433,043	29,823,528
Cigarette Tax	6,400	458
Gasoline Tax	42,127	747,967
Mineral Royalties	147,420	750,591
Mineral Severance	60,256	187,863
Property Tax	107,000	343,692
Dog Licenses	2,500	10,186
Building Permits	5,000	62,131
Liquor Licenses	12,200	16,631
Franchise Fees	30,000	91,490
Court Costs and Fines	10,100	7,517
Interest	37,500	17,000
Fire Department[3]	140,120	12,575,008
Miscellaneous	3,000	3,000
Total Revenues	2,073,666	44,998,706
EXPENDITURES		
Administration	325,255	2,685,201
Municipal Court	15,874	61,604
Animal Control	52,312	593,251
Police Department	227,237	1,550,822
Fire Protection	194,060	21,689,385
Streets[4]	381,840	1,411,560
Pest[4]	25,137	496,190
Recreation	11,000	9,039
Parks	56,900	305,727
Planning	4,500	113,848
Maintenance	219,500	2,339,106
Airport	32,500	139,962
Sanitation[5]	3,000	13,958
Total Expenditures	1,764,115	31,409,651

1 Only line items that had sufficient data to calculate annual average growth rates appear in this table. It does not entirely reflect the actual Pinedale Budget shown in Table 3.36.
2 Assumes straight line annual average growth rate of revenues from 1999 to 2003 except where otherwise noted, then adds additional revenues from sales tax, severance, and federal mineral royalties distributed in the same proportion as in year 2003 (see Chapter 3); however, it is unlikely that budget growth or budget items will remain constant over time.
3 Applied growth rate from 1999-2002.
4 Applied growth rate from 2002-2003.
5 Assumes 5% annual growth rate.

Table 5.21 Speculative Sublette County Budget in Year 10 under the Proposed Action.

Government/Line Item	2003-2004[1] (Estimated--Approved by Board) ($)	Project Year 10[2] (Estimated Available $)
NONPROPERTY TAX REVENUES		
Gas Tax	275,000	526,899
Forest Service	187,202	372,584
Severance Tax	64,016	83,742
PILT	410,577	1,791,253
County Attorney	23,000	23,000
Emergency Management & S&R	25,000	50,114
County Clerk Fees	120,000	556,309
Clerk of Court Fees	12,000	24,217
Planning and Zoning Fees	19,500	49,962
Sheriff's Fees	24,000	13,744
Sales and Use Tax	3,000,000	44,623,297
Cigarette Tax	4,098	4,207
Interest	300,000	276,626
Liquor Licenses	6,750	14,179,286
Big Piney & Pinedale Metro	352,882	623,163
Miscellaneous Fees	30,000	2,958
Special Fuel	350,000	679,440
5%	20,000	43,138
Nurse	35,000	58,172
Motor Vehicles	250,000	468,587
Landfill	400,000	715,679
Federal Mineral Royalty[3]	10,000	--
U.S. Forest-Law Enforcement	9,500	7,586
Contract-Prisoners from Other Counties[4]	168,000	287,337
Sales Tax Penalty	8,000	11,321
Fuel Reimbursement (W&P, Fair)	6,000	9,939
COPS Universal Grant	48,000	757
E-911 Reimbursement	30,000	47,169
Search and Rescue	12,000	67,395
County Court Jury and Reimbursement	2,000	15,403
State-County Road Fund	298,688	1,149,016
Total Revenue Other than Property Taxes	6,501,213	66,751,669
PROPERTY TAX REVENUES		
General Fund	9,616,995	164,047,243
Fair	276,436	3,279,593
Airport	115,500	570,173
Library	520,495	1,552,068
Museum	198,865	555,903
Fire	487,688	1,362,201
Total Revenue from Property Taxes	11,215,979	171,367,182
Total Revenues	17,717,192	238,118,851
GENERAL FUND APPROPRIATIONS[5]		
Specific Appropriations		
County Commissioners	204,700	2,876,186
County Clerk	169,615	861,671
County Treasurer	160,378	1,331,521
County Assessor	230,503	1,230,122
County Attorney	214,807	1,596,578
Clerk of Court	174,547	1,355,335
Recycling[6]	123,672	4,499,627
GIS	48,171	388,311
County Engineer	10,000	282,198
Courthouse and Jail[7]	3,382,200	6,943,137

Table 5.21 (Continued)

Government/Line Item	2003-2004[1] (Estimated--Approved by Board) ($)	Project Year 10[2] (Estimated Available $)
Specific Appropriations (Cont.)		
Election	2,225	2,397
Zoning and Land Planning	120,168	816,840
Detention	1,278,212	146,968,141
Communication	315,363	1,485,479
Law Enforcement	1,843,227	16,163,833
County Coroner	26,857	1,518,178
County Health	124,147	1,246,237
Health Officer and Sanitarian	86,740	5,434,407
Road and Bridge	3,651,063	70,508,929
Transfer Station	48,200	58,733
Sanitary Landfill	735,023	26,744,797
Emergency Management	108,112	6,617,404
County Extension Office	96,484	2,825,494
Total Specific Appropriations	11,999,864	301,755,554
Other General Fund Appropriations		
Financial Administration	60,000	820,460
FICA, Insurance, Retirement	1,200,000	15,357,363
County Officer's Expense	20,000	596,120
Printing and Publication	40,000	119,581
Postage	27,000	154,235
Telephone	4,000	11,716
CPA Audit	22,500	76,875
Grant-Historic Survey	10,023	177,523
Senior Citizens-Big Piney	35,000	386,638
Senior Citizens-Pinedale	45,000	992,194
SAFV Task Force	13,950	95,928
Office Rent	1,968	4,666
Worker's Compensation	125,000	4,590,925
Unemployment Compensation	10,000	24,237
Pre-School Grant	15,000	13,393
Learning Center	20,000	470
Soil Conservation	164,000	5,238,877
County Court Jury	2,000	9,643
Total Other General Fund Appropriations	1,815,441	28,670,841
Total General Fund Appropriations	13,815,305	330,426,395

1 Only line items that had sufficient data to calculate annual average growth rates appear in this table. It does not entirely reflect the actual Sublette County Budget shown in Table 3.37.

2 Assumes straight line annual average growth rate of revenues from 1999 to 2003 except where otherwise noted, then adds additional revenues from sales tax, severance, and production ad valorem distributed in the same proportion as in year 2003 (see Chapter 3). However, it is unlikely that budget growth or budget items will remain constant over time.

3 Although Sublette County budgets from 1999-2004 indicate that federal mineral royalties have been received, the state disbursements do not indicate such distributions to counties. Therefore, for purposes of this analysis, it is assumed that no such distributions will take place.

4 Assumes 5% annual growth rate.

5 Assumes appropriations occur as a constant percentage of total revenue based on the assumed straight line annual average growth rates from 1999 to 2003.

6 Applied same growth rate as sanitary landfill.

7 Applied growth rate from 2001-2003.

Nominal taxes and royalties to Sublette County would be $1,892.00 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $314,077 (approximately $5,982 annually) for each person in the county. This alternative would generate approximately $48.99 million for the school capital account to be distributed by the state (Table 5.17).

Property tax revenues would likely be higher under this alternative than under the Proposed Action due to the greater amount of construction involved with development, which would result in an increased tax base resulting from capital improvements in the JIDPA. Because Alternative A maximizes resource recovery, benefits to consumers and local, state, and national economies would likely be higher than under the Proposed Action. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to reduced development expenditures. Alternative A would generate the most overall taxes and revenues ($6,234.7 million) and the most funds ($48.99 million) for the school capital account over the LOP compared to the other alternatives (Table 5.18).

5.3.3.4 Alternative B

Under Alternative B, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $4,876.4 million ($2,725.2 million present value) over the LOP (Table 5.17). Nominal taxes and royalties to Sublette County would be $1,446.06 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $240,050 (approximately $5,334 annually) for each person in the county. This alternative would generate approximately $36.63 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA but at a lower amount than under the Proposed Action due to the decreased number of well pads. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action.

Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to reduced development expenditures and lower recovery of resources.

5.3.3.5 Alternative C

Under Alternative C, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $4,845.5 million ($3,242.5 million present value) over the LOP (Table 5.17). Nominal taxes and royalties to Sublette County would be $1,502.78 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $249,465 (approximately $5,091 annually) for each person in the county. This alternative would generate approximately $39.81 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA but at a lower amount than under the Proposed Action due to the decreased number of wells. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action. Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to reduced development expenditures and lower recovery of resources.

5.3.3.6 Alternative D

Under Alternative D, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $5,646.1 million ($3,483.9 million present value) over the LOP (Table 5.17).

Nominal taxes and royalties to Sublette County would be $1,728.38 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $286,915 (approximately $5,855 annually) for each person in the county. This alternative would generate approximately $45.18 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA but at a lower amount than under the Proposed Action due to the decreased number of wells. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action. Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to lower recovery of resources.

5.3.3.7 Alternative E

Under Alternative E, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $4,992.9 million ($2,798.3 million present value) over the LOP (Table 5.17). Nominal taxes and royalties to Sublette County would be $1,484.41 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $246,416 (approximately $4,694 annually) for each person in the county. This alternative would generate approximately $37.69 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA, but at a lower amount than under the Proposed Action due to the decreased number of well pads. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action.

Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to lower recovery of resources.

5.3.3.8 Alternative F

Under Alternative F, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $5,588.0 million ($3,165.4 million present value) over the LOP (Table 5.17). Nominal taxes and royalties to Sublette County would be $1,676.94 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $278,376 (approximately $5,302 annually) for each person in the county. This alternative would generate approximately $42.98 million for the school capital account to be distributed by the state (Table 5.18).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA but at a lower amount than under the Proposed Action due to the decreased number of well pads. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action. Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to lower recovery of resources.

5.3.3.9 Alternative G

Under Alternative G, nominal taxes and royalties under the 250 well/year development rate would most likely amount to $6,030.1 million ($3,446.6 million present value) over the LOP (Table 5.17).

Nominal taxes and royalties to Sublette County would be $1,824.35 million (Table 5.18). Based on a population of 6,024 (year 2002), this would be equivalent to the county receiving funds of $302,847 (approximately $5,769 annually) for each person in the county. This alternative would generate approximately $47.10 million for the school capital account to be distributed by the state (Table 5.17).

In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the JIDPA but at a lower amount than under the Proposed Action due to the decreased number of well pads. However, this alternative would result in a lower recovery of resources and a lower supply of natural gas over the long-term than under the Proposed Action. Conceptually, this may result in higher consumer prices and increased dependence on foreign supplies, although given the size of the market it is not likely that a measurable change in market price would be associated with this alternative due to the length of the LOP. Local area government operating budgets would likely increase but be less under this alternative than under the Proposed Action due to lower recovery of resources.

5.3.3.10 Preferred Alternative

Under the Preferred Alternative, impacts from increased taxes and revenues on local governments would approximately the same as those described under Alternative G at the 250 wells/year development rate. at the 250 wells/year development rate.

5.4 RECREATION IMPACTS

5.4.1 Nonconsumptive Recreation

No developed recreation sites or facilities are present in or immediately adjacent to the JIDPA; therefore, no impacts to recreation sites or facilities are anticipated under the Proposed Action or any alternative.

There would likely be some unquantifiable long-term displacement or elimination of existing dispersed recreation due to an increased level of gas field development activities, but given the existing environment already contains these activities, much of this impact may have already occurred. That is, potential recreational visitors may already avoid the JIDPA because of a perceived reduction in the quality of the recreational experience in the area.

Information on the number of resident versus nonresident nonconsumptive recreational visitors is not collected for the JIDPA. Economic losses could result if recreationists were displaced from the JIDPA and moved their activities out of the study area. Losses would be proportional to the number of displaced recreationists. For the purposes of this analysis, it is assumed that all recreation would be lost from the JIDPA for the LOP. (It is likely that most of this loss has already occurred due to extant development effects.)

Direct impacts from displaced nonconsumptive recreationists (per visitor day) could result in a loss of $29.62 (including $6.80 of labor income) and 0.000518 AJEs each (Table 5.22). If all 3,396 RVDs (see Table 3.43) were lost (regardless of the authorized alternative), there would be an annual loss of direct expenditures of $100,590 (including $23,093 labor earnings) and an annual loss of 1.8 AJEs for the LOP (Table 5.23).

Table 5.22 Economic Activity per RVD from Nonconsumptive Recreation, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Item	Economic Activity per RVD
Direct Expenditures	$22.82
Secondary Labor Earnings	$6.80
Total Economic Activity per RVD	$29.62
AJEs per RVD	0.000518

Table 5.23 Economic Activity from Nonconsumptive Recreation for the Life of Field, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
Affected RVDs (Assumed Lost for LOF)	--	3,396	3,396	3,396	3,396	3,396	3,396	3,396	3,396	
Economic Activity/RVD										Approximately the same as Alternative G
Direct Expenditures ($)	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	
Secondary Labor Earnings ($)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	
Total Economic Effect ($)	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	
Total AJEs	0.000518	0.000518	0.000518	0.000518	0.000518	0.000518	0.000518	0.000518	0.000518	
Annual Economic Activity										
Direct Expenditures ($)	--	77,496.7	77,496.7	77,496.7	77,496.7	77,496.7	77,496.7	77,496.7	77,496.7	
Secondary Labor Earnings ($)	--	23,092.8	23,092.8	23,092.8	23,092.8	23,092.8	23,092.8	23,092.8	23,092.8	
Total Economic Effect ($)	--	100,589.5	100,589.5	100,589.5	100,589.5	100,589.5	100,589.5	100,589.5	100,589.5	
Total Annual AJEs	--	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
					Nominal Value of LOF Recreation					
75 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	6.4	6.4	6.4	4.4	5.4	6.4	6.4	6.4	--
Secondary Labor Earnings (millions of $)	--	1.9	1.9	1.9	1.3	1.6	1.9	1.9	1.9	--
Total Economic Effect (millions of $)	--	8.2	8.2	8.2	5.7	7.0	8.2	8.2	8.2	--
Total LOF AJEs[2]	--	144.2	144.2	144.2	100.3	123.1	144.2	144.2	144.2	--
150 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	4.7	4.7	4.7	3.8	4.3	4.7	4.7	4.7	--
Secondary Labor Earnings (millions of $)	--	1.4	1.4	1.4	1.1	1.3	1.4	1.4	1.4	--
Total Economic Effect (millions of $)	--	6.1	6.1	6.1	4.9	5.5	6.1	6.1	6.1	--
Total LOF AJEs[2]	--	107.3	107.3	107.3	86.2	96.8	107.3	107.3	107.3	--
250 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	4.1	4.1	4.1	3.5	3.8	4.1	4.1	4.1	
Secondary Labor Earnings (millions of $)	--	1.2	1.2	1.2	1.0	1.1	1.2	1.2	1.2	Approximately the same as Alternative G
Total Economic Effect (millions of $)	--	5.3	5.3	5.3	4.5	4.9	5.3	5.3	5.3	
Total LOF AJEs[2]	--	92.4	92.4	92.4	79.2	86.2	92.4	92.4	92.4	

Table 5.23 (Continued)

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
					Present Value of LOF Recreation[2]					
75 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	2.1	2.1	2.1	1.9	2.0	2.1	2.1	2.1	--
Secondary Labor Earnings (millions of $)	--	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	--
Total Economic Effect (millions of $)	--	2.7	2.7	2.7	2.5	2.6	2.7	2.7	2.7	--
150 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	--
Secondary Labor Earnings (millions of $)	--	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	--
Total Economic Effect (millions of $)	--	2.5	2.5	2.5	2.3	2.4	2.5	2.5	2.5	--
250 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	1.8	1.8	1.8	1.7	1.8	1.8	1.8	1.8	Approximately the same as Alternative G
Secondary Labor Earnings (millions of $)	--	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Total Economic Effect (millions of $)	--	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.4	

However, it is likely that any recreationists discouraged from engaging in activities in the JIDPA as a result of natural gas development would relocate their activities to other locations in the vicinity that would provide similar recreational opportunities unique to the PFO area. Individuals may experience impacts in terms of lessened enjoyment and satisfaction from relocated recreational activities.

5.4.1.1 No Action Alternative

Under the No Action Alternative, no change in economic activity from current conditions for recreation would be expected. No additional development would occur; therefore, current recreationists would not likely relocate their activities (Table 5.23). Impacts from all action alternatives would likely be higher than those described for the No Action Alternative due to increased disturbance and longer LOP.

5.4.1.2 Proposed Action

Under the Proposed Action, if it is assumed that all 3,396 RVDs are relocated for the LOP, reduced recreation economic activity would amount to $2.4 million present value (including $0.5 million present value secondary labor earnings) and up to 92.4 AJEs (Table 5.23).

5.4.1.3 Alternative A (Maximum Recovery)

Under Alternative A, if it is assumed that all 3,396 RVDs are relocated for the LOP, the greatest reduction in economic activity would occur under the 75 well/year development rate due to project duration (up to 82 years) (Table 5.23). This option could result in the loss of recreational economic activity of up to $2.7 million present value (including $0.6 million present value in secondary labor earnings) and up to 144.2 AJEs for the 82-year LOP (Table 5.23). The least reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $2.4 million present value (including $0.5 million present value secondary labor earnings) and up to 92.4 AJEs (Table 5.23). The loss of economic activity would be increased under longer development rates due to the extended period that RVDs would be displaced.

5.4.1.4 Alternative B

Under Alternative B, losses to economic activity from recreation would be the same as those described for Alternative A (Table 5.23). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.1.5 Alternative C

Under Alternative C, the greatest reduction in economic activity from recreation losses would most likely occur under the 75 well/year development rate due to project duration (up to 57 years). This option could result in the accumulated loss of up to $2.5 million present value (including $0.6 million present value in secondary labor earnings) and up to 100.3 AJEs for the 57-year LOP (Table 5.23). The least reduction in economic activity would occur under the 250 well/year development rate (45-year LOP) and would amount to $2.3 million present value (including $0.5 million present value secondary labor earnings) and up to 79.2 AJEs (Table 5.23). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.1.6 Alternative D

Under Alternative D, the greatest reduction in economic activity would most likely occur under the 75 well/year development rate due to project duration (up to 70 years). This option could result in the accumulated loss of up to $2.6 million present value (including $0.6 million present value in secondary labor earnings) and up to 123.1 AJEs for the 70-year LOP (Table 5.23). The least reduction in economic activity would most likely occur under the 250 well/year development rate (49-year LOP) and would amount to $2.3 million present value (including $0.5 million present value secondary labor earnings) and up to 86.2 AJEs (Table 5.23). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.1.7 Alternative E

Under Alternative E, changes to economic activity would likely be the same as those described for Alternative A.

5.4.1.8 Alternative F

Under Alternative F, changes to economic activity would likely be the same as those described for Alternative A.

5.4.1.9 Alternative G

Under Alternative G, changes to economic activity would likely be the same as those described for Alternative A.

5.4.1.10 Preferred Alternative

Under the Preferred Alternative, changes to economic activity would approximately the same as same as those described for Alternative G at the 250 wells/year development rate.

5.4.2 Hunting

Economic activity from hunting could be reduced if hunters were displaced from the JIDPA and moved their activities out of the study area. Losses would be proportional to the number of displaced hunters. Under the Proposed Action and alternatives, populations of pronghorn antelope and/or greater sage-grouse, which are the two principle species hunted on the JIDPA, would likely be displaced to such an extent that recreational hunting on the JIDPA may no longer occur. Cottontail rabbits are also hunted on the JIDPA, but are unlikely to be displaced. However, it is likely that hunters already avoid the area due to extant development. Lands adjacent to the JIDPA may absorb displaced hunting pressure since displaced wildlife (most notably pronghorn antelope and greater sage-grouse) may also move to adjacent lands; thus, no economic loss may result from loss of hunting due to the project. However, for the purposes of this economic analysis, it is conservatively assumed that all hunting on the JIDPA would be lost for the LOP.

Only cottontail, greater sage-grouse, and pronghorn are likely to be hunted on the JIDPA. WGFD does not collect resident versus nonresident information for cottontail and greater sage-grouse hunting; therefore, it will be conservatively assumed for the purposes of this analysis that all hunters are nonresident. Direct impacts from displaced pronghorn hunters (61.0 hunter days per year attributable to JIDPA lands) could result in a loss of $536.46/hunter day (including $155.16 of labor income) and 0.012087 AJEs each (Table 5.24). Direct impacts from displaced cottontail hunters (26.4 hunter days per year) could result in a loss of $243.48/hunter day (including $70.42 of labor income) and 0.005486 AJEs each. Direct impacts from displaced greater sage-grouse hunters (16.3 hunter days per labor) could result in a loss of $183.32 (including $53.02 of labor income) and 0.004131 AJEs each. If all hunters relocate their activities away from the JIDPA could result in an annual economic activity loss of $42,140 ($12,188 of labor income) and an annual loss 0.95 AJEs (Table 5.25).

Table 5.24 Economic Activity per Hunter Day, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

	Economic Activity from Hunting			
Item	Pronghorn	Cottontail	Greater Sage-grouse	Total
Economic Activity Per Hunter Day				
Direct Expenditures	$381.30	$173.06	$130.30	$684.66
Secondary Labor Earnings	$155.16	$70.42	$53.02	$278.60
Total Economic Activity per Hunter Day	$536.46	$243.48	$183.32	$963.26
AJEs	0.012087	0.005486	0.004131	0.021704
Annual Economic Activity				
No. Hunter Days	61.0	26.4	16.3	103.70
Direct Expenditures	$23,259	$4,569	$2,124	$29,952
Secondary Labor Earnings	$9,465	$1,859	$864	$12,188
Total Annual Economic Activity	$32,724	$6,428	$2,988	$42,140
AJEs	0.7	0.1	0.1	0.95

Table 5.25 Economic Activity Resulting from Hunting Over the Life of Field, Jonah Infill Drilling Project, Sublette County, 2005.

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
Affected Hunter Days[1] (Assumed Lost for L	--	103.7	103.7	103.7	103.7	103.7	103.7	103.7	103.7	Approximately the same as Alternative G
Economic Activity/AUM										
Direct Expenditures ($)	684.66	684.66	684.66	684.66	684.66	684.66	684.66	684.66	684.66	
Secondary Labor Earnings ($)	278.60	278.60	278.60	278.60	278.60	278.60	278.60	278.60	278.60	
Total Economic Effect ($)	963.26	963.26	963.26	963.26	963.26	963.26	963.26	963.26	963.26	
Total AJEs	0.021704	0.021704	0.021704	0.021704	0.021704	0.021704	0.021704	0.021704	0.021704	
Annual Economic Activity										
Direct Expenditures ($)	--	29,952.0	29,952.0	29,952.0	29,952.0	29,952.0	29,952.0	29,952.0	29,952.0	
Secondary Labor Earnings ($)	--	12,188.0	12,188.0	12,188.0	12,188.0	12,188.0	12,188.0	12,188.0	12,188.0	
Total Economic Effect ($)	--	42,140.0	42,140.0	42,140.0	42,140.0	42,140.0	42,140.0	42,140.0	42,140.0	
Total Annual AJEs	--	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Nominal Value of LOF Hunting										
75 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	2.5	2.5	2.5	1.7	2.1	2.5	2.5	2.5	--
Secondary Labor Earnings (millions of $)	--	1.0	1.0	1.0	0.7	0.9	1.0	1.0	1.0	--
Total Economic Effect (millions of $)	--	3.5	3.5	3.5	2.4	2.9	3.5	3.5	3.5	--
Total Annual AJEs	--	77.9	77.9	77.9	54.2	66.5	77.9	77.9	77.9	--
150 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	1.8	1.8	1.8	1.5	1.6	1.8	1.8	1.8	--
Secondary Labor Earnings (millions of $)	--	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	--
Total Economic Effect (millions of $)	--	2.6	2.6	2.6	2.1	2.3	2.6	2.6	2.6	--
Total Annual AJEs	--	58.0	58.0	58.0	46.6	52.3	58.0	58.0	58.0	--
250 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	1.6	1.6	1.6	1.3	1.5	1.6	1.6	1.6	Approximately the same as Alternative G
Secondary Labor Earnings (millions of $)	--	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	
Total Economic Effect (millions of $)	--	2.2	2.2	2.2	1.9	2.1	2.2	2.2	2.2	
Total Annual AJEs	--	49.9	49.9	49.9	42.8	46.6	49.9	49.9	49.9	

Table 5.25 (Continued)

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
					Present Value of LOF Hunting					
75 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.8	--
Secondary Labor Earnings (millions of $)	--	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--
Total Economic Effect (millions of $)	--	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	--
150 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8	--
Secondary Labor Earnings (millions of $)	--	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--
Total Economic Effect (millions of $)	--	1.1	1.1	1.1	1.0	1.0	1.1	1.1	1.1	--
250 Wells/Year Development Rate										
Direct Expenditures (millions of $)	--	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
Secondary Labor Earnings (millions of $)	--	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Approximately the same as Alternative G
Total Economic Effect (millions of $)	--	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	

[1] Includes pronghorn, cottontail, and greater sage-grouse (assumed lost for LOF) (see Table 5.24).

5.4.2.1 No Action Alternative

Under the No Action Alternative, no change in economic activity from current conditions for hunting would be expected. No additional development would occur; therefore, current hunters would not likely relocate their activities more than has already occurred (Table 5.25). Under all action alternatives, impacts to hunting would likely be greater than that described for the No Action Alternative due to increased disturbance and longer LOP.

5.4.2.2 Proposed Action

Under the Proposed Action, if it is assumed that all 103.7 hunter days per year are relocated for the LOP, reduction in economic activity from hunting expenditures would likely amount to $1.0 million present value (including $0.3 million present value secondary labor earnings) and up to 49.9 AJEs (Table 5.25).

5.4.2.3 Alternative A (Maximum Recovery)

Under Alternative A, if it is assumed that all 103.7 hunter days per year are relocated for the LOP, the greatest reduction in economic activity would likely occur under the 75 well/year development rate due to project duration under this development rate (up to 82 years). This option could result in the accumulated loss of up to $1.1 million present value (including $0.3 million present value in secondary labor earnings) and up to 77.9 AJEs for the 82-year LOP (Table 5.25). The least reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $1.0 million present value (including $0.3 million present value secondary labor earnings) and up to 49.9 AJEs (Table 5.25). Longer development periods under the 75 and 150 well/year development rates would result in greater reductions in hunting-generated economic activity than under the Proposed Action.

Nominally, the greatest total reduction in economic activity ($3.5 million) from any alternative from loss of hunting would likely occur under the 75 well/year development rate under this alternative.

5.4.2.4 Alternative B

Under Alternative B, changes to economic activity would likely be the same as those described for Alternative A. Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.2.5 Alternative C

Under Alternative C, the greatest reduction in economic activity would likely occur under the 75 well/year development rate due to project duration (up to 57 years). This option could result in the accumulated loss of up to $1.0 million present value (including $0.3 million present value in secondary labor earnings) and up to 54.2 AJEs for the 57-year LOP (Table 5.25). The least reduction in economic activity would occur under the 250 well/year development rate (45-year LOP) and would amount to $0.9 million present value (including $0.3 million present value secondary labor earnings) and up to 42.8 AJEs (Table 5.25). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.2.6 Alternative D

Under Alternative D, the greatest reduction in economic activity would likely occur under the 75 well/year development rate due to project duration (up to 70 years). This option could result in the accumulated loss of up to $1.1 million present value (including $0.3 million present value in secondary labor earnings and up to 66.5 AJEs for the 70-year LOP (Table 5.25). The least reduction in economic activity would occur under the 250 well/year development rate (49-year LOP) and would amount to $1.0 million present value (including $0.3 million present value secondary labor earnings) and up to 46.6 AJEs (Table 5.25). Impacts would likely be less than for the Proposed Action due to reduced disturbance over the LOP.

5.4.2.7 Alternative E

Under Alternative E, changes to economic activity would likely be the same as those described for Alternative A.

5.4.2.8 Alternative F

Under Alternative F, changes to economic activity would likely be the same as those described for Alternative A.

5.4.2.9 Alternative G

Under Alternative G, changes to economic activity would likely be the same as those described for Alternative A.

5.4.2.10 Preferred Alternative

Under the Preferred Alternative, changes to economic activity would approximately the same as those described for Alternative G at the 250 wells/year development rate.

5.5 GRAZING IMPACTS

There would be a reduction in available forage on grazing allotments within the JIDPA due to road, pipeline, and well pad construction (BLM 2004c). For the purposes of this analysis, it is conservatively assumed that, based on the reduction in forage, BLM would reduce the number of permitted AUMs during initial disturbance and for the LOP; these estimated reductions are presented in Table 5.26. The economic activity from these AUMs is presented in Table 5.27. The assumed reduction in AUMs does not take into consideration the possibility that areas reclaimed shortly after initial disturbance--areas not needed for the LOP--could potentially provide more forage (primarily grass) for livestock than the previously undisturbed range. Total economic impact per AUM lost is estimated at $114.99 (including $18.46 labor earnings) and 0.000709 AJEs annually (Table 5.27). Additionally, fees paid to the BLM by permittees ($1.35/AUM) would not be realized if the number of permitted AUMs were reduced.

Table 5.26 Number of AUMs Potentially Affected under Each Alternative and Cumulatively Including Existing Disturbance, Jonah Infill Drill Project, 2004.

	Number of AUMs	
Alternative	Newly Affected (Assumed Lost for LOP)	Cumulative (Newly Affected + Reasonably Foreseeable Disturbance) (Assumed Lost for LOP)
Proposed Action	1,720	1,761
Alternative A	1,720	1,761
Alternative B	618	659
Alternative C	909	950
Alternative D	1,325	1,366
Alternative E	881	968
Alternative F	1,227	1,268
Alternative G	1,531	1,490
No Action	342	383
Total acres in All Allotments	--	120,597
Total Permitted AUMs in All Allotments	--	9,876

Table 5.27 Economic Activity from Grazing per AUM, Jonah Infill Drilling Project, Sublette County, Wyoming, 2005.

Item/AUM	Economic Activity per AUM
Value of Production	$35.29
Indirect Economic Activity (not labor)	$61.24
Secondary Labor Earnings	$18.46
Total Economic Activity per AUM	$114.99
AJEs per AUM	0.000709

For the purposes of this economic analysis, it is conservatively assumed that all affected AUMs (cumulative plus reasonably foreseeable disturbance) would be lost under each alternative for the LOP (Tables 5.26 and 5.28). Total losses would depend on the LOP (ranging from 40 to up to 82 years), which depends on the number of wells and rate of development ultimately approved. Some AUMs would return to productivity during the LOP as reclamation proceeds and forage production increases. Removal and reinstatement of any permitted AUMs would be at the discretion of the BLM.

5.5.1 No Action Alternative

Under the No Action Alternative, it is assumed no new surface disturbance would occur except for that which is already authorized; however, 383 AUMs that are currently affected plus reasonably foreseeable disturbance would remain lost for the LOP. The reduction could result in the accumulated loss of up to $0.9 million present value (including $0.2 million present value in secondary labor earnings) and up to 10.9 AJEs for the 40-year LOP (Table 5.28). The least change in grazing would occur under this alternative due to the shorter project duration and reduced disturbance. Impacts to grazing under all action alternatives would likely be higher than that described for the No Action Alternative due to increased disturbance and longer LOP.

5.5.2 Proposed Action

Under the Proposed Action, if it is assumed that 1,761 AUMs would be lost for the LOP, reduction in economic activity would amount to $6.6 million present value (including $4.0 million present value secondary labor earnings) and up to 65.5 AJEs (Table 5.28) for the 40-year LOP. Impacts would be greater than for the No Action Alternative due to increased disturbance and longer project duration.

5.5.3 Alternative A (Maximum Recovery)

Under Alternative A, if it is assumed that 1,761 AUMs would be lost for the LOP, the least reduction in economic activity would likely occur under the 150 well/year development rate due to

Table 5.28 Economic Activity Resulting from Grazing Over the Life of Field, Jonah Infill Drilling Project, Sublette County, 2005.

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
Affected AUMs[1] (Assumed Lost for LOF)	383	1,761	1,761	659	950	1,366	968	1,268	1,490	Approximately the same as Alternative G
Economic Activity/AUM										
Value of Production ($)	35.3	35.29	35.29	35.29	35.29	35.29	35.29	35.29	35.29	
Indirect Economic Activity (not labor) ($)	61.2	61.24	61.24	61.24	61.24	61.24	61.24	61.24	61.24	
Secondary Labor Earnings ($)	18.5	18.46	18.46	18.46	18.46	18.46	18.46	18.46	18.46	
Total Economic Effect ($)	115.0	114.99	114.99	114.99	114.99	114.99	114.99	114.99	114.99	
Total AJEs	0.000709	0.000709	0.000709	0.000709	0.000709	0.000709	0.000709	0.000709	0.000709	
Annual Economic Activity										
Value of Production ($)	13,516.1	62,145.7	62,145.7	23,256.1	33,525.5	48,206.1	34,160.7	44,747.7	52,582.1	
Indirect Economic Activity (not labor) ($)	23,454.9	107,843.6	107,843.6	40,357.2	58,178.0	83,653.8	59,280.3	77,652.3	91,247.6	
Secondary Labor Earnings ($)	7,070.2	32,508.1	32,508.1	12,165.1	17,537.0	25,216.4	17,869.3	23,407.3	27,505.4	
Total Economic Effect ($)	44,041.2	202,497.4	202,497.4	75,778.4	109,240.5	157,076.3	111,310.3	145,807.3	171,335.1	
Total Annual AJEs	0.3	1.2	1.2	0.5	0.7	1.0	0.7	0.9	1.1	
					Nominal Value of LOF Grazing					
75 Wells/Year Development Rate										
Value of Production (millions of $)	0.9	8.8	8.8	3.3	3.3	5.9	4.9	6.4	7.5	--
Indirect Economic Activity (not labor) (millions of $)	0.3	2.7	2.7	1.0	1.0	1.8	1.5	1.9	2.3	--
Secondary Labor Earnings (millions of $)	0.3	2.7	2.7	1.0	1.0	1.8	1.5	1.9	2.3	--
Total Economic Effect (millions of $)	1.5	14.2	14.2	5.3	5.3	9.4	7.8	10.2	12.0	--
Total Annual AJEs	10.9	102.4	102.4	38.3	38.4	67.8	56.3	73.7	86.6	--
150 Wells/Year Development Rate										
Value of Production (millions of $)	0.9	6.6	6.6	2.5	2.9	4.6	3.6	4.7	5.6	--
Indirect Economic Activity (not labor) (millions of $)	0.3	2.0	2.0	0.7	0.9	1.4	1.1	1.4	1.7	--
Secondary Labor Earnings (millions of $)	0.3	2.0	2.0	0.7	0.9	1.4	1.1	1.4	1.7	--
Total Economic Effect (millions of $)	1.5	10.5	10.5	3.9	4.6	7.4	5.8	7.6	8.9	--
Total Annual AJEs	10.9	76.2	76.2	28.5	33.0	53.3	41.9	54.8	64.4	--
250 Wells/Year Development Rate										
Value of Production (millions of $)	0.9	5.7	5.7	2.1	2.6	4.1	3.1	4.1	4.8	
Indirect Economic Activity (not labor) (millions of $)	0.3	1.7	1.7	0.6	0.8	1.2	0.9	1.2	1.4	
Secondary Labor Earnings (millions of $)	0.3	1.7	1.7	0.6	0.8	1.2	0.9	1.2	1.4	Approximately the same as Alternative G
Total Economic Effect (millions of $)	1.5	9.1	9.1	3.4	4.2	6.6	5.0	6.5	7.7	
Total Annual AJEs	10.9	65.5	65.5	24.5	30.3	47.5	36.0	47.2	55.5	

Table 5.28 (Continued)

Economic Activity	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
				Present Value of LOF Grazing						
75 Wells/Year Development Rate										
Value of Production (millions of $)	0.3	1.7	1.7	0.6	0.8	1.3	0.9	1.2	1.4	--
Indirect Economic Activity (not labor) (millions of $)	0.5	2.9	2.9	1.1	1.4	2.2	1.6	2.1	2.5	--
Secondary Labor Earnings (millions of $)	0.2	0.9	0.9	0.3	0.4	0.7	0.5	0.6	0.7	--
Total Economic Effect (millions of $)	0.9	5.4	5.4	2.0	2.7	4.1	3.0	3.9	4.6	--
150 Wells/Year Development Rate										
Value of Production (millions of $)	0.3	1.6	1.6	0.6	0.7	1.2	0.9	1.1	1.3	--
Indirect Economic Activity (not labor) (millions of $)	0.5	2.7	2.7	1.0	1.4	2.0	1.5	1.9	2.3	--
Secondary Labor Earnings (millions of $)	0.2	0.8	0.8	0.3	0.4	0.6	0.4	0.6	0.7	--
Total Economic Effect (millions of $)	0.9	5.1	5.1	1.9	2.4	3.8	2.8	3.7	4.3	--
250 Wells/Year Development Rate										
Value of Production (millions of $)	0.3	1.3	1.3	0.5	0.8	1.1	0.7	0.9	1.1	Approximately the same as Alternative G
Indirect Economic Activity (not labor) (millions of $)	0.5	1.3	1.3	0.5	1.3	1.9	0.7	0.9	1.1	
Secondary Labor Earnings (millions of $)	0.2	4.0	4.0	1.5	0.4	0.6	2.2	2.9	3.4	
Total Economic Effect (millions of $)	0.9	6.6	6.6	2.5	2.5	3.7	3.6	4.7	5.6	

[1] Cumulative AUMs (newly affected + RFD) (assumed lost for LOF).

project duration (up to 61 years). This option could result in the accumulated loss of up to $5.1 million present value (including $0.8 million present value in secondary labor earnings) and up to 76.2 AJEs for the 61-year LOP (Table 5.28). Under the 250 well/year development rate, impacts would be the same as under the Proposed Action. Losses would be greater than under the Proposed Action during the longer project durations due to the longer periods the AUMs would be unavailable.

The greatest loss in grazing from all alternatives would likely occur under Alternative A at a 75 well/year development rate.

5.5.4 Alternative B

Under Alternative B, if it is assumed that 659 AUMs would be reduced for the LOP, the least reduction in economic activity would likely occur under the 150 well/year development rate due to project duration (up to 61 years). This option could result in the accumulated loss of up to $1.9 million present value (including $0.3 million present value in secondary labor earnings) and up to 38.3 AJEs for the 82-year LOP (Table 5.28). The greatest reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $2.5 million present value (including $1.5 million present value secondary labor earnings) and up to 24.5 AJEs (Table 5.28). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.5 Alternative C

Under Alternative C, if it is assumed that 950 AUMs would be reduced for the LOP, the greatest reduction in economic activity would likely occur under the 75 well/year development rate due to project duration (up to 57 years). This option could result in the accumulated loss of up to $2.7 million present value (including $0.4 million present value in secondary labor earnings) and up to 38.4 AJEs for the 57-year LOP (Table 5.28). The least reduction in economic activity would occur under the 150 well/year development rate (45-year LOP) and would amount to $2.4 million present value (including $0.4 million present value secondary labor earnings) and up to 30.3 AJEs

(Table 5.28). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.6 Alternative D

Under Alternative D, if it is assumed that 1,366 AUMs would be reduced for the LOP, the greatest reduction in economic activity would likely occur under the 75 well/year development rate due to project duration (up to 70 years). This option could result in the accumulated loss of up to $4.1 million present value (including $0.7 million present value in secondary labor earnings) and up to 67.8 AJEs for the 70-year LOP (Table 5.28). The least reduction in economic activity would occur under the 250 well/year development rate (49-year LOP) and would amount to $3.7 million present value (including $0.6 million present value secondary labor earnings) and up to 47.5 AJEs (Table 5.28). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.7 Alternative E

Under Alternative E, if it is assumed that 968 AUMs would be reduced for the LOP, the least reduction in economic activity would likely occur under the 150 well/year development rate due to project duration (up to 61 years). This option could result in the accumulated loss of up to $2.8 million present value (including $0.4 million present value in secondary labor earnings) and up to 41.9 AJEs for the 61-year LOP (Table 5.28). The most reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $3.6 million present value (including $2.2 million present value secondary labor earnings) and up to 36.0 AJEs (Table 5.28). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.8 Alternative F

Under Alternative F, if it is assumed that 1,268 AUMs would be reduced for the LOP, the least reduction in economic activity would likely occur under the 150 well/year development rate due to project duration (up to 61 years) (Table 5.28). This option could result in the accumulated loss of up to $3.7 million present value (including $0.6 million present value in secondary labor earnings) and up to 54.8 AJEs for the 61-year LOP. The most reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $4.7 million present value (including $2.9 million present value secondary labor earnings) and up to 47.2 AJEs. Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.9 Alternative G

Under Alternative G, if it is assumed that 1,490 AUMs would be reduced for the LOP, the greatest reduction in economic activity would likely occur under the 150 well/year development rate due to project duration (up to 61 years). This option could result in the accumulated loss of up to $4.3 million present value (including $0.7 million present value in secondary labor earnings) and up to 64.4 AJEs for the 61-year LOP (Table 5.28). The most reduction in economic activity would occur under the 250 well/year development rate (52.5-year LOP) and would amount to $5.6 million present value (including $3.4 million present value secondary labor earnings) and up to 55.5 AJEs (Table 5.28). Impacts would be less than for the Proposed Action due to reduced disturbance over the LOP.

5.5.10 Preferred Alternative

Under the Preferred Alternative, changes to economic activity would be approximately the same as those described for Alternative G at the 250 wells/year development rate.

5.6 POPULATION AND LABOR ACTIVITY

5.6.1 No Action Alternative

Under the No Action Alternative, no additional development would occur and the pace of production would likely be slowed. This would reduce the number of rigs, crews, and associated services currently operating in the area. Services and associated jobs would likely be reduced or eliminated under the No Action Alternative. No additional secondary labor earnings or jobs would occur from development under this alternative; minimal additional secondary labor and jobs may be created from production activities, but this employment is not expected to affect population in the study area.

5.6.2 Proposed Action

Project-required direct employment is not expected to affect population in the study area. Project-required natural gas workers would likely be primarily obtained from the existing pool of workers employed in the area because drilling and production in the JIDPA continue year-round, thus providing continuous employment for these workers and would likely attract mature, settled workers that have already permanently relocated to the CIAA. These jobs would likely be lost under the No Action Alternative. Increased potential for employment from secondary (non-project-required) jobs created as a result of the project may attract out-of-area job seekers, which could affect population in the study area; however, it is likely that these job seekers would already live in the area but work in adjoining counties, thus population changes are anticipated to be minimal. If the demographic of workers attracted to the project area were young unmarried or married males who did not move their families into the region, there could be a short-term impact related to the in-migration of these workers. Additionally, secondary employment AJEs would likely be distributed throughout the study area, state, region, and nation. If population increases would occur, pressure on housing would likely increase, which could induce additional residential construction and development in the study area. A longer development period would reduce the present value of the economic activity in terms of the dollars that could be derived from development but a longer development period would be less likely to affect population and job trends over the long term.

5.6.3 Alternative A (Maximum Recovery)

Population changes from secondary employment would likely be similar to but reduced from that described for the Proposed Action because only conventional wells would be drilled; therefore, fewer AJEs would be created to attract new workers. The potential for population changes from secondary employment would likely be lowest under Alternative A when compared to all other alternatives that contain a development component.

5.6.4 Alternative B

Population changes from secondary employment would likely be similar to but increased from that described for the Proposed Action because all wells would be directionally drilled; therefore, more AJEs would be created to attract new workers.

5.6.5 Alternative C

Population changes from secondary employment would likely be less than that described for the Proposed Action due to the creation of fewer AJEs as a result of fewer wells being developed.

5.6.6 Alternative D

Population changes from secondary employment would likely be similar to but decreased from that described for the Proposed Action due to fewer numbers of AJEs being created as a result of fewer wells being developed.

5.6.7 Alternative E

Population changes from secondary employment would likely be similar to but somewhat higher than that described for the Proposed Action due to the increased number of AJEs created because of the higher level of directional drilling.

5.6.8 Alternative F

Population changes from secondary employment would likely be higher than that described for the Proposed Action. Under the 75 and 250 well/year development rate the number of AJEs created would be similar to but slightly higher than the Proposed Action, but more AJEs are created under the 150 well/year development rate due to the combination of straight and directional wells being drilled, which would likely attract some workers to come to the area seeking employment. The potential for population changes from secondary employment would likely be highest under Alternative F when compared to all other alternatives.

5.6.9 Alternative G

Population changes from secondary employment would likely be similar to but somewhat higher than that described for the Proposed Action due to the increased number of AJEs created as a result of the higher number of directionally drilled wells.

5.6.10 Preferred Alternative

Population changes from secondary employment would likely be approximately the same as that described for Alternative G at the 250 wells/year development rate.

5.7 SUMMARY OF ECONOMIC ACTIVITY

5.7.1 No Action Alternative

Under the No Action Alternative, the least amount of change in economic activity from current conditions would be expected when compared to all other alternatives; because no additional development would occur, no economic activity from development would occur. Production would be limited to the life of currently producing wells; therefore, only up to 3,366 BCF of gas and 31.98 MBO would be recovered under this alternative (Table 5.29). Over the LOP, the No Action Alternative would generate up to $15,255.9 million ($11,028.5 million present value) and 13,947 AJEs with an average wage of $47,173 (Table 5.29). Up to $2,334.9 million in taxes and revenues would be realized over the LOP (Table 5.29). Grazing could be reduced by up to $1.5 million (Table 5.29). No effect would be expected to occur on recreation or hunting resources. The least total economic activity would occur under the No Action Alternative of all alternatives, and this alternative would create the least number of AJEs. Impacts from all action alternatives would likely be higher than those described under the No Action Alternative due to increased development and production, increased disturbance, and longer LOP.

5.7.2 Proposed Action

Under the Proposed Action, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 7,947 BCF of gas and 75.50 MBO (Table 5.29). Over the LOP of 52.5 years (12.5 years to develop), economic activity would be $45,153.7 million ($28,060.4 million present value), including $6,072.1 million in taxes and revenues (Table 5.29). The number of AJEs that would be created would be up to 85,945.2 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This action could result in a loss of economic activity from recreation of $5.3 million, hunting of $2.2 million, and grazing of $9.1 million over the LOP (Table5.29).

Table 5.29 Summary of Total Economic Activity Resulting from Natural Gas Development and Production Over the Life of Field, Jonah Infill Drilling Project, Sublette County, 2004.

	Economic Activity Resulting from Development (LOF)									
Economic Effect	No Action	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
Total Anticipated Natural Gas Recovery over the LOF (BCF)	3,366	7,947	8,191	6,124	6,657	7,554	6,302	7,186	7,876	Approximately the same as Alternative G
Total Anticipated Condensate Recovery over the LOF (million bbls)	31.98	75.50	77.81	58.18	63.24	71.76	59.87	68.27	74.82	
Potential Range of Change in Employment										
Secondary Development Employment (AJEs)	--	52,930 to 53,342	52,187.5 to 52,605.0	60,625 to 61,110	21,617 to 22,119	38,466 to 38,474	59,848 to 60,316	57,823 to 99,071	53,740 to 54,193	
Average Earnings Per Job	--	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	$31,881 to $32,025	
Secondary Production Employment (AJEs)	13,947	32,928	33,939	25,374	27,583	31,299	26,112	29,775	32,634	
Average Earnings Per Job	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	$47,173	
Recreation AJEs	--	-92.4 to -144.2	-92.4 to -144.3	-92.4 to -144.4	-79.2 to -100.3	-86.2 to -123.1	-92.4 to -144.4	-92.4 to -144.4	-92.4 to -144.4	
Hunting AJEs	--	-49.9 to -77.9	-49.9 to -77.9	-49.9 to -77.9	-42.8 to -54.2	-46.6 to -66.5	-49.9 to -77.9	-49.9 to -77.9	-49.9 to -77.9	
Grazing AJEs	--	-65.7 to -102.7	-65.7 to -102.7	-24.4 to -38.1	-30.5 to -38.6	-47.6 to -68.0	-34.5 to -53.9	-47.4 to -74.1	-58.7 to -91.7	
Potential Range of Change in Employment	13,947	85,110.0 to 85,945.2	85,918.5 to 86,219.1	85,832.3 to 86,223.6	59,047.5 to 49,508.9	69,584.6 to 69,515.4	85,732.2 to 86,151.8	87,408.3 to 128,549.0	86,173.0 to 86,513.0	
NOMINAL VALUE OF ECONOMIC ACTIVITY										
75 Wells Per Year Development Rate										
Value of Development[1] (millions of $)	0.0	8,655.9	8,565.1	9,612.5	3,568.6	6,227.7	9,514.7	9,263.4	8,760.6	--
Value of Production[1,2] (millions of $)	12,922.5	30,509.5	31,446.1	23,510.8	25,556.9	29,000.6	24,194.1	27,587.9	30,236.8	--
Taxes/royalties from proposed project (millions of $)	2,334.9	6,076.0	6,239.1	4,881.4	4,850.7	5,646.0	4,997.8	5,592.7	6,034.8	--
Recreation (millions of $)	0.0	-8.2	-8.2	-8.2	-5.7	-7.0	-8.2	-8.2	-8.2	--
Hunting (millions of $)	0.0	-3.5	-3.5	-3.5	-2.4	-2.9	-3.5	-3.5	-3.5	--
Grazing (millions of $)	-1.5	-14.2	-14.2	-5.3	-5.3	-9.4	-7.8	-10.2	-12.0	--
Total Nominal Economic Activity (millions of $)	15,255.9	45,215.5	46,224.5	37,987.7	33,962.7	40,854.9	38,687.2	42,422.1	45,008.6	--
150 Wells Per Year Development Rate										
Value of Development[1] (millions of $)	0.0	8,655.9	8,565.1	9,612.5	3,796.5	6,227.7	9,507.8	15,678.7	8,760.6	--
Value of Production[1,2] (millions of $)	12,922.5	30,509.5	31,446.1	23,510.8	25,556.9	29,000.6	24,194.1	27,587.9	30,236.8	--
Taxes/royalties (millions of $)	2,334.9	6,076.5	6,239.1	4,881.4	4,865.7	5,646.0	4,997.3	6,015.6	6,034.8	--
Recreation (millions of $)	0.0	-6.1	-6.1	-6.1	-4.9	-5.5	-6.1	-6.1	-6.1	--
Hunting (millions of $)	0.0	-2.6	-2.6	-2.6	-2.1	-2.3	-2.6	-2.6	-2.6	--
Grazing (millions of $)	-1.5	-10.5	-10.5	-3.9	-4.6	-7.4	-5.8	-7.6	-8.9	--
Total Nominal Economic Activity (millions of $)	15,255.9	45,222.7	46,231.1	37,992.0	34,207.5	40,859.0	38,684.7	49,265.9	45,014.7	--
250 Wells Per Year Development Rate										
Value of Development[1] (millions of $)	0.0	8,588.6	8,497.2	9,536.2	3,490.3	6,228.7	9,440.6	9,191.2	8,688.3	Approximately the same as Alternative G
Value of Production[1,2] (millions of $)	12,922.5	30,509.5	31,446.1	23,510.8	25,556.9	29,000.6	24,194.1	27,587.9	30,236.8	
Taxes/royalties (millions of $)	2,334.9	6,072.1	6,234.7	4,876.4	4,845.5	5,646.1	4,992.9	5,588.0	6,030.1	
Recreation (millions of $)	0.0	-5.3	-5.3	-5.3	-4.5	-4.9	-5.3	-5.3	-5.3	
Hunting (millions of $)	0.0	-2.2	-2.2	-2.2	-1.9	-2.1	-2.2	-2.2	-2.2	
Grazing (millions of $)	-1.5	-9.1	-9.1	-3.4	-4.2	-6.6	-5.0	-6.5	-7.7	
Total Nominal Economic Activity (millions of $)	15,255.9	45,153.7	46,161.4	37,912.5	33,882.1	40,861.8	38,615.2	42,353.2	44,940.1	

Table 5.29 (Continued)

Economic Effect	No Action	Proposed Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G	Preferred Alternative
	Economic Activity Resulting from Development (LOF)									
	PRESENT VALUE OF ECONOMIC ACTIVITY[3]									
75 Wells Per Year Development Rate										
Value of Development[2] (millions of $)	0.0	4,496.4	4,452.8	4,997.3	2,655.7	3,818.0	4,946.5	4,815.8	4,554.5	--
Value of Production[2] (millions of $)	9,275.7	12,101.0	12,144.6	9,325.1	14,130.0	13,208.8	9,596.1	10,942.1	11,992.8	--
Taxes/royalties (millions of $)	1,753.7	2,557.3	2,561.7	2,108.2	2,733.2	2,665.9	2,151.9	2,378.2	2,542.8	--
Recreation (millions of $)	0.0	-2.7	-2.7	-2.7	-2.5	-2.6	-2.7	-2.7	-2.7	--
Hunting (millions of $)	0.0	-1.1	-1.1	-1.1	-1.0	-1.1	-1.1	-1.1	-1.1	--
Grazing (millions of $)	-0.9	-5.4	-5.4	-2.0	-2.7	-4.1	-3.0	-3.9	-4.6	--
Total Present Value of Economic Activity (millions of $)	11,028.5	19,145.4	19,149.8	16,424.7	19,512.7	19,684.9	16,687.6	18,128.4	19,081.6	--
150 Wells Per Year Development Rate										
Value of Development[2] (millions of $)	0.0	6,058.3	5,994.8	6,727.8	3,209.1	4,781.8	6,654.5	10,973.6	6,131.6	--
Value of Production[2] (millions of $)	9,275.7	15,864.2	16,349.9	12,225.0	16,049.7	16,543.1	12,580.4	14,345.1	15,722.5	--
Taxes/royalties (millions of $)	1,753.7	3,156.6	3,239.5	2,543.2	3,073.1	3,217.8	2,602.8	3,061.5	3,134.5	--
Recreation (millions of $)	0.0	-2.5	-2.5	-2.5	-2.3	-2.4	-2.5	-2.5	-2.5	--
Hunting (millions of $)	0.0	-1.1	-1.1	-1.1	-1.0	-1.0	-1.1	-1.1	-1.1	--
Grazing (millions of $)	-0.9	-5.1	-5.1	-1.9	-2.4	-3.8	-2.8	-3.7	-4.3	--
Total Present Value of Economic Activity (millions of $)	11,028.5	25,070.4	25,575.5	21,490.6	22,326.1	24,535.3	21,831.3	28,372.9	24,980.7	--
250 Wells Per Year Development Rate										
Value of Development[2] (millions of $)	0.0	6,631.8	6,561.2	7,363.5	3,151.8	5,265.1	7,289.7	7,097.1	6,708.8	Approximately the same as Alternative G
Value of Production[2] (millions of $)	9,275.7	17,963.8	18,511.2	13,842.7	17,145.3	18,212.2	14,245.2	16,243.3	17,803.0	
Taxes/royalties (millions of $)	1,753.7	3,474.7	3,574.9	2,725.2	3,242.5	3,483.9	2,798.3	3,165.4	3,446.6	
Recreation (millions of $)	0.0	-2.4	-2.4	-2.4	-2.3	-2.3	-2.4	-2.4	-2.4	
Hunting (millions of $)	0.0	-1.0	-1.0	-1.0	-0.9	-1.0	-1.0	-1.0	-1.0	
Grazing (millions of $)	-0.9	-6.6	-6.6	-2.5	-2.5	-3.7	-3.6	-4.7	-5.6	
Total Present Value of Economic Activity (millions of $)	11,028.5	28,060.4	28,637.3	23,925.5	23,533.9	26,954.2	24,326.2	26,497.8	27,949.5	

1 Includes nonproject labor earnings resulting from secondary economic activity induced by project activities. These earnings do not include project labor earnings.

2 Natural gas plus condensate; Proposed Action and Alternatives A-F include wells currently in production (i.e., No Action Alternative wells); natural gas price is assumed at $3.50/mcf and condensate price is assumed at $21/bbl.

3 Number of years to develop varies for each alternative; well life is assumed to be 40 years; see Section 2.2 for a discussion of discounting. The discount rate used for this analysis was 3.5%. Conservatively assumes revenues are received as a lump sum at year end.

5.7.3 Alternative A

Under Alternative A, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 8,191 BCF of gas and 77.81 MBO. Economic activity could range from $46,224.5 million ($19,149.8 million present value), including $6,239.1 million in taxes and revenues to $46,161.4 million ($28,637.3 million present value), including $6,234.7 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 85,918.5 to 86,219.1 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $5.3 million to $8.2 million, hunting ranging from $2.2 million to $3.5 million, and grazing ranging from $9.1 million to $14.2 million over the LOP (Table 5.29).

5.7.4 Alternative B

Under Alternative B, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 6,124 BCF of gas and 58.18 MBO (Table 5.29). LOP could range from 82 years (42 years to develop) to 52.5 years (12.5 years to develop). Economic activity could range from $37,992.0 million ($21,490.6 million present value), including $4,881.4 million in taxes and revenues to $37,912.5 million ($23,925.5 million present value), including $4,876.4 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 85,832.3 to 86,223.6 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $5.3 million to $8.2 million, hunting ranging from $2.2 million to $3.5 million, and grazing ranging from $3.4 million to $5.3 million over the LOP (Table 5.29).

5.7.5 Alternative C

Under Alternative C, change in economic activity from current conditions would be expected from the development of up to 1,250 wells and the recovery of up to 6,657 BCF of gas and 63.24 MBO (Table 5.29). LOP could range from 57 years (17 years to develop) to 45 years (5 years to develop).

Economic activity could range from $33,882.1 million ($23,533.9 million present value), including $4,845.5 million in taxes and revenues to $34,207.5 million ($22,326.1 million present value), including $4,865.7 million in taxes and revenues. The number of AJEs that would be created in the study area could range from 59,047.5 to 49,508.9 with an average wage ranging from $31,881 to $47,173. This alternative could result in a loss of economic activity from recreation ranging from $4.5 million to $5.7 million, hunting ranging from $1.9 million to $2.4 million, and grazing ranging from $4.2 million to $5.3 million over the LOP.

5.7.6 Alternative D

Under Alternative D, change in economic activity from current conditions would be expected from the development of up to 2,200 wells and the recovery of up to 7,554 BCF of gas and 71.76 MBO (Table 5.29). LOP could range from 70 years (30 years to develop) to 49 years (9 years to develop). Economic activity could range from $40,861.8 million ($26,954.2 million present value), including $5,646.1 million in taxes and revenues to $40,854.9 million ($19,684.9 million present value), including $5,646.0 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 69,584.6 to 69,515.4 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $4.9 million to $7.0 million, hunting ranging from $2.1 million to $2.9 million, and grazing ranging from $6.6 million to $9.4 million over the LOP (Table 5.29).

5.7.7 Alternative E

Under Alternative E, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 6,302 BCF of gas and 59.87 MBO (Table 5.29). LOP could range from 82 years (42 years to develop) to 52.5 years (12.5 years to develop). Economic activity could range from $38,615.2 million ($24,326.2 million present value), including $4,992.9 million in taxes and revenues to $38,687.2 million ($16,687.6 million present value), including $4,997.8 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 85,732.2 to 86,151.8 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $5.3 million to $8.2 million, hunting ranging from $2.2 million to $3.5 million, and grazing ranging from $5.0 million to $7.8 million over the LOP (Table 5.29).

5.7.8 Alternative F

Under Alternative F, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 7,186 BCF of gas and 68.27 MBO (Table 5.29). LOP could range from 82 years (42 years to develop) to 52.5 years (12.5 years to develop). Economic activity could range from $42,353.2 million ($26,497.8 million present value), including $5,588.0 million in taxes and revenues to $49,265.9 million ($28,372.9 million present value), including $6,015.6 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 87,408.3 to 128,549.0 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $5.3 million to $8.2 million, hunting ranging from $2.2 million to $3.5 million, and grazing ranging from $6.5 million to $10.2 million over the LOP (Table 5.29).

The greatest total economic activity in terms of dollars and jobs would occur under the Alternative F under the 150 well/year development rate (Table 5.29).

5.7.9 Alternative G

Under Alternative G, change in economic activity from current conditions would be expected from the development of up to 3,100 wells and the recovery of up to 7,876 BCF of gas and 74.82 MBO (Table 5.29). LOP could range from 82 years (42 years to develop) to 52.5 years (12.5 years to develop). Economic activity could range from $44,940.1 million ($27,949.5 million present value), including $6,030.1 million in taxes and revenues to $45,014.7 million ($24,980.7 million present value), including $6,034.8 million in taxes and revenues (Table 5.29). The number of AJEs that would be created in the study area could range from 86,173 to 86,513 with an average wage ranging from $31,881 to $47,173 (Table 5.29). This alternative could result in a loss of economic activity from recreation ranging from $5.3 million to $8.2 million, hunting ranging from $2.2 million to $3.5 million, and grazing ranging from $7.7 million to $12.0 million over the LOP (Table 5.29).

5.7.10 Preferred Alternative

Under the Preferred Alternative, impacts would likely be approximately the same as those described for Alternative G at the 250 wells/year development rate.

5.8 CUMULATIVE IMPACTS

The cumulative impacts assessment area for socioeconomics includes Sublette, Lincoln, and Sweetwater Counties. All of these counties depend upon the oil and gas industry for a portion of their economic activity and tax base (refer to Section 3.0), and the Jonah Infill Drilling Project, along with other oil and gas developments, would increase employment opportunities, expand the tax base, and improve the abilities for the counties to maintain and increase services and infrastructure for residents. When considering employment, tax base/revenues, and general economic health, increased oil and gas development produces impacts. Wells developed as part of this project would add proportionately to the economic benefits realized from the area. Local communities would experience economic impacts from an increase in consumption of local goods and services and increased sales tax revenues. For instance, construction of well pads and roads is usually contracted to local construction companies, and it is likely that many employees would spend some of their payroll in these communities. Actual impacts would depend on the rate of development and the number of wells authorized.

Increases in regional oil and gas development activity in a short period of time can cause notable changes in employment and income. These variables can in turn cause changes in population trends, which could have detrimental effects on community services, social structures and lifestyles. Increased oil and gas development is expected, under all alternatives, to cause an increase in taxes and revenues to all governments in the study area. Increases to ad valorem taxes would be expected to occur in Sublette County. Conversely, under the No

Action Alternative, these increases would not be realized, which could result in negative impacts to local governments. Additional revenues would accrue to the U.S. in the form of personal and corporate income taxes. Wyoming, and especially Sublette, Sweetwater, and Lincoln Counties are highly dependent on mineral revenues, and the revenue anticipated from the proposed project would add to those revenues.

Where the surface is in private ownership and the minerals are in federal ownership, a lease holder has the right of ingress and egress on the private surface and the right to disturb whatever is reasonably necessary to recover the minerals. This does not prevent the private owner and the lease holder from entering into mutually acceptable terms regarding surface use to facilitate the process. When both the surface and minerals are in private ownership, negotiations for a lease--including financial considerations--are between the private owner and the potential lessee, and the terms of the lease--financial and otherwise--are negotiated by the two parties. It is usual for the private mineral owner to share in the profits from the recovery of the mineral resource.

Some portion of the resident population, as well as many non-residents, prioritize preserving the naturalness of the area above all else and are not in favor of the high level of oil and gas development proposed in JIDPA. These individuals may be affected on a personal aesthetic and moral level by the proposed project.

5.9 UNAVOIDABLE ADVERSE IMPACTS

There would be avoidable adverse short-term and/or long-term impacts to socioeconomic resources as a result of the proposed project.

This page intentionally left blank.

6.0 SOUTH PINEY IMPACT ANALYSIS

Infinity Oil and Gas of Wyoming, Inc. (Infinity) and Williams Production RMT Company (Williams) (hereinafter referred to as "the Companies") have notified the BLM PFO that they propose to drill and development natural gas resources in approximately 31,231 acres in portions of T29N and T30N, R114W approximately 13 mi west of Big Piney in Sublette County, Wyoming. Infinity would develop natural gas from the coals in the Upper Cretaceous Mesaverde Formation to a maximum depth of approximately 4,000 ft, whereas Williams would develop natural gas from the Frontier Formation to a maximum depth of approximately 10,000 ft. The project would be referred to as the South Piney Natural Gas Development Project (South Piney Project), and would include private (47%), state (4%) and federal (49%) surface and private (8.5%), state (6%) and federal (85.5%) minerals.

6.1 SPP PROPOSED ACTION AND ALTERNATIVE DESCRIPTIONS

The Proposed Action and three alternative actions are evaluated herein:

- the Proposed Action (up to 210 wells/well pads and associated facilities--see Section 6.3);
- Alternative A (up to 420 wells/well pads and associated facilities--see Section 6.4);
- Alternative B (up to 210 wells from 160 well pads and associated facilities--see Section 6.5); and
- the No Action Alternative (see Section 6.6).

Additional alternatives considered but not analyzed in detail are discussed in BLM (2004b).

The following analyses show that the Proposed Action and Alternatives are compatible with BLM management objectives. Socioeconomic impacts are anticipated as a result of increased local taxes and revenues. Under the No Action Alternative the affects of increased employment, economic activity, and substantial federal, state, local, and county revenues would not occur; therefore, this alternative would not be in accord with BLM, state, and local land use plans.

The economic impact of the Proposed Action, alternatives, and cumulative impacts on the study-area economy were analyzed in two phases using the methods developed for the SWREE (UWAED 1997) and JMHCAP (UWAED 2003; BLM 2003a). Phase I was the development phase, which considered the economic impacts associated with drilling and completion of infill wells in the JIDPA. Due to the large price fluctuations in natural gas prices, the economic impacts of production were estimated based on cost of production rather than total output.

Phase II considered the economic impact of natural gas production as a result of the production from the wells completed under Phase I.

BLM defines a significant change as any change that would result in a 15% or greater change of any affected factor. In the long-term, all alternatives would likely result in significant economic impacts; however, population is not likely to be significantly affected over the LOP, although there may be short-term population impacts as a result of cumulative impacts from in-migration not associated with the project.

6.2 ASSUMPTIONS

6.2.1 Labor

An estimated 736.5-768.8 worker-years of direct employment would be provided by the Proposed Action during a 20-year life of project (LOP) (BLM 2004b) (Table 6.1).

6.2.2 Natural Gas Drilling and Completion

For this analysis, it was assumed that all wells would be drilled but only 93% would be completed (per estimates from the Reservoir Management Group for the Pinedale RMP) (personal communication, February 12, 2004, with David T. Taylor, Professor, UWAED). The anticipated rate of development for the Proposed Action would be 30 wells per year for 7 years.

Table 6.1 Estimated Effort Required to Develop and Operate the South Piney Project.

Item	Infinity Wells		Williams Wells		Total Worker Years for Full Development (210 Wells)[1]
	Worker-Days per Well	Worker-Years for Full Development (160 Wells)[1]	Worker-Days per Well	Worker-Years for Full Development (50 Wells)[1]	
Well Construction/Development					
Well pad/access road construction	15	9.2	15	2.9	12.1
Rig transport/rig-up operations	60	36.9	60	11.5	48.4
Drilling	160	98.5	250	48.0	146.5
Completion/testing	60-100	36.9-61.5	60-100	11.5-19.2	48.4-80.7
Pipeline/ancillary facility installation	60	36.9	60	11.5	48.4
Operations/Maintenance					
Production[2]	487	299.5	487	93.6	393.1
Workovers[3]	24	14.8	24	4.6	19.4
Abandonment/Reclamation					
Abandonment	15	9.2	15	2.9	12.1
Reclamation	10	6.2	10	1.9	8.1
Total	891-991	548.1-572.7	981-1,021	188.4-196.1	736.5-768.8

1 One worker-year equals 260 worker-days.
2 Assumes one visit per day to each well for 20-year life of well, with one worker visiting 15 wells per day.
3 Assumes two workovers per well, 12 worker-days per workover.

Infinity

The cost of drilling, completing, and setting production equipment for an Infinity well to the Mesaverde Formation would average $300,000, $100,000, and $100,000, respectively, for a total cost of $500,000. The cost of annual production operations is assumed to be $141,663 per well (Table 6.2).

Williams

The cost of drilling, completing, and setting production equipment on a Williams well to the Frontier Formation would average $600,000, $350,000, and $150,000, respectively, for a total cost of $1.1 million. The costs of annual production operations are assumed to be $141,663 per well.

Table 6.2 Direct Annual Operating Cost Assumptions.[1]

Operating Cost Item	Cost ($)[2]
Direct labor and overhead	5,371
Fuel, chemicals, and disposal	7,560
Surface maintenance	11,240
Subsurface maintenance	2,785
Electricity[3]	3,581
Gas compression costs[4,5]	47,625
Gas transportation costs[4,6]	63,501
Total annual costs[5]	141,663
Non-labor annual costs[5] (Total annual costs - Direct labor and overhead)	136,292
Total annual cost per MCF[5]	0.89
Non-labor cost per MCF[5]	0.86

1 Source: EIA (2000).
2 In 2000 dollars, adjusted for inflation. Assumes one 8,000-ft well.
3 Assumes 5,000 kilowatts per month at $0.06 per kilowatt for 12 months.
4 Assumes $0.31/MCF.
5 Assumes annual production of 159,600 MCF.
6 Assumes $0.41/MCF.

6.2.3 Natural Gas Production

Infinity

Infinity anticipates that each well (160 drilled, 93% completed, total 149 producing) would produce of 172.15 MMCF/year and 513,000 MMCF for the LOP. This is a best estimate of production because sufficient data are not available to determine initial or LOP production. The annual cost of production operations used for the analysis is presented in Table 6.3.

Williams

Williams anticipates that each well (50 drilled, 93% completed, total 47 producing) would produce of 63.83 MMCF/year and 60,000 MMCF for the LOP. This is a best estimate of production because sufficient data are not available to determine initial or LOP production. The annual cost of production operations used for the analysis is presented in Table 6.2.

6.3 PROPOSED ACTION IMPACTS (210 WELLS/WELL PADS)

Estimates of the economic impacts of oil and gas development on the Southwest Wyoming economy in terms of total economic impact, earnings, and jobs were based on the updated calibrated county-specific model from the SWRE and JMHCAP reports. The employment estimates were expressed as AJEs.

6.3.1 Infinity Natural Gas Development Impacts

6.3.1.1 Drilling and Completing

The estimated costs for drilling and completing natural gas wells were obtained from the Operators (see Section 6.2.1). As shown in Table 6.3, expenditures made to drill and complete one Infinity well ($500,000), would generate total economic impacts (direct and secondary) of $684,054 (includes $148,054 of labor earnings) and would generate 4.5 AJEs. Over the development period (7 years), Infinity drilling would nominally return $101.0 million ($61.9 million present value impact).

6.3.1.2 Production Operation Impacts

The estimated cost for operating natural gas wells was obtained from the EIA (2000) (Table 6.2). As shown in Table 6.4, expenditures made to operate ($141,663) and production from one Infinity well would generate total economic impacts (direct and secondary) of $559,480 (includes $12,607 of labor earnings) and would generate 0.33 AJEs annually. Over the LOP (20 years), Infinity production would nominally return $1.7 billion ($1.2 billion present value impact).

Table 6.3 SPP Gas Drilling Impacts.

	Proposed Action and Alternative B Impacts[1]				Alternative A [1]			
Estimated Impacts	Infinity	Williams	Total	Annual (LOP)	Infinity	Williams	Total	Annual (LOP)
				PER WELL				
Direct Expenditures								
Drilling ($)	300,000	600,000	na	na	300,000	600,000	na	na
Completion ($) [2]	200,000	500,000	na	na	200,000	500,000	na	na
Total Direct Expenditures ($)	500,000	1,100,000	--	--	500,000	1,100,000	--	--
Labor Earning								
Drilling ($)	109,848	219,696	na	na	109,848	219,696	na	na
Completion ($)[2]	38,206	95,515	na	na	38,206	95,515	na	na
Total Labor Earnings ($)	148,054	315,211			148,054	315,211	--	--
Total Impact per Well	648,054	1,415,211	na	na	684,054	1,415,211		
Annual Job Equivalents (AJEs)								
Drilling	3.3	6.7	na	na	3.3	6.7	na	na
Completion[2]	1.2	3.1	na	na	1.2	3.1	na	na
Total AJEs per Well[3]	4.5	9.8	--	--	4.5	9.8	--	--
				TOTAL WELLS				
Number of Wells	160	50	210	10.5	320	100	420	21.0
Completion[2] Rate	93.0%	93.0%	na	na	93.0%	93.0%	na	na
Total Earnings Impacts								
Total Expenditures ($) (Drilling + 93% Completion)	77,760,000	53,250,000	131,010,000	6,550,500	155,520,000	106,500,000	262,020,000	13,101,000
Total Labor Earnings ($)	23,260,733	15,426,248	38,686,980	1,934,349	46,521,466	30,852,495	77,373,961	3,868,698
Total Impacts Action Alternative ($)	101,020,733	68,676,248	169,696,980	8,484,849	202,041,466	137,352,495	339,393,961	16,969,698
Discounted (Present Value) LOP Impact ($)[5]	88,242,245	59,989,134	148,231,378	na	176,484,490	119,978,267	296,462,757	na
Total AJEs	706.6	479.2	1,185.7	59.3	1413.1	958.3	2,371.4	118.6
Average Earnings Per Created Jobs[4] ($)	32,921	32,195	32,628	32,628	32,921	32,195	32,628	32,628

1 na = not applicable at this level.
2 Completion includes the cost of completion and setting of production equipment.
3 AJEs are jobs indirectly created as a result of the activity. They do not include the direct labor jobs presented in Table 6.1.
4 This estimated average annual starting wage per job would not necessarily be the actual wage paid for each created job. Actual wages are determined on an individual basis by employers as influenced by market forces.
4 See Section 2.2 for a discussion of discounting. Assumes a 7-year development period.

Table 6.4 Gas Production Impacts LOP--South Piney.

Estimated Impacts	Infinity	Williams	Total	Annual Average for the LOP
Per MMCF				
Price/MMCF	$3,250	$3,250	$3,250	$3,250
Labor Earnings	$197.52	$197.52	$197.52	$197.52
Employment	0.0052	0.0052	0.0052	0.0052
Total Production (LOP)				
LOP MMCF	513,000	60,000	573,000	28,650
LOP Value of Production[1]	$1,667,250,000	$195,000,000	$1,862,250,000	$93,112,500
LOP Labor Earnings	$101,327,760	$11,851,200	$113,178,960	$5,658,948
Total LOP Impact	$1,768,577,760	$206,851,200	$1,975,428,960	$98,771,448
Discounted (Present Value) LOP Impact[2]	$1,256,787,020	$146,992,634	$1,403,779,654	na
LOP Job Equivalents	2,668	312	2,980	149.0
Average Annual Starting Wage Per Job	$37,985	$37,985	$37,985	$37,985

1 The value of production is based on revenues less cost of operation.
2 See Section 2.2 for a discussion of discounting. Assumes equal annual production for a 20-year production period. na = not applicable.

6.3.1.3 Government Revenues

The project would generate substantial revenues for state, county, and local governments as well as area school districts through ad valorem taxes, severance taxes, federal royalties, and other taxes on facilities and production. Infinity anticipates that each of the 149 completed wells (93% of 160 drilled wells) would produce 172.15 MMCF/year for a total of 513,000 MMCF for the LOP from all wells. This is a best estimate of production because sufficient data are not available to determine initial or LOP production. Assuming that 149 wells would be completed, and natural gas prices were $3.25/mcf (CREG 2003), it is estimated that LOP nominal gross income from the field would be $1.4 billion (Table 6.5). Nominal transportation costs are estimated at $210.3 million (paid to pipeline companies), federal royalties at $182.1 million (half of the royalties are returned to the state), state severance taxes at $87.4 million, and county ad valorem taxes at $102.0 million. Total nominal taxes and revenues generated by Infinity would be approximately $371.5 million over the LOP ($264.0 million present value impact). In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements in the SPPA. Additional natural gas

Table 6.5 Estimated Annual and LOP Revenues and Taxes Resulting From Infinity's 149 Mesaverde Wells Producing an Average of 0.47 MMCFpd of Natural Gas and From Williams' 47 Frontier Wells Producing an Average of 0.17 MMCFd of Natural Gas.[1]

			Annual		LOP	
Item	Rate	LOP (years)	Gas Recovered (MMCF)	Amount	Gas Recovered (MMCF)	Amount (millions)
Infinity (160 wells)						
Income	$3.25[2]	20	25,650	$3,362,500	513,000	$1,667.3
Transportation fees	$0.41[2]	20	25,650	$10,516,500	513,000	$210.3
Income less transportation fees	--	--	--	$72,846,000	--	$1,456.9
Federal royalties	12.5%[3]	20	--	$9,105,750	--	$182.1
State severance taxes	6.0%[4]	20	--	$4,370,760	--	$87.4
County and ad valorem taxes	7.0%[5]	20	-	$5,099,220	--	$102.0
Total taxes/royalties - Infinity	na	na	na	$18,575,730	na	$371.5
Present value of total taxes/royalties - Infinity[6]	na	na	na		na	$264.0
Williams (50 wells)						
Income	$3.25[2]	20	3,000	$9,750,000	60,000	$195.0
Transportation fees	$0.41[2]	20	3,000	$1,230,000	60,000	$24.6
Net income (gross income less transportation fees)	na	na	na	$8,520,000	na	$170.4
Federal royalties	12.5%[3]	20	na	$1,065,000	na	$21.3
State severance taxes	6.0%[4]	20	na	$511,200	na	$10.2
County and ad valorem taxes	7.0%[5]	20	na	$596,400	na	$11.9
Total taxes/royalties - Williams	na	na	na	$2,172,600	na	$43.4
Present value of total taxes/royalties - Williams[6]	na	na	na	na	na	$30.8
Nominal total taxes/royalties – Infinity plus Williams	na	na	na	$20,748,330	na	$414.9
Present value of total taxes/royalties - Infinity plus Williams[6]	na	na	na	na	na	$294.8

1 Based on estimated 93% completion rate of all wells drilled (personal communication, February 12, 2004, with David T. Taylor, Professor, UWAED). na = not applicable.
2 Rate per mcf (mcf = one thousand cubic feet); price per mcf from CREG (2003); transportation cost per mcf from EIA (2000).
3 Based on net income.
4 Based on gross revenue less federal royalties.
5 Based on net income less federal royalties.
6 See Section 2.2 for a discussion of discounting. Assumes a 20-year production period.

production is beneficial to consumers because retail prices for natural gas are affected by supply and demand. As supply increases in relation to demand, prices of natural gas tend to fall. Reduced energy costs are a benefit to the local, state, and national economies. While, conceptually, changes in production for this field could impact pricing of natural gas for consumers, given the size of the market it is not likely that a measurable change in market price would occur.

6.3.2 Williams Natural Gas Development Impacts

6.3.2.1 Drilling and Completing

The estimated costs for drilling and completing natural gas wells were obtained from the Operators (see Section 6.2.1). As shown in Table 6.2, direct expenditures made to drill and complete one Williams well ($1,100,000), would generate total economic impacts (direct and secondary) of $1,415,211 (includes $315,211 of labor earnings) and would generate 9.8 AJEs (Table 6.2). LOP impact from Williams drilling and completing (assuming a 7-year development period) under the Proposed Action would be $68.6 million (present value impact of $59.9 million).

6.3.2.2 Production Operation Impacts

The estimated cost for operating natural gas wells was obtained from the EIA (2000) (Table 6.2). As shown in Table 6.5, expenditures made to operate ($141,663) and production from one Williams well, would generate total economic impacts (direct and secondary) of $207,447 (includes $34,002 of labor earnings) and would generate 0.90 AJEs annually. Nominal LOP production from Williams would provide a nominal impact of $206.8 million ($146.9 million present value impact).

6.3.2.3 Government Revenues

Assuming that of the 50 wells that would be drilled, 47 would be completed, and natural gas prices were $3.25/mcf (CREG 2003), it is estimated that LOP gross income from the field would be companies), federal royalties at $21.3 million (half of the royalties are returned to the state), state severance taxes at $10.2 million, and county ad valorem taxes at $11.9 million. Total nominal taxes and revenues generated by Infinity would be approximately $43.4 million over the LOP ($30.8 million present value impact). As with Infinity wells, property tax revenues would increase due to the increased tax base resulting from capital improvements in the SPPA.

6.3.3 Summary of Natural Gas Development Impacts

In summary, nominal gross LOP income from the Proposed Action would exceed $1.8 billion (Table 6.5). Transportation costs would be $234.9 million, federal royalties $203.4 million, state severance taxes $97.6 million, and county ad valorem taxes $113.9 million. Total direct impacts from development of the Proposed Action would be $169,696,980 (including $38,686,980 of labor earnings) and would generate 1,185.7 AJEs (Table 6.3), while production would provide $1.9 billion over the LOP (Table 6.4). In addition, property tax revenues would increase due to the increased tax base resulting from capital improvements and higher mineral property assessments, and increased sales and use tax revenues. Nominal taxes and revenues generated from the SPP would be over $414 million dollars over the LOP. Additional revenues would accrue to the U.S. in the form of personal income taxes and corporate taxes. Finally, this evaluation does not take into consideration condensate production that would add to income and tax/royalty revenues. Wyoming, and especially Sublette, Sweetwater, and Lincoln Counties are highly dependent on mineral revenues, and the revenue anticipated from the Proposed Action would add to those revenues.

6.3.4 Recreation Impacts

There are no developed recreational areas within the SPPA; therefore, none would be affected by the Proposed Action (BLM 2004b). All dispersed recreational opportunities that now occur in the SPPA would be available under the Proposed Action; however, it is likely that the level of use would be affected due in part to a reduction in desirability resulting from gas development. Some people would find the gas development distracting or undesirable and would likely choose other less developed areas in which to recreate. On the other hand, additional access to the area may encourage other users especially off-road vehicle users. Additional off-road vehicle use could further discourage other recreationists who seek a less noisy environment. Overall, a moderate reduction in recreational use would likely occur.

Studies of workers on oil and gas projects have found that the immigrant workforce typically participates in outdoor recreation at lower levels than the existing population, and that these workers typically do not recreate in the vicinity of project sites and leave the project area on their days off (Wyoming Recreation Commission 1987). Many of the workers on the proposed project would be local and would return to their homes during off hours and recreate at previously established locales. Therefore, impacts from competition for recreational opportunities between people working on the project and other users would likely be negligible.

The level of hunting would be affected due in part to a reduction in desirability resulting from gas development--especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

Economic losses could result if recreationists and hunters were displaced from the SPPA and moved their activities out of the study area. Losses would be proportional to the number of displaced recreationists/hunters. Direct impacts from displaced nonconsumptive recreationists (per visitor day) could result a loss of $27.35 (including $8.15 of labor income) and 0.000621 AJEs each. Direct impacts from displaced pronghorn hunters (per hunter day) could result in a loss of $381.30 (including $155.16 of labor income) and 0.012087 AJEs each. Direct impacts from displaced deer hunters (per hunter day) could result in a loss of $331.70 (including $134.98 of labor income) and 0.010515 AJEs each. Direct impacts from displaced elk hunters (per hunter day) could result in a loss of $188.91 (including $76.87 of labor income) and 0.005988 AJEs eacg. Direct impacts from displaced moose hunters (per hunter day) could result in a loss of $197.18 (including $80.24 of labor income) and 0.006251 AJEs each. Direct impacts from displaced cottontail hunters (per hunter day) could result in a loss of $173.06 (including $70.42 of labor income) and 0.005486 AJEs each. Direct impacts from displaced greater sage-grouse hunters (per hunter day) could result in a loss of $130.03 (including $53.02 of labor income) and 0.004131 AJEs each.

It is likely that any recreationists discouraged from engaging in activities in the SPPA as a result of natural gas development would relocate their activities to other locations in the vicinity; thus, no economic loss is likely to result from loss of recreation due to the proposed project.

6.3.5 Agriculture/Rangeland Impacts

There would be a reduction in AUMs on grazing allotments within the SPPA due to road, pipeline, and well pad construction (BLM 2004b). For the purposes of this analysis, UWAED conservatively assumed that the AUMs would actually be removed from the allotments and result in a complete loss of those AUMs during initial disturbance and for the LOP. The annual loss from initial disturbance would be 189 AUMs. The annual loss from LOP disturbance would be 75 AUMs. Such an annual loss in AUMs does not take into consideration the possibility that areas reclaimed shortly after initial disturbance--areas not needed for the LOP--may provide more forage (forbs and grass) for livestock than the previously undisturbed range. Short-term (initial) disturbance would be spread over the development period and would be scattered throughout the SPPA in small parcels so that a relatively few areas of small size would be disturbed in any one year. After a few years much of the previously disturbed land would be revegetated and likely producing more forage than prior to disturbance. The entire area of short-term disturbance would never all be out of production at the same time.

Direct economic impact from the loss of AUMs (189 initial and 75 LOP) would result in an initial unrealized production of $6,670 and $2,647 annually production returns would go unrealized for the LOP (Table 6.6). Total initial unrealized production income would be $11,574 (including $3,489 of labor earnings) and 0.13 AJEs would not occur. For the LOP, total unrealized impacts would be $4,493 annual production revenues (including $1,385 of labor earnings), and approximately 0.05 AJEs.

Table 6.6 Cattle Grazing Impacts, SPP.

	Proposed Action[1]		Alternative A[1]		Alternative B[1]		
Impact	Initial	LOP (annual)	Initial	LOP (annual)	Initial	LOP (annual)	No Action
AUMs	-189	-75	-289	-114	-146	-60	3,812
Total Direct Impact	-$6,670	-$2,647	-$10,199	$4,023	-$5,152	-$2,117	$134,525
Total Impact	-$11,574	-$4,593	-$17,698	$6,981	-$8,941	-$3,674	$233,447
Annual Job Equivalents	-0.13	-0.05	-0.20	0.080826	-0.10	-0.04	2.70
Labor Earnings	-$3,489	-$1,385	-$5,335	$2,104	-$2,695	-$1,108	$70,370
Average Annual Starting Wage Per Job	-$26,037	-$26,037	-$26,037	$26,037	-$26,037	-$26,037	$26,037

[1] Lost AUMs would result in a loss of production, lost jobs, and lost earnings per job.

6.4 ALTERNATIVE A (420 WELLS/WELL PADS)

6.4.1 Natural Gas Development Impacts

Economic impacts under Alternative A would be similar to those for the Proposed Action; however, the increased number of well pads would result in greater economic impacts than under the Proposed Action because the number of well pads would be doubled. Under Alternative A, drilling and completion would generate total economic impacts (direct and secondary) of $339.3 million ($296.4 million present value impact) (includes $77.3 million of labor earnings) and would generate 2,371.4 AJEs. Because there would be no additional production over the LOP, impacts from production and government revenues would remain essentially as described under the Proposed Action. Due to the establishment of management areas with additional development restrictions there would likely be increased management and labor burdens for the Companies that could delay development and the realization of revenues.

6.4.2 Recreation Impacts

Economic impacts to recreation under Alternative A would be similar to those for the Proposed Action.

6.4.3 Agriculture/Rangeland Impacts

Socioeconomic impacts under Alternative A would be similar in kind as described for the Proposed Action; however, there would be additional personnel and payroll associated with the drilling and development of 210 additional wells. There would be additional short-term demands on temporary housing; however, the use of local workers would result in negligible impacts on the demand for housing. Traffic within the SPPA would increase due to additional project-related activity associated with a doubling in the number of wells, and county roads would have to be appropriately upgraded. Economic benefits would depend upon gas production generated from additional wells, and would generally be proportional to any increased gas production.

Impacts would be similar in timing and kind to those in the Proposed Action (BLM 2004b). However, impacts would disturb more surface because twice a many well pads would be developed. The annual loss from initial disturbance would be 289 AUMs. The annual loss from LOP disturbance would be 114 AUMs.

Direct economic impact from the loss of AUMs (289 initial and 114 LOP) would result in an initial loss of production of $10,199 and an annual loss of $4,023 for the LOP (Table 6.6). Total initial losses would be $17,968 (including $5,335 of labor earnings) and 0.20 AJEs would be lost. For the LOP, total losses would be $6,981 (including $2,104 of labor earnings), and approximately 0.08 AJEs annually.

6.5 ALTERNATIVE B (210 WELLS/160 WELL PADS)

6.5.1 Natural Gas Development Impacts

Economic impacts under Alternative B would be similar to those for the Proposed Action. Due to the establishment of management areas with additional development restrictions there would likely be increased management and labor burdens for the Companies that could delay development and the realization of revenues.

6.5.2 Recreation

Impacts to recreation under Alternative B would be similar in kind to those for the Proposed Action. The level of hunting would be affected due in part to a reduction in desirability resulting from gas development --especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

6.5.3 Agriculture/Rangeland

Impacts would be similar in timing and kind to those in the Proposed Action. However, impacts would disturb less surface area because the 210 wells would be developed from approximately 160 well pads. The annual loss from initial disturbance would be 146 AUMs. The annual loss from LOP disturbance would be 60 AUMs.

Direct economic impact from the loss of AUMs (146 initial and 60 LOP) would result in an initial loss of production of $5,152 and an annual loss of $2,117 for the LOP (Table 6.6). Total initial losses would be $8,941 (including $2,695 of labor earnings) and 0.10 AJEs would be lost. For the LOP, total losses would be $3,674 (including $1,108 of labor earnings), and approximately 0.04 AJEs annually.

6.6 NO ACTION ALTERNATIVE

6.6.1 Natural Gas Well Development and Production

The economic benefits accruing from the anticipated gas production in the SPPA would not be realized under the No Action Alternative. Economic benefits from gas production would be limited to that generated by the 10 existing wells and approximately 17 wells that could be drilled on private and state surface/minerals assuming that access and landowner approval would be obtained. However, well pads would have to be located so that they did not drain adjacent federal gas reserves and, in the case of wells to the Mesaverde Formation, would require an adequate number of wells to dewater the reservoir and release the gas. One or two wells drilled to the Mesaverde coals on private and state surface/minerals would not be adequate to dewater the coals and recover gas resources. Rather, it would normally require at least four wells on 160-acre spacing, and the scattered parcels of private and state surface/minerals would often make that difficult or impossible. Traffic within the SPPA would remain near present levels, with possible increases due to increased recreational use.

Natural gas development would include existing wells and to wells drilled on state and private surface/minerals that would not require a federal permit. However, it is likely that existing Infinity wells on the SPPA would be plugged and abandoned for economic reasons (personal communication with Reed Scott, Infinity Oil and Gas of Wyoming, Denver, Colorado), as would two of the three Williams wells (personal communication with Jennifer Head, J. A. Rohn Consulting, Fort Collins, Colorado). One Williams well may be kept in production as long as it is economically feasible (personal communication with Jennifer Head, J. A. Rohn Consulting, Fort Collins, Colorado).Forty-nine wells disturbing 431 acres could be developed in the SPPA as a result of reasonably foreseeable disturbance. Most of the wells would require a federal permit and would be subject to mitigation measures similar to those in the South Piney Project; therefore, impacts to land use would likely be low. Impacts would be less from reasonably foreseeable disturbance than from any of the action alternatives because fewer well pads/roads would be built.

Under the No Action Alternative, drilling and completion of an additional 17 wells on private land would generate total economic impacts (direct and secondary) of $23,349,924 (includes $5,244,924 of labor earnings) and would generate 162.9 AJEs. Assuming an average annual production of 146.17 MMCF per well (average of the estimated production from Infinity and Williams wells in the Proposed Action), the 10 existing wells plus 17 new wells would generate total economic impacts (direct and secondary) of $272,125,418 (includes $15,590,979 of labor earnings) and would generate 410 AJEs over 20 years.

6.6.2 Grazing

Land use under the No Action Alternative would continue as at present, with livestock grazing, wildlife habitat, recreation, and existing facilities dominating use. None of the economic livestock grazing losses described under the Proposed Action would occur as a result of the No Action Alternative. However, fluctuations in cattle markets as a result of brucellosis found in cattle herds in Sublette County, resulting quarantines on Wyoming livestock, and the nationwide impact of bovine spongiform encephalopathy on beef demand are undetermined and not addressed in this analysis.

6.6.3 Recreation

Land use under the No Action Alternative would continue as at present, with livestock grazing, wildlife habitat, recreation, and existing facilities dominating use.

The level of hunting would be affected due in part to a reduction in desirability resulting from gas development --especially for mule deer, elk, and moose--which could also be affected by impacts to big game populations in the SPPA.

The economic losses described under the Proposed Action would not necessarily occur as a result of the No Action Alternative; however, existing natural gas development may result in similar losses if hunters/recreationists are displaced.

6.7 CUMULATIVE IMPACTS

The cumulative impacts assessment area for socioeconomics includes Sublette, Lincoln, and Sweetwater Counties. All of these counties depend upon the oil and gas industry for a significant portion of their economic activity and tax base (refer to Section 3.0), and the South Piney Project, along with other oil and gas development, would increase employment opportunities, expand the tax base, and improve the abilities for the counties to maintain and increase services and infrastructure to their residents. When considering employment, tax base/revenues, and general economic health, increased oil and gas development produces beneficial impacts. Wells developed as part of this project would add proportionately to the economic benefits realized from the area. Local communities would experience beneficial economic impacts from an increase in consumption of local goods and services and increased sales tax revenues. For instance, construction of well pads and roads is usually contracted to local construction companies, and it is likely that many employees would spend some of their payroll in these communities. Actual impacts would depend on the rate of development and the number of wells authorized.

Increases in regional oil and gas development activity in a short period of time can cause notable changes in employment and income. These variables can in turn cause changes in population trends, which could have detrimental effects on community services, social structures and lifestyles. Increased oil and gas development is expected, under all alternatives, a cause a significant increase in taxes and revenues to all governments in the study area. Significant increases to ad valorem taxes would be expected to occur in Sublette County Conversely, under the No Action Alternative, these increases would not be realized, which could result in negative impacts to local government. Additional revenues would accrue to the U.S. in the form of personal and corporate income taxes. Finally, this evaluation does not take into consideration condensate production that would add to income and tax/royalty revenues. Wyoming, and especially Sublette, Sweetwater, and Lincoln Counties are highly dependent on mineral revenues, and the revenue anticipated from the Proposed Action would add to those revenues.

Where the surface is in private ownership and the minerals are in federal ownership, a lease holder has the right of ingress and egress on the private surface and the right to disturb whatever is reasonably necessary to recover the minerals. This does not prevent the private owner and the lease holder from entering into mutually acceptable terms regarding surface use to facilitate the process. When both the surface and minerals are in private ownership, negotiations for a lease--including financial considerations--are between the private owner and the potential lessee, and the terms of the lease--financial and otherwise--are negotiated by the two parties. It is usual for the private mineral owner to share in the profits from the recovery of the mineral resource.

However, some portion of the resident population, as well as many non-residents, prioritize preserving the naturalness of the area above all else and are not in favor of the high level of oil and gas development proposed in SPPA. These individuals may be adversely affected on a personal aesthetic and moral level by the Proposed Action and Alternatives.

6.8 UNAVOIDABLE ADVERSE IMPACTS

There would be no unavoidable short-term or long-term adverse impacts to socioeconomics as a result of the proposed project.

This page intentionally left blank.

7.0 SOCIAL IMPACTS

Baseline social and economic factors, including population, personal income, and quality of living factors described in Chapter 3.0 were compared to expected changes in the economy that would affect a typical family in the study area. Impacts were evaluated against the potential for changes in quality of life factors (i.e., availability of necessities, recreation, and leisure time) and the ability of residents to maintain or improve the current quality of life as a result of the proposed project and alternatives. Impacts would be similar for both the SPP and the JIDP.

7.1 POPULATION

The projects could result in some increases in population in Sublette, Lincoln, and Sweetwater Counties as a result of job seekers from other areas moving to the area in search of employment; although existing industry expertise and services in the three counties is generally adequate to service additional oil and gas development. While the initial analysis assumed that adequate support services existed, companies at the time of this report indicate--despite State of Wyoming reports to the contrary when data was collected for this analysis--that there are insufficient numbers of rigs available for meeting drilling schedules and that there are insufficient numbers of employees to staff the rigs that are available. The existing labor shortage, which is already impacting the CIAA, may be incrementally increased by the JIDP and SPP.

7.2 INCOME, POVERTY, AND UNEMPLOYMENT

Personal per capita income in the study area ranged from $16,140 to $28,037 in 2000 (see Table 3.4). The estimated annual starting wage per job for indirectly created jobs from development on the SPPA would range from $32,195 to $32,921 and on the JIDPA would range from $31,881 to $32,025. The estimated annual starting wage per job from production would be $37,985 on the SPPA and $47,778 for the JIDPA. These estimated annual starting wages are from 50 to 58% higher than the personal per capita income reported in 2000. Thus, there would likely be beneficial impacts on income and poverty reduction as a result of the Proposed Actions and Alternatives. These benefits would not be realized under the No Action Alternatives of either project.

It is not anticipated that the SPP or JIDP will result in a notable in-migration of workers to the study area. With an estimated 1,713 available workers available in the study area and 12,000 available workers in Wyoming (see Table 3.5), the estimated number of laborers that would be directly employed as a result of the projects would be readily available. The SPP Proposed Action would require approximately 96.1 AJEs annually (direct and indirect labor). The JIDP Proposed Action would directly provide up to 9,899 worker years and up to 52,930 AJEs during development and up to 6,964 new worker years and 32,823 new AJEs from production. The duration of these impacts, and therefore the number of jobs, would depend on the rate of development. Some of these jobs would be existing jobs that would continue as a result of continued development and operations that would otherwise have been lost; some jobs would be newly created parallel or transitional jobs. These jobs would likely reduce unemployment in the study area and the state. The projects would result in beneficial impacts to local employment--both to the workforce directly involved in oil and gas development and to the general service economy--especially during construction and drilling.

7.3 QUALITY OF LIVING

Increased revenues and incomes in the study area would likely result in some change in the values and social condition of the local communities. These effects would likely include increased entropy in the study area society. Entropy is a measure of the natural decay of the structure or of the disappearance of distinctions within a social system--a trend toward disorder and chaos resulting ultimately in total breakdown (cf. Catton 1982; Heinberg 2003). Much of the energy consumed by a social organization is spent to maintain its structure--counteracting social entropy (e.g., through legal institutions, education, the normative consequences, or television). The increased flow of government funds into local area budgets could serve to maintain balance of the social condition through selective enforcement of normative consequences. However, uncontrolled government growth without a clear set of goals and objectives designed to maintain the balance and integrity of the community and preserve the freedoms and individual responsibilities of community members, could serve to increase entropy. Random obtainment of wealth without a correlative input of self-determined ingenuity and earned labor will tend to encourage individuals toward the entropy and the influence of those individuals often serves to drive government bodies toward accelerated internal entropy.

An additional consideration to quality of life would cumulatively be impacted by oil and gas development and production. Non-labor sources of income was the fastest growing sector in 2000 according to EPS community profiles. Excessive growth and difficulty obtaining services due to high numbers of low-income individuals could result in the perception that the Pinedale area and Sublette County in general may not be as desirable a place to live. This could potentially encourage non-labor income sources to refrain from moving into the area, or even drive some individuals in the area to choose another area in which to live (personal communication, December 2004, with Roy Allen, Economist, BLM Wyoming State Office, Cheyenne).

7.3.1 Crime

Crime could increase in the study area as a result of greater affluence among residents. In-migrant labor that fails to become employed could also result in some increased crime. However, because of the demographics of the laborers attracted to oil and gas development and production, the existing crime situation, which is already affecting the CIAA, may be incrementally increased by the Project.

7.3.2 Health Care

Increased affluence in the study area could attract additional health care providers to the area or encourage existing health care providers to remain in the area. This would likely be a beneficial impact to the study area society. However, impacts already being experienced by the healthcare community may be incrementally increased by the Project as a result of increases in population from laborers attracted by jobs.

7.3.3 Housing

While it is possible that there may be some increase in the study area population as a result of job-seekers coming to the area, such an increase in population would not place an undue burden on existing infrastructure. For instance, nearly 32% of the housing in Sublette County is vacant, although the habitability of this vacant housing is unknown (see Table 3.8). If there were an increase in the population, increased demand would likely cause an increase in housing prices (rental costs and home sale prices). Additionally, increased affluence in the study area is likely to cause an increase in the demand for higher-quality housing, which could result in increased housing construction projects. This would result in increased ad valorem tax revenues to local governments. It could also make it more difficult for some individuals to obtain satisfactory housing within affordable price ranges, which would have an effect on those individuals. Impacts to housing already being experienced by the affected communities may be incrementally increased by the Project as a result of increases in population. Plans are underway to build another motel in town and several mancamps are currently under discussion by area operators for permitting to alleviate some of the pressures on housing. Several housing developments are also being planned.

7.3.4 Cost of Living and Inflation

Increased cost of living and inflation already being experienced by the affected communities may be incrementally increased by the Project.

7.4 EDUCATION

Increased revenues to schools as a result of increased ad valorem and other taxes and revenues would be a beneficial impact to the school systems, allowing the purchase of higher-quality teaching materials and potentially increasing the wages of teachers, which could attract teachers with higher credentials than would otherwise have been attracted to positions within the study area. Any increases in population would likely aid in offsetting the current trend toward school closures/consolidations in some communities. Additionally, increased funding would provide schools with more options to improve education and raise performance test scores, thus increasing the overall education rate and improving the overall quality of the workforce in the study area. Increases in population may help reduce impacts already being experienced by schools in affected communities that have resulted in school closures.

This page intentionally left blank.

8.0 ECONOMIC JUSTICE

The Environmental Protection Agency's (EPA's) Office of Environmental Justice defines environmental justice as "[t]he fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group[s] should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies". Meaningful involvement means that: (1) community residents in the potential impact area have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) the concerns of all participants involved will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those in the potential impact area (EPA 2002).

In sum, environmental justice is a goal to be achieved for all communities and persons across the U.S. Environmental justice is achieved when everyone--regardless of race, culture, or income--enjoys the same degree of protection from environmental and health hazards and has equal access to the decision-making process to have a healthy environment in which to live, learn, and work (EPA 2002).

EO 12898 (February 11, 1994) and its accompanying memorandum have the primary purpose of ensuring that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. ..." EO 12898 also explicitly calls for the application of equal consideration for Native American programs. To meet these goals, EO 12898 specified that each agency develop an agency-wide environmental justice strategy.

The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

The Presidential Memorandum that accompanied EO 12898 calls for a variety of actions. Four specific actions were directed at *National Environmental Policy Act* (NEPA)-related activities, including the following.

1. Each federal agency must analyze environmental effects (i.e., human health, economic and social effects) of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA.

2. Mitigation measures outlined or analyzed in environmental assessments, EISs, or RODs, whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities.

3. Each federal agency must provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility of public meetings, official documents, and notices to affected communities.

4. In reviewing other agencies' proposed actions under Section 309 of the *Clean Air Act*, the EPA must ensure that the agencies have fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

8.1 DEFINING MINORITY AND/OR LOW-INCOME POPULATION

8.1.1 Minority Communities

Minority or low-income communities that may be addressed in the scope of NEPA analysis are generally considered as follows.

- Minority - Individual(s) classified by OMB Directive No. 15 as Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons.
- Minority Population - Minority populations should be identified where either:
  - (a) the minority population of the affected area exceeds 50% or
  - (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

In identifying minority communities, agencies may consider as a community either: (1) a group of individuals living in geographic proximity to one another, or (2) a geographically dispersed/transient set of individuals (such as migrant workers or American Indians), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population.

A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

8.1.2 Low-Income Population

Two of the tests available for identifying low-income populations in an affected area are:

(a) the Department of Health and Human Services poverty guidelines or

(b) the Department of Housing and Urban Development statutory definition for very low-income for the purposes of housing benefits programs.

In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effects. The guidance for low-income population provides two ways to calculate low-income: in most circumstances, agencies should apply the test that most accurately reflects the relative cost of living in the particular geographic area under consideration, taking into account the need to ensure full coverage of all low-income communities pursuant to EO 12898.

8.1.3 Disproportionately High and Adverse Human Health Effects

When determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

(a) whether the health effects, which may be measured in risks and rates, are significant, unacceptable, or above generally accepted norms. (Adverse health effects may include bodily impairment, infirmity, illness, or death.);

(b) whether the risk or rate of hazard exposure by a minority population or low-income population to an environmental hazard is significant and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; and

(c) whether health effects occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

8.2 PROJECT STUDY AREA

8.2.1 Minority Communities

Application of the EPA's defining guidelines reveals there are no minority communities that would be affected by the proposed projects. About 2.5% of the Lincoln County population, 3.2% of the Sublette County population, and 11% of the Sweetwater County population is minority as compared to 8.9% for the State of Wyoming, (EPA 2003). There are no potentially affected communities within the study area where the minority population exceeds 50% nor are there any population clusters where the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population; therefore, development would not unduly affect minority populations (email from Karen Kellen [acting director], Environmental Justice, Region 8, EPA, on February 20, 2003); therefore, environmental justice issues for minority communities are not discussed further herein.

8.2.2 Low-Income Population

Approximately 10.8% of the Lincoln County population, 8.4% of the Sublette County population, and 8.0% of the Sweetwater County population lives below the poverty level as compared to 11.9% for the State of Wyoming (EPA 2003).

No low-income populations have been identified as a community (i.e,. a group of individuals living in geographic proximity to one another) or as a geographically dispersed/transient set of individuals (e.g., migrant workers or Native Americans), that would experience common conditions of environmental exposure or effects. Development would not unduly affect low-income individuals in the study area (email from Karen Kellen [acting director]), Environmental Justice, Region 8, EPA, on February 20, 2003), therefore, environmental justice issues for low-income communities is not discussed further herein.

8.2.3 Disproportionately High and Adverse Human Health Effects

It is not anticipated that development of the projects would result in any health effects (i.e., bodily impairment, infirmity, illness, or death), which could be measured in risks and rates, that would be significant, unacceptable, or above generally accepted norms. No risk or rate of hazard exposure by a minority population or low-income population to an environmental hazard would be significant or appreciably exceed or be likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group. No health effects would occur in a minority or low-income population as a result of exposures from environmental hazards related to the proposed projects.

9.0 ACRONYM LIST AND GLOSSARY

9.1 ACRONYM LIST

AJE	Annual job equivalent
AUM	Animal unit months
BCF	Billion cubic feet of natural gas
BEA	U.S. Department of Commerce, Bureau of Economic Analysis
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
C.F.R.	*Code of Federal Regulations*
Companies	Infinity Oil and Gas of Wyoming, Inc. and Williams Production RMT Company
CPI	Consumer price index
CREG	Consensus Revenue Estimating Group
EIA	Energy Information Administration
EIS	Environmental impact statement
EnCana	EnCana Oil and Gas (USA), Inc.
EO	Executive Order
EPA	Environmental Protection Agency
EPS	Sonoran Institute Economic Profile System
FIRE	Finance, insurance, and real estate
GSP	Gross state product
GSPO	Gross state product originating
I/O	Input/output
I-80	Interstate 80
IBT	Indirect business tax and non-tax liability
IMPLAN®	Impact Analysis for Planning; IMPLAN® PRO 2.0 software
Infinity	Infinity Oil and Gas of Wyoming, Inc.
JIDP	Jonah Infill Drilling Project
JIDPA	JIDP area
JMHCAP	*Jack Morrow Hills Coordinated Activity Plan*
LOP	Life of field
LOP	Life of project
LRI	Legislative Royalty Impact Assistance Account
MBO	Million barrels of condensate (oil)
MCF	Thousand cubic feet of natural gas
MIG	Minnesota IMPLAN Group, Inc.
MMCF	Million cubic feet of natural gas
N	North
NASS	National Agricultural Statistical Service
NCES	National Center of Education Statistics
NEPA	*National Environmental Policy Act*
OMB	Office of Management and Budget

Operators	EnCana Oil and Gas (USA), Inc. and BP America
PCPI	Per capita personal income
PFO	Pinedale Field Office
PILT	Payments in lieu of taxes
PWMTF	Permanent Wyoming Mineral Trust Fund
R	Range
REIS	Regional Economic Information System
RMIS	Recreational Management Information System
ROD	Record of Decision
RSFO	Rock Springs Field Office
RVD	Recreational visitor day
SCBC	Sublette County Board of Commissioners
Schlumberger	Schlumberger Oil Field Services
SCPC	Sublette County Planning Commission
SIC	Standard Industrial Classification
South Piney Project	South Piney Natural Gas Development Project
SPP	South Piney Project
SPPA	SPP area
SSI	Supplemental Security Income
SSSI	Supplemental Social Security Income
SWREE	*Southwest Wyoming Resource Evaluation Socio/Economic Evaluation*
T	Township
TCPU	Transportation, communication, and public utilities
TPI	Total personal income
TRC Mariah	TRC Mariah Associates Inc.
U.S.C.	*United States Code*
USDI	U.S. Department of the Interior
USFS	U.S. Department of Agriculture, Forest Service
UWAED	University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department
W	West
W.S.	*Wyoming Statute*
WDAI	Wyoming Department of Administration and Information
WDERP	Wyoming Department of Employment, Research, and Planning
WGFD	Wyoming Game and Fish Department
WHDP	Wyoming Housing Database Partnership
Williams	Williams Production RMT Company
WOSLI	Wyoming Office of State Lands and Investments
WyCAS	Wyoming Comprehensive Assessment System

9.2 GLOSSARY

ad valorem: Tax levied on property or production according to assessed value.

allotment: An area of land where one or more permittees graze their livestock. Generally consists of public land but may include parcels of private or State lands. The number of livestock and season of use are stipulated for each allotment. An allotment may consist of several pastures or be only one pasture.

annual job equivalent (AJE): An AJE represents 12 months of employment. For example, one AJE could represent one job for 12 months or two jobs for 6 months or three jobs for 4 months. For the purposes of this analysis, a job is defined as 260 worker-days = 1 worker-year, a person year is 365 days; therefore, there are approximately 1.4 worker years per person year (i.e,. one AJE = 1.4 person years).

animal unit month (AUM): The amount of forage necessary for the sustenance of one cow/calf pair for 1 month.

annual growth rate formulas:

Between two consecutive years (e.g., 1999-2000):

([Y2 data -Y1 data]/Y1 data) X 100 = annual growth

where Y = year.

Annualized growth rate over a period of time (e.g., 1980 to 1990):

$[(\text{Y2 data}/\text{Y1 data})^{(1/[Y2-Y1])} - 1] \times 100$ = average annual growth

where Y = year.

commercial well: A well capable of producing profitably.

completion: The activities and methods to prepare a well for production. Includes installation of equipment for production from an oil or gas well.

condensate (gas condensate): Hydrocarbons contained in the natural gas stream and removed by condensation.

consumer price index (CPI): A measure of the average change in prices over time in a market basket of goods and services.

directional drilling: The intentional deviation of a wellbore from vertical to reach subsurface areas off to one side from the drilling site.

discount factor formula: 1/(1+i)t where i is the interest rate and t is the year.

displacement: As applied to recreation and hunting, forced shifts in the patterns of land use, either in location or timing of use.

environment: The aggregate of physical, biological, economic, and social factors affecting organisms in an area.

environmental impact statement (EIS): An analysis of alternative actions and their predictable environmental impacts, including physical, biological, economic, and social consequences and their interactions; short- and long-term impacts; direct, indirect, and cumulative impacts.

entropy: a process of degradation or running down or a trend to disorder (i.e., chaos, disorganization, randomness).

federal lands: All lands and interests in lands owned by the U.S. that are subject to the mineral leasing laws, including mineral resources or mineral estates reserved to the U.S. in the conveyance of a surface or non-mineral estate.

gross state product: GSP is the value added in production by the labor and property located in a state. GSP for a state is derived as the sum of the gross state product originating in all industries in a state. In concept, an industry's GSP, referred to as its "value added", is equivalent to its gross output (sales or receipts and other operating income, commodity taxes, and inventory change) minus its intermediate inputs (consumption of goods and services purchased from other U.S. industries or imported). Thus, GSP is often considered the state counterpart of the nation's gross domestic product (GDP), BEA's featured measure of U.S. output. In practice, GSP estimates are measured as the sum of the distributions by industry and state of the components of gross domestic income (GDI) -- that is, the sum of the costs incurred and incomes earned in the production of GDP.

gross state product calculation: The sum of gross state product originating by industry of all industries.

impacts: These include: a) Direct impacts, which are caused by the action and occur at the same time and place; b) Indirect impacts, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing impacts and other impacts related to induced changes in the pattern of land use, population density or growth rate, and related impacts on air and water and other natural systems, including ecosystems. Impacts include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts may also include those resulting from actions which may have both beneficial and detrimental impacts, even if on balance the agency believes that the impact will be beneficial (40 C.F.R. 1508.8).

industry compensation of employees: GSP estimates of compensation of employees are the sum of employee wages and salaries and supplements to wages and salaries.

> Wages and salaries are measured on an accrual, or "when earned" basis, which may be different from the measure of wages and salaries measured on a disbursement, or "when paid" basis.

Wages and salaries and supplements of Federal military and civilian government employees stationed abroad are excluded from the measure of GSP.

- Employee wages and salaries: The monetary remuneration of employees. This remuneration includes the compensation of corporate officers; commissions, tips, and bonuses; voluntary employee contributions to certain deferred compensation plans, such as 401(k) plans; and receipts in kind, or pay-in-kind. Wages and salaries are measured before deductions, such as social security contributions and union dues.
- Supplements to wages and salaries consist of employer contributions for social insurance and other labor income.
  - **Employer contributions for social insurance** consist of employer payments under the following programs:
    - old age, survivors, and disability insurance ("Social Security"),
    - hospital insurance,
    - unemployment insurance,
    - railroad retirement,
    - pension benefit guaranty,
    - veterans' life insurance,
    - publicly-administered workers' compensation,
    - military medical insurance, and
    - temporary disability insurance.

    Although these employer contributions to publicly-administered social insurance programs are treated as a cost of production, and are included in the calculation of GSP, they are not treated as part of income when accounting for personal income. Instead, the payments from the programs are counted as personal income when they are paid out to individuals.
  - **Other Labor Income (OLI):** Consists of employer payments to government employee retirement and private pension and profit-sharing plans, private group health and life insurance plans, privately-administered workers' compensation plans, supplemental unemployment benefit plans, corporate directors' fees, and several minor categories of employee compensation, including judicial fees to juries and witnesses, compensation of prison inmates, and marriage fees to justices of the peace.

inflation calculations:

Inflation Factor = (Current Year CPI / Year "X" CPI)
Current Year Dollars = Year "X" Dollars x Inflation Factor

infrastructure: The basic framework or underlying foundation of a community including road networks, electric and gas distribution, water and sanitation services, and facilities.

irretrievable: A term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

irreversible: A term that describes the loss of future options. Applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity that are renewable only over long periods of time.

long-term impacts: For the purpose of this NEPA analysis, long-term impacts last for the life of the project or beyond.

mitigate: To lessen the severity.

mitigation measures: Actions taken to reduce or minimize potential impacts to the environment.

mitigation: Avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree of magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or compensating for the impact by replacing or providing substitute resources or environments.

modeling: A mathematical representation of an observable situation. In economics, models afford the ability to estimate the short- and long-term impacts of changes in industry on the local, regional, and/or national economy.

***National Environmental Policy Act of 1969* (NEPA):** The federal law established in 1969, which went into effect on January 1, 1970, that 1) established a national policy for the environment, 2) requires federal agencies to become aware of the environmental ramifications of their proposed actions, 3) requires full disclosure to the public of proposed federal actions and a mechanism for pubic input into the federal decision-making process, and 4) requires federal agencies to prepare an environmental impact statement for every major action that would significantly affect the quality of the human environment.

natural gas: Those hydrocarbons, other than oil and other than natural gas liquids separated from natural gas, that occur naturally in the gaseous phase in the reservoir and are produced and recovered at the wellhead in gaseous form.

No Action Alternative: The management direction, activities, outputs, and effects that are likely to exist in the future if the current plan would continue unchanged.

nominal value: Value of project activities is the simple calculation of dollars with no adjustments.

present value: Value of project activities after the discount rate has been applied over time (i.e., the real value of project activities).

production: Phase of commercial operation of an oil field.

public land: Lands or interests in lands owned by the United States and administered by the Secretary of Interior through the Bureau of Land Management, without regard to how the United States acquired ownership.

reclamation: Rehabilitation of a disturbed area to make it acceptable for designated uses. This normally involves regrading, replacement of topsoil, revegetation and other work necessary to restore it for use.

Record of Decision (ROD): A decision document for an environmental impact statement or Supplemental EIS that publicly and officially discloses the responsible official's decision regarding the actions proposed in the EIS and their implementation.

recreational visitor day (RVD): As a unit of measure, a recreational visitor day is defined as a 12-hour period.

short-term impacts: For the purpose of this NEPA analysis, short-term impacts are generally defined as those that would last for 10 years or less.

socioeconomics: Study of an impact region on the current and projected population and relative demographic characteristics (housing, economy, government, etc.).

well pad: Relatively flat work area that is used for drilling a well and producing from the well once it is completed.

wellbore: The hole drilled from the surface to the gas-bearing formation.

This page intentionally left blank.

10.0 REFERENCES

Blevins, A., K. Jensen, M. Coburn, and S. Utz. 2004. Executive Summary. *In* Social and Economic Impact Assessment of Oil and Gas Development in Sublette and Sweetwater Counties. Prepared for Shell Exploration and Production Company by University of Wyoming, Department of Sociology, Laramie.

Bureau of Economic Analysis. 2002. Regional Accounts Data, Local Area Personal Income, Regional Economic Information System. Table CA34 Average Wage per Job, Wyoming (dollars). http://www.bea.doc.gov/bea/regional/reis. December 2002. Data accessed June 19, 2003.

______. 2003a. Regional Accounts Data, Local Area Personal Income, Regional Economic Information System. Tables CA05(SIC) and SA1-3. Personal Income by Major Source and Earnings by Industry. May 2003. <http://www.bea.doc.gov/bea/regional/reis>. Data accessed December 15, 2003.

______. 2003b. Personal Dividend Income, Personal Interest Income, and Rental Income of Persons. http://www.bea.doc.gov/bea/regional/articles/lapi2001/pdf/dir.pdf, May 6, 2003. Data accessed December 15, 2003.

______. 2003c. Regional Accounts Data, Local Area Personal Income, Regional Economic Information System. Table CA25 Total full-time and part-time employment by industry. U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division. May 2003. http://www.bea.doc.gov/bea/regional/reis. Data accessed June 19, 2003.

______. 2003d. Regional Accounts Data, Local Area Personal Income, Regional Economic Information System. Table C1-3 Per capita personal income. May 2003. http://www.bea.doc.gov/bea/regional/reis. Data accessed June 19, 2003.

______. 2003e. Regional Accounts Data, Local Area Personal Income, Regional Economic Information System. Table CA25 Total full-time and part-time employment by industry--Wyoming (number of jobs). May 2003. http://www.bea.doc.gov/bea/regional/reis. Data accessed June 23, 2003.

______. 2003f. Gross State Product (GSP), for states and regions in current-dollar GSP and real chained-dollar GSP, and GSP by industry, for 1977–2001 (annual). U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division -- May 2003. http://www.bea.gov/bea/regional/gsp/. Data accessed July 8, 2003.

______. 2003f. Employee Compensation for Wyoming. U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division -- May 2003. http://www.bea.gov/bea/regional/gsp/. Data accessed July 14, 2003.

______. 2003g. Table SA05: Personal income by major source and earnings by industry--United States (thousands of dollars). U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division. April 2003 <http://www.bea.gov/bea/regional/spi/action.cfm>. Data accessed July 17, 2003.

Bureau of Labor Statistics. 2003a. Average annual Unemployment Rates. Labor Force Statistics from Current Population Survey. U.S. Department of Labor, Bureau of Labor Statistics. <http://www.bls.gov/cps/home.htm>. Data accessed December 16, 2003.

Bureau of Labor Statistics. 2003. Consumer Price Index--All Urban Consumers. U.S. Department of Labor, Bureau of Labor Statistics. <http://data.bls.gov/servlet/SurveyOutputServlet>. Data accessed December 23, 2003.

Bureau of Land Management. 1988. Record of Decision and Resource Management Plan for the Pinedale Resource Area. Prepared by the U.S. Department of the Interior, Bureau of Land Management, Pinedale Resource Area, Rock Springs District, Rock Springs, Wyoming. 118 pp.

______. 1997. Record of Decision for the Green River Resource Area Management Plan and Environmental Impact Statement. U.S. Department of the Interior, Bureau of Land Management, Rock Springs District, Rock Springs, Wyoming.

______. 1999. Draft environmental impact statement for the Pinedale Anticline Oil and Gas Exploration and Development Project, Sublette County, Wyoming. Pinedale Field Office, Pinedale, Wyoming.

______. 2003a. Supplemental Draft EIS for the Jack Morrow Hills Coordinated Activity Plan/Draft Green River RMP Amendment. BLM/WY/PL-03/008+1610. Prepared by BLM, Wyoming State Office, Cheyenne, Wyoming; BLM, Rock Springs Field Office, Rock Springs, Wyoming; and BLM, Lander Field Office, Lander, Wyoming.

______. 2003b. Socioeconomic Profile--Pinedale. Prepared by Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming. January 2003. 37 pp.

______. 2003c. Payments in Lieu of Taxes, Search Payments and Acres. U.S. Bureau of Land Management, Office of Public Affairs, Washington, D.C. <http://www.blm.gov/pilt/search.html>. Data accessed July 10, 2003.

______. 2004a. Pinedale Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming.

______. 2004b. Draft Environmental Impact Statement for the South Piney Natural Gas Development Project, Sublette County, Wyoming. Prepared for the U.S. Department of the Interior, Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming.

______. 2004c. Draft Environmental Impact Statement for the Jonah Infill Drilling Project, Sublette County, Wyoming. Prepared for the U.S. Department of the Interior, Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming by TRC Mariah Associates Inc., Laramie, Wyoming.

Campbell, Paul. 1997. Population Projections: States, 1995-2025. Current Population Reports, P25-1131. Prepared for Census Bureau. <http://www.census.gov/prod/2/pop/p25/p25-1131.pdf>. Data accessed December 15, 2003.

Consensus Revenue Estimating Group. 2003. Wyoming State Government Revenue Forecast Fiscal Year 2003 – Fiscal Year 2008. January 2003.

______. 2004. Wyoming State Government Revenue Forecast Fiscal Year 2004 – Fiscal Year 2008. January 2004.

Catton ,W. 1982. Overshoot: The Ecological Basis of Revolutionary Change. University of Illinois Press. 320 pp.

Coupal, R., T. Taylor, and T. Foulke. 2003. Wyoming Economic Atlas: PILT. University of Wyoming Department of Agricultural and Applied Economics. http://agecon.uwyo.edu/econdev/PILT1.htm

Dalaker, J., and B.D. Proctor. 2000. U.S. Census Bureau, Current Population Reports, Series P60-210, Poverty in the United States: 1999. U.S. Government Printing Office. Washington, D.C.

Dean Runyan Associates. 2003. The Economic Impact of Travel on Wyoming, 1997-2002 Detailed State and County Estimates. October 2003. Prepared for the State Office of Travel and Tourism Wyoming Business Council by Dean Runyan Associates, Portland, Oregon. 63 pp.

Energy Information Administration. 2000. Cost and Indices for Domestic Oil and Gas Equipment and Production Operations, 1996-1999. Cost for Rocky Mountain Region. Published by Energy Information Administration, Office of Oil and Gas, U.S. Department of Energy, Washington, D.C. DOE/EIA–0185(2000).

______. 2001a. Energy in the United States: A Brief History and Current Trends. United States Department of Energy, Energy Information Administration. June 2001. www.eia.doe.gov/emeu/aer/eh1999/eh1999.html. Data Accessed July 10, 2003.

______. 2001b. Historical Natural Gas Annual 1930 Through 2000. Table 7. Wellhead Value and Marketed Production of Natural Gas by State, 1967-2000. Published by Energy Information Administration, Office of Oil and Gas, U.S. Department of Energy, Washington, D.C. DOE/EIA-E-0110(00). December 2001.

______. 2003a. Natural Gas Monthly, December 2003. Table 23. Average Price of Natural Gas Sold to Industrial Consumers, by State, 2000-2002. Published by Energy Information Administration, Office of Oil and Gas, U.S. Department of Energy, Washington, D.C. DOE/EIA-0130(2003/12).

______. 2004a. Annual Energy Outlook 2004 with Projections to 2025. Table 14. Natural Gas Prices, Margins and Revenues. Published by Energy Information Administration, Office of Oil and Gas, U.S. Department of Energy, Washington, D.C. DOE/EIA-0383(2004). January 2004.

______. 2004b. Natural Gas Annual 2002. <http://www.eia.doe.gov>. Data accessed April 2004.

Environmental Protection Agency. 2003. EnviroMapper for Environmental Justice. http://map10.epa.gov/enviromapper/. Data accessed September 9, 2003.

Foulke, T., R. Coupal, and D. Taylor. 2001. Economic Trends in Wyoming's Mineral Sector: Gas and Oil. Editor, Hattie Penny. University of Wyoming College of Agriculture Department of Agricultural and Applied Economics, Laramie. B-1112, August 2001. 22 pp.

Gerking, S., W. Morgan, M. Kunce, J. Kerkvliet. 2001. Mineral Tax Incentives, Mineral Production and the Wyoming Economy. Prepared under 1999 Wyoming Session Laws, Chapter 168, Section 3, for the Wyoming Legislature. December 2001. 305 pp.

Heinberg, R. 2003. The Party's Over: Oil, War and the Fate of Industrial Societies. New Society Publishers. 288 pp.

Lummis, C.M., S. Garland, and G. Shaffer. 2000. Annual Report of the Treasurer of the State of Wyoming For the Period July 1, 1999 through June 30, 2000. Prepared by Cynthia M. Lummis, State Treasurer; Sharon Garland, Deputy State Treasurer; and Glenn Shaffer, Chief Investment Officer.

______. 2001. Annual Report of the Treasurer of the State of Wyoming For the Period July 1, 2000 through June 30, 2001. Prepared by Cynthia M. Lummis, State Treasurer; Sharon Garland, Deputy State Treasurer; and Glenn Shaffer, Chief Investment Officer.

______. 2002. Annual Report of the Treasurer of the State of Wyoming For the Period July 1, 2001 through June 30, 2002. Prepared by Cynthia M. Lummis, State Treasurer; Sharon Garland, Deputy State Treasurer; and Glenn Shaffer, Chief Investment Officer.

______. 2003. Annual Report of the Treasurer of the State of Wyoming For the Period July 1, 2002 through June 30, 2003. Prepared by Cynthia M. Lummis, State Treasurer; Sharon Garland, Deputy State Treasurer; and Glenn Shaffer, Chief Investment Officer.

Mast, T. 2004. Labor shortages vary across state. Casper Star-Tribune. November 7, 2004.

Minnesota IMPLAN Group, Inc. 2000. Users Guide. IMPLAN Professional®, Version 2.0 Social Accounting and Impact Analysis Software, 2nd Edition, June 2000. Minnesota IMPLAN Group, Inc. Stillwater, Minnesota. 418 pp.

National Agriculture Statistical Service. 1999. 1997 Census of Agriculture Volume 1: Part 50, Chapter 2, Wyoming County-Level Data. Table 1: County Summary Highlights. AC97-A-51. U.S. Department of Agriculture, National Agriculture Statistical Service, Washington, D.C. March 1999.

National Center for Education Statistics. 2003. Common Core of Data, America's Public Schools. Data obtained from "Build a Table" <http://nces.ed.gov/ccd/bat/index.asp>. Data accessed July 3, 2003.

National Energy Technology Laboratory. 2003. Strategic Planning & Policy Support, Policy Support Environmental Drivers. Prepared by the U.S. Department of Energy, National Energy Technology Laboratory, Strategic Center for Natural Gas. July 18, 2003. < http://www.netl.doe.gov/scng/>. Data accessed July 23, 2003.

Office of Management and Budget. 1987. 1987 Standard Industrial Classification Manual. Office of Management and Budget. Washington, D.C.

______. 2004. Memorandum for the Heads of Departments and Agencies, 2004 Discount Rates for OMB Circular No. A-94. M-04-06, Office of Management and Budget, February 13, 2004.

Pinedale Online. 2002. http://pinedaleonline.com. Designed and maintained by Wind River Web Services and Office Outlet in Pinedale, Wyoming. Data accessed January 2, 2003.

Royster, W. 2004. Growth strains social services. Casper Star-Tribune. November 7, 2004.

Schlumberger Oil Field Services Companies. 2003. Scoping Comment Letter. Letter to Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming from James Stewart, General Manager, U.S. Land Western Region, Schlumberger Oil Field Services Company, Greenwood Village, Colorado. April 25, 2003. 4 pp.

Sonoran Institute. 2003. Economic Profile System. Sonoran Institute, Northwest Office, Bozeman, Montana.

Sublette.Com. 2001. http://www.sublette.com. Designed and maintained by Wind River Web Services and Office Outlet in Pinedale, Wyoming. Data accessed January 2, 2003.

Sublette County Board of Commissioners and Sublette County Planning Commission. 2003. Sublette County Comprehensive Plan: County Vision, Goals and Policies

Sublette County Sheriff's Department. 2002. http://www.sublette.com/government/sheriff. Data accessed January 2, 2003.

Taylor, D.T., and S. Lieske. 2002. Population Change in Wyoming, 1990-2000. Wyoming Open Spaces Research Group. B-1121, April 2002.

Tax Reform 2000 Committee. 1999. Building Wyoming's Tax Structure for the 21st Century, Report of the State of Wyoming Tax Reform 2000 Committee, June 1999. Presented to Honorable Jim Geringer, Governor, State of Wyoming; Honorable Jim Twiford, President, Wyoming State Senate; and Honorable Eli D. Bebout, Speaker of the House, Wyoming House of Representatives.

TRC Mariah Associates Inc. 2003. Final Socioeconomic Analysis Protocol for the Jonah Infill Drilling Project Environmental Impact Statement. Prepared for Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming; Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming, and Jonah Infill Drilling Project Operators by TRC Mariah Associates Inc., Laramie, Wyoming. 17 pp.

University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department. 1997. Southwest Wyoming Resource Evaluation Socio/Economic Evaluation (SWREE), Final Report, Parts I and II. Prepared for Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming, by the University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department.

______. 2003. Jack Morrow Hills Coordinated Activity Plan: Economic Analysis. Summary of an analysis of the regional economic effects on Southwest Wyoming associated with the resource use alternatives for the Jack Morrow Hills Coordinated Activity Plan and follow-up to the Southwest Wyoming Resource Evaluation, Socio/Economic Evaluation (1997). Prepared for the Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming, by the University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department. <http://agecon.uwyo.edu/econdev/PubStorage/JMHCAP.pdf> Report accessed October 21, 2003.

______. 2004. Summary of an analysis of the regional economic effects on Southwest Wyoming associated with the resource use alternatives for the Pinedale Resource Management Plan and follow-up to the Southwest Wyoming Resource Evaluation, Socio/Economic Evaluation. Prepared for the BLM Wyoming State Office; BLM Pinedale Field Office; and State of Wyoming, Wyoming Business Council, by the University of Wyoming, College of Agriculture, Cooperative Extension Service, Agricultural Economics Department.

U.S. Census Bureau. 1981. U.S. Census Bureau 1980 Census of Population and Housing. Table 080A: Median Household Income in 1979. U.S. Census Bureau, Washington, D.C.

______. 1990. U.S. Census Bureau 1990 Census of Population and Housing. Table 080A: Median Household Income in 1989. www.factfinder.gov. Data accessed June 20, 2003.

______. 2000a. State and County QuickFacts. www.census.gov. Last Revised: Friday, 24-Sep-2002 11:19:39 EDT. Data accessed December 26, 2002.

______. 2000b. U.S. Census Bureau 1990 Census of Population and Housing (http://factfinder.census.gov). Data accessed December 26, 2002.

______. 2000c. American Fact Finder, Census 2000 Quick Tables. DP-3: Profile of Selected Economic Characteristics: 2000. http://factfinder.census.gov. Data accessed January 2, 2003.

______. 2000d. American Fact Finder, Census 2000 Detailed Tables. P-5: Urban and Rural Population (Total Population) (Final National File Only): 2000. http://factfinder.census. gov. Data accessed April 24, 2003.

______. 2000e. American Fact Finder, Census 2000 Detailed Tables. P-8: Sex by Age. http://factfinder.census.gov. Data accessed June 18, 2003.

______. 2000f. American Fact Finder, Census 2000 Detailed Tables. P-41. Age By Types Of Disability For The Civilian Noninstitutionalized Population 5 Years And Over With Disabilities. http://factfinder.census.gov. Data accessed June 19, 2003.

______. 2003. Source: U.S. Census Bureau, Current Population Survey, 2003 Annual Social and Economic Supplement. http://www.census.gov/hhes/poverty/threshld/thresh02.html. Last revised October 14, 2003. Data accessed January 25, 2004.

U.S. Department of Energy, Energy Information System. 2000. Wyoming State Data: Natural Gas Summary. 2000. http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/current/pdf/table_092.pdf. Data accessed January 23, 2003.

Workman, J.P. 1986. Range Economics. McMillan Publishing, Inc. New York, New York.

Wyoming Agricultural Statistics Service. 2003. Wyoming Agricultural Statistics 2003. Issued cooperatively by the Wyoming Business Council; University of Wyoming, College of Agriculture, Agricultural Experiment Station, and Department of Agricultural and Applied Economics; and U.S. Department of Agriculture, National Agricultural Statistics Service. Wyoming Agricultural Statistics Service, Cheyenne, Wyoming.

Wyoming Business Council. 2002a Interactive Business Center. Salaries. http://wyomingbusiness.org. Data accessed June 23, 2003.

______. 2002b. Interactive Business Center. Quality of Life Category: Crime. http://wyomingbusiness.org. Data accessed June 23, 2003.

______. 2002c. Interactive Business Center. Quality of Life Category: Health Care. http://wyomingbusiness.org. Data accessed June 23, 2003.

______. 2002d. Interactive Business Center. Quality of Life Category: Housing. http://wyomingbusiness.org. Data accessed June 23, 2003.

______. 2002e. Wyoming Sales, Use, and Lodging Tax Report. 27th Edition. Prepared by Wyoming Department of Administration and Information, Economic Analysis Division, Cheyenne, Wyoming.

Wyoming Community College Commission. 2003. Press Release. April 4, 2003. <http://commission.wcc.edu/WCCC/press.htm>. Data accessed July 7, 2003.

Wyoming Department of Administration and Information. 2000. 1990 Census of Population and Housing: Profiles for State, Counties, and Major Cities and Towns. <http://eadiv.state.wy.us/pop90/pop90.htm>. Data accessed June 17, 2003.

______. 2001a. Historical decennial census population for Wyoming counties, cities, and towns. <http://eadiv.state.wy.us/demog_data/ cntycity_hist.htm> Data accessed June 17, 2003.

______. 2001b. Median Household Income By County: 1969, 1979, 1989 <http://eadiv.state.wy.us/ demog_data/CNTY_INCOME70_90.htm>. Data accessed June 17, 2003.

______. 2002a. Equality State Almanac 2000, 8th Edition. Prepared by Economic Analysis Division, Department of Administration and Information, State of Wyoming, Cheyenne, Wyoming. May 2002.

______. 2002b. Wyoming Population Estimates and Forecasts for Counties, Cities, and Towns: 1991 to 2010. Prepared by Wyoming Department of Administration and Information, Division of Economic Analysis, October 1, 2002. http://eadiv.state.wy.us/ pop/wyc&sc10.htm. Data accessed December 30, 2002.

______. 2002c. Household Income and Poverty Status by County, Census Tract, and Block Group. <http://eadiv.state.wy.us/demog_data/pop2000/BG_Inc&Pvty.xls>. September 3, 2002. Data accessed June 19, 2003.

______. 2002d. Annual Residential Housing Units Authorized by Building Permits For Wyoming and Counties: 1987 to 2002. <http://eadiv.state.wy.us/housing/annlbldg.htm>. July 28, 2003. Data accessed January 5, 2004.

______. 2002e. Wyoming Sales, Use, and Lodging Tax Report. 27th Edition. Prepared by Wyoming Department of Administration and Information, Economic Analysis Division, Cheyenne, Wyoming.

______. 2003a. Wyoming and County Population Estimates and Components of Changes: 2000 to 2010. <http://eadiv.state.wy.us/pop/CO-02EST.htm>. Data accessed June 17, 2003.

______. 2003b. Wyoming Cost of Living for The Fourth Quarter 2002, Table Va: Average Rental Rates - 2Q02 & 2Q01. Department of Administration and Information, Economic Analysis Division, Cheyenne, Wyoming. March 27, 2003. Contact: Justin Ballard, Senior Economist.

Wyoming Department of Education Assessment and Accountability Office. 2003 WyCAS Test Results and Released Items. Wyoming Department of Education Assessment and Accountability Office, Hathaway Building, 2nd Floor, 2300 Capitol Avenue Cheyenne, Wyoming 82002-0050. <http://www.asme.com/wycas/TestResults/ TestResults.htm>. Data accessed September 8, 2003.

Wyoming Department of Employment, Research, and Planning. 1999. Identifying Wyoming's Oil & Gas Dependent Counties. Wyoming Department of Employment, Research & Planning, Cheyenne, Wyoming. Prepared by David Bullard, Economist. Last modified on January 9, 2003 by Valerie A. Davis. http://doe.state.wy.us/lmi/1099/a3.htm. Data accessed April 23, 2003.

______. 2002a. 1979 Wyoming Benchmark Labor Force Estimates. Wyoming Department of Employment, Research & Planning. <http://doe.state.wy.us/lmi/laus/79bmk.htm>. Data accessed June 20, 2003.

______. 2002b. 1989 Wyoming Benchmark Labor Force Estimates. Wyoming Department of Employment, Research & Planning. <http://doe.state.wy.us/lmi/laus/89bmk.htm>. Data accessed June 20, 2003.

______. 2002c. 2002 Wyoming Benchmark Labor Force Estimates. Wyoming Department of Employment, Research & Planning. <http://doe.state.wy.us/lmi/laus/02bmk.htm>. Data accessed June 20, 2003.

______. 2003. Tables 8, 83, 86, and 89. In ES-202 Report (Second Run date: September 2003). Preliminary Wyoming Statewide Employing Units, Employment, and Wages by NAICS Sector, First Quarter 2003. Prepared by Nancy Brennan, 09/09/2003. http://doe.state.wy.us/lmi/03Q1_202/toc.htm. Data accessed February 25, 2004.

Wyoming Department of Revenue. 1998. State of Wyoming Department of Revenue 2002 Annual Report. Wyoming Department of Revenue, Cheyenne, Wyoming. 131 pp.

______. 1999. State of Wyoming Department of Revenue 1999 Annual Report. Wyoming Department of Revenue, Cheyenne, Wyoming. 131 pp.

______. 2000. State of Wyoming Department of Revenue 2000 Annual Report. Wyoming Department of Revenue, Cheyenne, Wyoming. 103 pp.

______. 2001. State of Wyoming Department of Revenue 2002 Annual Report. Wyoming Department of Revenue, Cheyenne, Wyoming. 110 pp.

______. 2002. State of Wyoming Department of Revenue 2002 Annual Report. Wyoming Department of Revenue, Cheyenne, Wyoming. 122 pp.

______. 2003. Sales & Use Tax, New Tax Rates Effective 4/1/03. Last Updated On: 3/26/2003 2:35:23 PM. <http://revenue.state.wy.us/>. Data accessed July 10, 2003.

Wyoming Energy Commission. 2003. Energy Policy. Adopted April 16, 2003. <http://www.wyomingbusiness.org/minerals/energy_commission/commission_meetings.cfm>. Data accessed August 25, 2003.

Wyoming Game and Fish Department. 2003a. 2002 Annual Report of Big and Trophy Game Harvest. Data Tables and Summaries on CD-ROM.

______. 2003b. 2002 Annual Report of Small and Upland Game Harvest. Data Tables and Summaries on CD-ROM.

______. 2003c. 2003 Annual Report. Pages 56-58, 60, 67, and 73. Facsimile from Walt Gasson, Wyoming Game and Fish Department, Cheyenne, Wyoming to C. Keefe, TRC Mariah Associates Inc., Laramie, Wyoming, January 12, 2004.

______. 2003d. Hunter/angler/wildlife watcher expenditures, by species, per BLM FO administrative areas. Facsimile from Tom Christiansen, Wyoming Game and Fish Department, Green River, Wyoming to C. Keefe, TRC Mariah Associates Inc., Laramie, Wyoming, January 23, 2004.

Wyoming Housing Database Partnership. 2003. A Profile of Wyoming Demographics, Economics, and Housing Semiannual Report, Ending June 30, 2003, Final Report. August 28, 2003. Prepared by Western Economic Services, LLC, Portland Oregon.

Wyoming Office of State Lands and Investments. 2002. Annual Report for Fiscal Year Ending June 30, 2002. Office of State Lands and Investments, Cheyenne, Wyoming. 49 pp.

Wyoming State Land Use Commission. 1979. Wyoming State Land Use Plan. 180 pp.

Wyoming Recreation Commission. 1987. Bairoil survey of regional recreation monitoring program, summary results. Cheyenne, Wyoming.

This page intentionally left blank.

APPENDIX A:

ASSUMED PRODUCTION RATES, DECLINE CURVES, AND DISCOUNTING TABLES FOR EACH ALTERNATIVE

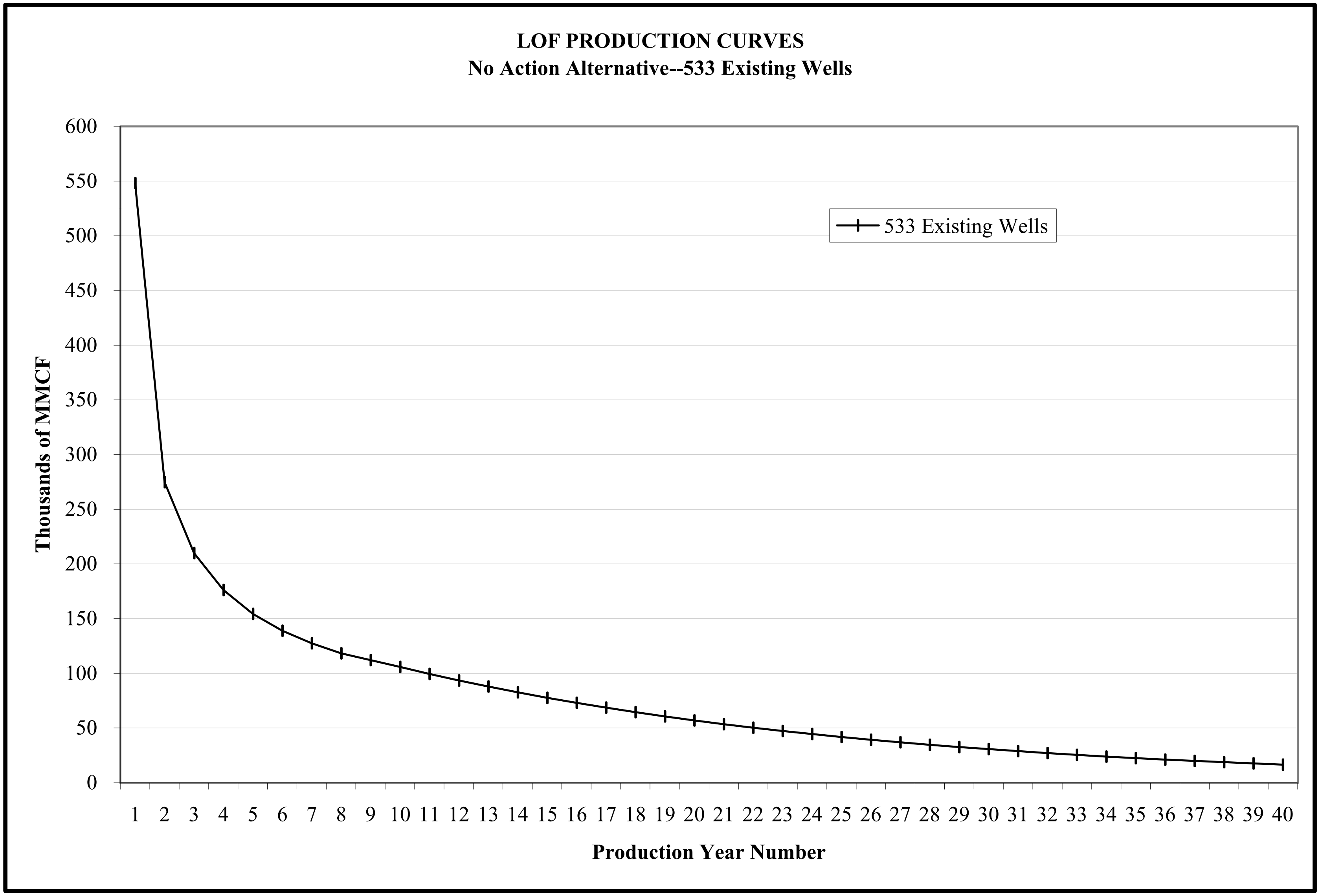
This page intentionally left blank.

No Action Alternative

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
548,121.39	1,918,424,869.79	5,207,153.22	$109,350,218	1	0.966183575	1,853,550,598.83	1	0.966183575	105,652,384.13	1	0.966183575	69,949,292.50
274,804.06	961,814,194.99	2,610,638.53	$54,823,409	2	0.9335107	897,863,842.79	2	0.9335107	51,178,239.04	2	0.9335107	33,883,585.70
209,928.43	734,749,493.86	1,994,320.05	$41,880,721	3	0.901942706	662,701,946.48	3	0.901942706	37,774,010.95	3	0.901942706	25,009,046.06
176,075.29	616,263,528.17	1,672,715.29	$35,127,021	4	0.871442228	537,038,061.83	4	0.871442228	30,611,169.52	4	0.871442228	20,266,742.38
154,422.64	540,479,226.42	1,467,015.04	$30,807,316	5	0.841973167	455,069,005.89	5	0.841973167	25,938,933.34	5	0.841973167	17,173,394.14
139,056.95	486,699,317.45	1,321,041.00	$27,741,861	6	0.813500644	395,930,208.33	6	0.813500644	22,568,021.87	6	0.813500644	14,941,614.20
127,431.82	446,011,353.71	1,210,602.25	$25,422,647	7	0.785990961	350,560,892.38	7	0.785990961	19,981,970.87	7	0.785990961	13,229,466.96
118,244.37	413,855,279.87	1,123,321.47	$23,589,751	8	0.759411556	314,286,482.13		0.759411556	17,914,329.48	8	0.759411556	11,860,543.26
	392,604,176.12			9	0.733730972		9	0.733730972	16,419,753.10		0.733730972	10,871,028.81
105,899.04		1,006,040.91	$21,126,859	10	0.708918814	262,758,384.68		0.708918814	14,977,227.93	10	0.708918814	9,915,975.92
	348,407,867.43			11	0.684945714		11	0.684945714	13,602,507.10		0.684945714	9,005,814.26
93,572.40		888,937.81	$18,667,694	12	0.661783298	216,736,283.57		0.661783298	12,353,968.16	12	0.661783298	8,179,193.87
	307,853,166.97			13	0.639404153		13	0.639404153	11,220,027.83		0.639404153	7,428,445.79
82,680.56		785,465.34	$16,494,772	14			14	0.61778179	10,190,169.89		0.61778179	6,746,607.57
77,719.73		738,337.42	$15,505,086	15	0.596890619	162,365,618.59		0.596890619	9,254,840.26	15	0.596890619	6,127,353.71
	255,697,902.42			16	0.576705912		16	0.576705912	8,405,362.04		0.576705912	5,564,939.52
68,673.15		652,394.88	$13,700,292	17	0.557203779	133,927,276.02		0.557203779	7,633,854.73	17	0.557203779	5,054,147.54
	225,934,646.65			18	0.53836114		18	0.53836114	6,933,162.73		0.53836114	4,590,240.26
60,679.59		576,456.09	$12,105,578	19	0.52015569	110,469,916.26		0.52015569	6,296,785.23	19	0.52015569	4,168,913.70
	199,635,841.12			20	0.502565884		20	0.502565884	5,718,819.29		0.502565884	3,786,259.69
53,616.48		509,356.58	$10,696,488	21	0.485570903	91,121,112.39		0.485570903	5,193,903.41	21	0.485570903	3,438,728.54
	176,398,229.12			22	0.469150631		22	0.469150631	4,717,168.41		0.469150631	3,123,096.51
47,375.52		450,067.45	$9,451,417	23	0.453285634	75,161,251.46	23	0.453285634		23	0.453285634	
44,532.99		423,063.39	$8,884,331	24	0.437957134	68,262,389.93		0.437957134	3,890,956.23	24	0.437957134	2,576,086.07
	146,513,531.82			25	0.423146989		25	0.423146989	3,533,815.31		0.423146989	2,339,633.72
39,349.35		373,818.81	$7,850,195	26	0.408837671	56,306,236.21		0.408837671	3,209,455.46	26	0.408837671	2,124,884.74
	129,459,357.93			27	0.395012242		27	0.395012242	2,914,867.78		0.395012242	1,929,847.02
34,769.08		330,306.30		28	0.38165434		28	0.38165434	2,647,319.52		0.38165434	1,752,711.30
32,682.94		310,487.91	$6,520,246	29	0.368748155	42,181,205.48		0.368748155	2,404,328.71	29	0.368748155	1,591,834.33
	107,526,864.63			30	0.356278411		30	0.356278411	2,183,641.52		0.356278411	1,445,723.93
28,878.64		274,347.10	$5,761,289	31	0.344230348	34,793,167.41		0.344230348	1,983,210.54	31	0.344230348	1,313,024.55
	95,010,733.12			32	0.332589709		32	0.332589709	1,801,176.75		0.332589709	1,192,505.40
25,517.17		242,413.10	$5,090,675	33	0.321342714	28,699,146.35		0.321342714	1,635,851.34	33	0.321342714	1,083,048.39
	83,951,484.23			34	0.310476052		34	0.310476052	1,485,700.75		0.310476052	983,638.15
22,546.97				35	0.299976862		35	0.299976862	1,349,332.11		0.299976862	893,352.55
21,194.15		201,344.46	$4,228,234	36	0.289832717	21,499,656.58		0.289832717	1,225,480.43	36	0.289832717	811,354.04
	69,728,764.41			37	0.28003161		37	0.28003161	1,112,996.72		0.28003161	736,881.93
18,727.16		177,907.98	$3,736,067	38	0.270561942	17,733,994.36		0.270561942	1,010,837.68	38	0.270561942	669,245.48
	61,612,344.73			39	0.261412505		39	0.261412505	918,055.53		0.261412505	607,817.19
16,547.31		157,199.49	$3,301,189	40	0.252572468	14,627,886.19		0.252572468	833,789.51	40	0.252572468	552,027.17
	-			41	0.24403137		41	0.24403137	-		0.24403137	-
-		-	$0	42	0.235779102	-		0.235779102	-	42	0.235779102	-
	-			43	0.227805895		43	0.227805895	-		0.227805895	-
-		-	$0	44	0.220102314	-		0.220102314	-	44	0.220102314	-
	-			45	0.212659241		45	0.212659241	-		0.212659241	-
-		-	$0	46	0.205467866	-		0.205467866	-	46	0.205467866	-
	-			47	0.198519677		47	0.198519677	-		0.198519677	-

No Action Alternative

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500					PV of LOP Production		Discount Factor		Labor Earnings	Discount Factor	PV of LOP Labor
-	-	-	$0	48	0.191806451	-	48	0.191806451	-	48	0.191806451	-
-	-	-	$0	49	0.185320243	-	49	0.185320243	-	49	0.185320243	-
-	-	-	$0	50	0.179053375	-	50	0.179053375	-	50	0.179053375	-
-	-	-	$0	51	0.172998429	-	51	0.172998429	-	51	0.172998429	-
-	-	-	$0	52	0.167148241	-	52	0.167148241	-	52	0.167148241	-
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
3,366,000.00	$11,781,003,500	31,977,000.00	671,517,000.00			8,473,010,816			482,961,617			319,754,482


LOF PRODUCTION CURVES
No Action Alternative--533 Existing Wells
Thousands of MMCF
600
550
500
450
400
350
300
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Production Year Number
533 Existing Wells

Proposed Action - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
32,352.49	113,233,698.96	307,348.61	$6,454,321	1	0.966183575	109,404,540.06	1	0.966183575	6,236,058.78	1	0.966183575	4,128,708.53
48,572.61	170,004,151.68	461,439.84	$9,690,237	2	0.9335107	158,700,694.70	2	0.9335107	9,045,939.60	2	0.9335107	5,989,046.82
60,963.50	213,372,261.70	579,153.28	$12,162,219	3	0.901942706	192,449,555.03	3	0.901942706	10,969,624.64	3	0.901942706	7,262,661.31
71,356.23	249,746,815.70	677,884.21	$14,235,568	4	0.871442228	217,639,921.43	4	0.871442228	12,405,475.52	4	0.871442228	8,213,295.36
80,470.93	281,648,250.99	764,473.82	$16,053,950	5	0.841973167	237,140,269.82	5	0.841973167	13,516,995.38	5	0.841973167	8,949,199.50
88,678.67	310,375,362.32	842,447.41	$17,691,396	6	0.813500644	252,490,557.23	6	0.813500644	14,391,961.76	6	0.813500644	9,528,488.65
96,200.26	336,700,893.16	913,902.42	$19,191,951	7	0.785990961	264,643,858.48	7	0.785990961	15,084,699.93	7	0.785990961	9,987,129.93
103,179.55	361,128,432.70	980,205.75	$20,584,321	8	0.759411556	274,245,105.07	8	0.759411556	15,631,970.99	8	0.759411556	10,349,461.78
109,800.47	384,301,638.13	1,043,104.45	$21,905,193	9	0.733730972	281,974,014.56	9	0.733730972	16,072,518.83	9	0.733730972	10,641,135.36
116,051.09	406,178,814.52	1,102,485.35	$23,152,192	10	0.708918814	287,947,803.34	10	0.708918814	16,413,024.79	10	0.708918814	10,866,574.20
121,926.67	426,743,361.20	1,158,303.41	$24,324,372	11	0.684945714	292,296,036.11	11	0.684945714	16,660,874.06	11	0.684945714	11,030,667.81
127,449.72	446,074,035.64	1,210,772.38	$25,426,220	12	0.661783298	295,204,346.59	12	0.661783298	16,826,647.76	12	0.661783298	11,140,421.63
132,641.39	464,244,867.62	1,260,093.21	$26,461,957	13	0.639404153	296,840,096.34	13	0.639404153	16,919,885.49	13	0.639404153	11,202,151.56
137,521.56	481,325,449.17	1,306,454.79	$27,435,551	14	0.61778179	297,354,097.69	14	0.61778179	16,949,183.57	14	0.61778179	11,221,548.94
142,108.91	497,381,195.77	1,350,034.67	$28,350,728	15	0.596890619	296,882,169.64	15	0.596890619	16,922,283.67	15	0.596890619	11,203,739.32
146,421.03	512,473,597.36	1,390,999.76	$29,210,995	16	0.576705912	295,546,553.19	16	0.576705912	16,846,153.53	16	0.576705912	11,153,335.82
150,474.42	526,660,453.64	1,429,506.95	$30,019,646	17	0.557203779	293,457,195.25	17	0.557203779	16,727,060.13	17	0.557203779	11,074,487.63
154,284.60	539,996,098.50	1,465,703.70	$30,779,778	18	0.53836114	290,712,914.94	18	0.53836114	16,570,636.15	18	0.53836114	10,970,923.98
157,866.17	552,531,604.18	1,499,728.64	$31,494,301	19	0.52015569	287,402,458.03	19	0.52015569	16,381,940.11	19	0.52015569	10,845,993.96
161,232.85	564,314,979.23	1,531,712.09	$32,165,954	20	0.502565884	283,605,456.64	20	0.502565884	16,165,511.03	20	0.502565884	10,702,702.72
164,397.53	575,391,351.55	1,561,776.53	$32,797,307	21	0.485570903	279,393,298.06	21	0.485570903	15,925,417.99	21	0.485570903	10,543,744.28
167,372.33	585,803,141.74	1,590,037.10	$33,390,779	22	0.469150631	274,829,913.45	22	0.469150631	15,665,305.07	22	0.469150631	10,371,531.27
170,168.64	595,590,223.92	1,616,602.04	$33,948,643	23	0.453285634	269,972,492.00	23	0.453285634	15,388,432.04	23	0.453285634	10,188,221.90
172,797.17	604,790,080.81	1,641,573.08	$34,473,035	24	0.437957134	264,872,130.40	24	0.437957134	15,097,711.43	24	0.437957134	9,995,744.46
175,267.98	613,437,946.27	1,665,045.85	$34,965,963	25	0.423146989	259,574,420.07	25	0.423146989	14,795,741.94	25	0.423146989	9,795,819.46
177,590.55	621,566,939.83	1,687,110.27	$35,429,316	26	0.408837671	254,119,979.92	26	0.408837671	14,484,838.86	26	0.408837671	9,589,979.80
179,773.77	629,208,193.83	1,707,850.81	$35,864,867	27	0.395012242	248,544,939.52	27	0.395012242	14,167,061.55	27	0.395012242	9,379,588.93
181,825.99	636,390,972.54	1,727,346.93	$36,274,285	28	0.38165434	242,881,376.86	28	0.38165434	13,844,238.48	28	0.38165434	9,165,857.40
183,755.08	643,142,784.18	1,745,673.27	$36,659,139	29	0.368748155	237,157,715.05	29	0.368748155	13,517,989.76	29	0.368748155	8,949,857.85
185,568.42	649,489,487.10	1,762,900.04	$37,020,901	30	0.356278411	231,399,082.17	30	0.356278411	13,189,747.68	30	0.356278411	8,732,538.56
187,272.97	655,455,387.48	1,779,093.19	$37,360,957	31	0.344230348	225,627,636.40	31	0.344230348	12,860,775.27	31	0.344230348	8,514,735.74
188,875.24	661,063,333.91	1,794,314.76	$37,680,610	32	0.332589709	219,862,861.60	32	0.332589709	12,532,183.11	32	0.332589709	8,297,184.67
190,381.37	666,334,803.54	1,808,623.04	$37,981,084	33	0.321342714	214,121,833.96	33	0.321342714	12,204,944.54	33	0.321342714	8,080,529.77
191,797.14	671,289,985.03	1,822,072.82	$38,263,529	34	0.310476052	208,419,464.18	34	0.310476052	11,879,909.46	34	0.310476052	7,865,333.74
193,127.96	675,947,855.75	1,834,715.61	$38,529,028	35	0.299976862	202,768,716.41	35	0.299976862	11,557,816.84	35	0.299976862	7,652,085.82
194,378.93	680,326,254.41	1,846,599.83	$38,778,597	36	0.289832717	197,180,806.48	36	0.289832717	11,239,305.97	36	0.289832717	7,441,209.27
195,554.84	684,441,949.16	1,857,771.00	$39,013,191	37	0.28003161	191,665,381.13	37	0.28003161	10,924,926.72	37	0.28003161	7,233,068.15
196,660.20	688,310,702.53	1,868,271.91	$39,233,710	38	0.270561942	186,230,680.54	38	0.270561942	10,615,148.79	38	0.270561942	7,027,973.42
197,699.24	691,947,330.92	1,878,142.76	$39,440,998	39	0.261412505	180,883,684.81	39	0.261412505	10,310,370.03	39	0.261412505	6,826,188.50
198,675.93	695,365,761.39	1,887,421.35	$39,635,848	40	0.252572468	175,630,246.65	40	0.252572468	10,010,924.06	40	0.252572468	6,627,934.25
166,323.45	582,132,062.43	1,580,072.74	$33,181,528	41	0.24403137	142,058,484.85	41	0.24403137	8,097,333.64	41	0.24403137	5,361,003.10
150,103.32	525,361,609.71	1,425,981.51	$29,945,612	42	0.235779102	123,869,288.39	42	0.235779102	7,060,549.44	42	0.235779102	4,674,579.21
137,712.43	481,993,499.69	1,308,268.07	$27,473,629	43	0.227805895	109,800,960.74	43	0.227805895	6,258,654.76	43	0.227805895	4,143,668.66
127,319.70	445,618,945.69	1,209,537.14	$25,400,280	44	0.220102314	98,081,761.26	44	0.220102314	5,590,660.39	44	0.220102314	3,701,409.51
118,205.00	413,717,510.40	1,122,947.53	$23,581,898	45	0.212659241	87,980,851.71	45	0.212659241	5,014,908.55	45	0.212659241	3,320,221.38
109,997.26	384,990,399.07	1,044,973.94	$21,944,453	46	0.205467866	79,103,155.58	46	0.205467866	4,508,879.87	46	0.205467866	2,985,194.89
102,475.68	358,664,868.23	973,518.93	$20,443,897	47	0.198519677	71,202,033.76	47	0.198519677	4,058,515.92	47	0.198519677	2,687,022.35

Proposed Action - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
95,496.38	334,237,328.69	907,215.61	$19,051,528	48	0.191806451	64,108,875.85	48	0.191806451	3,654,205.92	48	0.191806451	2,419,340.76
88,875.46	311,064,123.26	844,316.91	$17,730,655	49	0.185320243	57,646,478.80	49	0.185320243	3,285,849.29	49	0.185320243	2,175,462.82
82,624.84	289,186,946.87	784,936.00	$16,483,656	50	0.179053375	51,779,898.71	50	0.179053375	2,951,454.23	50	0.179053375	1,954,069.82
76,749.26	268,622,400.19	729,117.94	$15,311,477	51	0.172998429	46,471,253.36	51	0.172998429	2,648,861.44	51	0.172998429	1,753,732.16
71,226.21	249,291,725.75	676,648.97	$14,209,628	52	0.167148241	41,668,673.47	52	0.167148241	2,375,114.39	52	0.167148241	1,572,492.40
66,034.54	231,120,893.77	627,328.14	$13,173,891	53	0.161495885	37,325,073.30	53	0.161495885	2,127,529.18	53	0.161495885	1,408,573.62
61,154.37	214,040,312.22	580,966.56	$12,200,298	54	0.156034672	33,397,709.82	54	0.156034672	1,903,669.46	54	0.156034672	1,260,362.77
56,567.02	197,984,565.62	537,386.68	$11,285,120	55	0.150758137	29,847,784.23	55	0.150758137	1,701,323.70	55	0.150758137	1,126,395.68
52,254.90	182,892,164.03	496,421.59	$10,424,853	56	0.145660036	26,640,079.11	56	0.145660036	1,518,484.51	56	0.145660036	1,005,343.31
48,201.52	168,705,307.75	457,914.41	$9,616,203	57	0.140734334	23,742,629.10	57	0.140734334	1,353,329.86	57	0.140734334	895,999.34
44,391.33	155,369,662.89	421,717.66	$8,856,071	58	0.135975202	21,126,421.26	58	0.135975202	1,204,206.01	58	0.135975202	797,268.89
40,809.76	142,834,157.21	387,692.71	$8,141,547	59	0.131377007	18,765,124.01	59	0.131377007	1,069,612.07	59	0.131377007	708,158.25
37,443.08	131,050,782.16	355,709.27	$7,469,895	60	0.126934306	16,634,840.07	60	0.126934306	948,185.88	60	0.126934306	627,765.59
34,278.40	119,974,409.84	325,644.83	$6,838,541	61	0.122641841	14,713,882.54	61	0.122641841	838,691.31	61	0.122641841	555,272.50
31,303.61	109,562,619.65	297,384.25	$6,245,069	62	0.118494533	12,982,571.42	62	0.118494533	740,006.57	62	0.118494533	489,936.28
28,507.30	99,775,537.47	270,819.32	$5,687,206	63	0.114487471	11,423,048.98	63	0.114487471	651,113.79	63	0.114487471	431,083.02
25,878.77	90,575,680.58	245,848.28	$5,162,814	64	0.110615914	10,019,111.72	64	0.110615914	571,089.37	64	0.110615914	378,101.24
23,407.95	81,927,815.12	222,375.50	$4,669,885	65	0.106875279	8,756,058.14	65	0.106875279	499,095.31	65	0.106875279	330,436.12
21,085.38	73,798,821.56	200,311.09	$4,206,533	66	0.10326114	7,620,550.42	66	0.10326114	434,371.37	66	0.10326114	287,584.33
18,902.16	66,157,567.56	179,570.54	$3,770,981	67	0.099769217	6,600,488.71	67	0.099769217	376,227.86	67	0.099769217	249,089.24
16,849.94	58,974,788.85	160,074.43	$3,361,563	68	0.096395379	5,684,897.11	68	0.096395379	324,039.14	68	0.096395379	214,536.65
14,920.85	52,222,977.21	141,748.08	$2,976,710	69	0.093135632	4,863,819.97	69	0.093135632	277,237.74	69	0.093135632	183,550.84
13,107.51	45,876,274.29	124,521.32	$2,614,948	70	0.089986118	4,128,227.81	70	0.089986118	235,308.99	70	0.089986118	155,791.06
11,402.96	39,910,373.91	108,328.16	$2,274,891	71	0.086943109	3,469,931.98	71	0.086943109	197,786.12	71	0.086943109	130,948.29
9,800.69	34,302,427.48	93,106.59	$1,955,238	72	0.084003004	2,881,506.94	72	0.084003004	164,245.90	72	0.084003004	108,742.31
8,294.56	29,030,957.85	78,798.31	$1,654,765	73	0.081162322	2,356,219.96	73	0.081162322	134,304.54	73	0.081162322	88,919.03
6,878.79	24,075,776.36	65,348.54	$1,372,319	74	0.078417703	1,887,967.07	74	0.078417703	107,614.12	74	0.078417703	71,248.10
5,547.97	19,417,905.64	52,705.74	$1,106,821	75	0.075765896	1,471,215.03	75	0.075765896	83,859.26	75	0.075765896	55,520.71
4,297.00	15,039,506.98	40,821.52	$857,252	76	0.073203765	1,100,948.53	76	0.073203765	62,754.07	76	0.073203765	41,547.60
3,121.09	10,923,812.23	29,650.35	$622,657	77	0.070728275	772,622.40	77	0.070728275	44,039.48	77	0.070728275	29,157.22
2,015.73	7,055,058.86	19,149.45	$402,138	78	0.068336498	482,118.01	78	0.068336498	27,480.73	78	0.068336498	18,194.17
976.69	3,418,430.47	9,278.60	$194,851	79	0.066025601	225,703.93	79	0.066025601	12,865.12	79	0.066025601	8,517.61
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,947,037.27	$27,814,633,956	75,496,854.09	1,585,433,935.97			11,053,766,572			630,064,695			417,147,043

Proposed Action - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
61,623.80	215,683,305.70	585,426.12	$12,293,948	1	0.966183575	208,389,667.34	1	0.966183575	11,878,211.04	1	0.966183575	7,864,209.27
92,519.30	323,817,536.22	878,933.31	$18,457,600	2	0.9335107	302,287,135.03	2	0.9335107	17,230,366.70	2	0.9335107	11,407,711.90
116,121.00	406,423,486.73	1,103,149.46	$23,166,139	3	0.901942706	366,570,699.27	3	0.901942706	20,894,529.86	3	0.901942706	13,833,645.05
135,916.68	475,708,373.83	1,291,208.44	$27,115,377	4	0.871442228	414,552,365.02	4	0.871442228	23,629,484.81	4	0.871442228	15,644,377.15
153,278.01	536,473,032.08	1,456,141.09	$30,578,963	5	0.841973167	451,695,897.75	5	0.841973167	25,746,666.17	5	0.841973167	17,046,099.79
168,911.82	591,191,357.03	1,604,662.25	$33,697,907	6	0.813500644	480,934,549.85	6	0.813500644	27,413,269.34	6	0.813500644	18,149,508.04
183,238.64	641,335,241.47	1,740,767.08	$36,556,109	7	0.785990961	504,083,702.56	7	0.785990961	28,732,771.05	7	0.785990961	19,023,110.77
196,532.54	687,863,903.22	1,867,059.17	$39,208,242	8	0.759411556	522,371,797.21	8	0.759411556	29,775,192.44	8	0.759411556	19,713,266.88
209,143.82	732,003,356.38	1,986,866.25	$41,724,191	9	0.733730972	537,093,534.32	9	0.733730972	30,614,331.46	9	0.733730972	20,268,835.80
221,049.77	773,674,181.99	2,099,972.78	$44,099,428	10	0.708918814	548,472,183.29	10	0.708918814	31,262,914.45	10	0.708918814	20,698,243.25
232,241.36	812,844,759.72	2,206,292.92	$46,332,151	11	0.684945714	556,754,534.10	11	0.684945714	31,735,008.44	11	0.684945714	21,010,802.61
242,761.46	849,665,103.87	2,306,233.85	$48,430,911	12	0.661783298	562,294,174.88	12	0.661783298	32,050,767.97	12	0.661783298	21,219,857.57
252,650.35	884,276,223.58	2,400,178.32	$50,403,745	13	0.639404153	565,409,889.70	13	0.639404153	32,228,363.71	13	0.639404153	21,337,438.42
261,945.91	916,810,675.11	2,488,486.12	$52,258,208	14	0.61778179	566,388,940.21	14	0.61778179	32,284,169.59	14	0.61778179	21,374,385.83
270,683.73	947,393,059.46	2,571,495.45	$54,001,404	15	0.596890619	565,490,029.34	15	0.596890619	32,232,931.67	15	0.596890619	21,340,462.73
278,897.29	976,140,500.32	2,649,524.22	$55,640,009	16	0.576705912	562,945,997.20	16	0.576705912	32,087,921.84	16	0.576705912	21,244,456.04
286,618.03	1,003,163,092.44	2,722,871.25	$57,180,296	17	0.557203779	558,966,266.49	17	0.557203779	31,861,077.19	17	0.557203779	21,094,268.96
293,875.52	1,028,564,328.94	2,791,817.46	$58,628,167	18	0.53836114	553,739,064.23	18	0.53836114	31,563,126.66	18	0.53836114	20,897,004.81
300,697.57	1,052,441,490.31	2,856,626.90	$59,989,165	19	0.52015569	547,433,429.99	19	0.52015569	31,203,705.51	19	0.52015569	20,659,042.78
307,110.29	1,074,886,021.46	2,917,547.77	$61,268,503	20	0.502565884	540,201,044.04	20	0.502565884	30,791,459.51	20	0.502565884	20,386,107.00
313,138.25	1,095,983,880.30	2,974,813.39	$62,471,081	21	0.485570903	532,177,882.25	21	0.485570903	30,334,139.29	21	0.485570903	20,083,328.92
257,180.73	900,132,562.32	2,443,216.95	$51,307,556	22	0.469150631	422,297,759.38	22	0.469150631	24,070,972.28	22	0.469150631	15,936,672.84
231,611.54	810,640,399.10	2,200,309.65	$46,206,503	23	0.453285634	367,451,646.91	23	0.453285634	20,944,743.87	23	0.453285634	13,866,890.25
213,016.57	745,557,991.17	2,023,657.40	$42,496,805	24	0.437957134	326,522,440.97	24	0.437957134	18,611,779.14	24	0.437957134	12,322,303.88
197,927.21	692,745,234.08	1,880,308.49	$39,486,478	25	0.423146989	293,133,060.13	25	0.423146989	16,708,584.43	25	0.423146989	11,062,255.42
184,989.82	647,464,378.09	1,757,403.31	$36,905,470	26	0.408837671	264,707,828.26	26	0.408837671	15,088,346.21	26	0.408837671	9,989,544.02
173,514.52	607,300,827.34	1,648,387.96	$34,616,147	27	0.395012242	239,891,261.57	27	0.395012242	13,673,801.91	27	0.395012242	9,053,016.43
163,096.69	570,838,430.58	1,549,418.60	$32,537,791	28	0.38165434	217,862,964.70	28	0.38165434	12,418,188.99	28	0.38165434	8,221,712.56
153,477.25	537,170,366.59	1,458,033.85	$30,618,711	29	0.368748155	198,080,581.58	29	0.368748155	11,290,593.15	29	0.368748155	7,475,164.99
144,319.96	505,119,875.25	1,371,039.66	$28,791,833	30	0.356278411	179,963,306.32	30	0.356278411	10,257,908.46	30	0.356278411	6,791,455.25
135,660.76	474,812,673.09	1,288,777.26	$27,064,322	31	0.344230348	163,444,931.89	31	0.344230348	9,316,361.12	31	0.344230348	6,168,084.84
127,521.11	446,323,901.52	1,211,450.59	$25,440,462	32	0.332589709	148,442,736.35	32	0.332589709	8,461,235.97	32	0.332589709	5,601,931.98
119,869.84	419,544,455.15	1,138,763.52	$23,914,034	33	0.321342714	134,817,553.71	33	0.321342714	7,684,600.56	33	0.321342714	5,087,744.84
112,677.65	394,371,779.42	1,070,437.69	$22,479,191	34	0.310476052	122,442,993.02	34	0.310476052	6,979,250.60	34	0.310476052	4,620,753.67
105,916.99	370,709,465.45	1,006,211.41	$21,130,440	35	0.299976862	111,204,262.03	35	0.299976862	6,338,642.94	35	0.299976862	4,196,626.44
99,561.97	348,466,890.76	945,838.70	$19,862,613	36	0.289832717	100,997,105.59	36	0.289832717	5,756,835.02	36	0.289832717	3,811,428.77
93,588.25	327,558,871.00	889,088.36	$18,670,856	37	0.28003161	91,726,838.09	37	0.28003161	5,228,429.77	37	0.28003161	3,461,587.42
87,972.95	307,905,335.31	835,743.05	$17,550,604	38	0.270561942	83,307,465.55	38	0.270561942	4,748,525.54	38	0.270561942	3,143,857.13
82,694.57	289,431,012.25	785,598.46	$16,497,568	39	0.261412505	75,660,885.82	39	0.261412505	4,312,670.49	39	0.261412505	2,855,290.51
77,732.90	272,065,149.11	738,462.55	$15,507,713	40	0.252572468	68,716,166.22	40	0.252572468	3,916,821.47	40	0.252572468	2,593,210.68
71,320.18	249,620,617.96	677,541.68	$14,228,375	41	0.24403137	60,915,261.44	41	0.24403137	3,472,169.90	41	0.24403137	2,298,820.14
65,292.22	228,522,759.12	620,276.06	$13,025,797	42	0.235779102	53,880,890.86	42	0.235779102	3,071,210.78	42	0.235779102	2,033,357.06
59,625.93	208,690,771.41	566,446.38	$11,895,374	43	0.227805895	47,540,988.03	43	0.227805895	2,709,836.32	43	0.227805895	1,794,101.81
54,299.63	190,048,704.10	515,846.48	$10,832,776	44	0.220102314	41,830,159.61	44	0.220102314	2,384,319.10	44	0.220102314	1,578,586.56
49,292.90	172,525,161.53	468,282.58	$9,833,934	45	0.212659241	36,689,069.89	45	0.212659241	2,091,276.98	45	0.212659241	1,384,572.12
44,586.58	156,053,031.52	423,572.51	$8,895,023	46	0.205467866	32,063,883.31	46	0.205467866	1,827,641.35	46	0.205467866	1,210,026.83
40,162.64	140,569,229.26	381,545.05	$8,012,446	47	0.198519677	27,905,757.98	47	0.198519677	1,590,628.20	47	0.198519677	1,053,107.49
36,004.13	126,014,455.05	342,039.24	$7,182,824	48	0.191806451	24,170,385.42	48	0.191806451	1,377,711.97	48	0.191806451	912,142.00

Proposed Action - 150 Wells/Year Development Rate

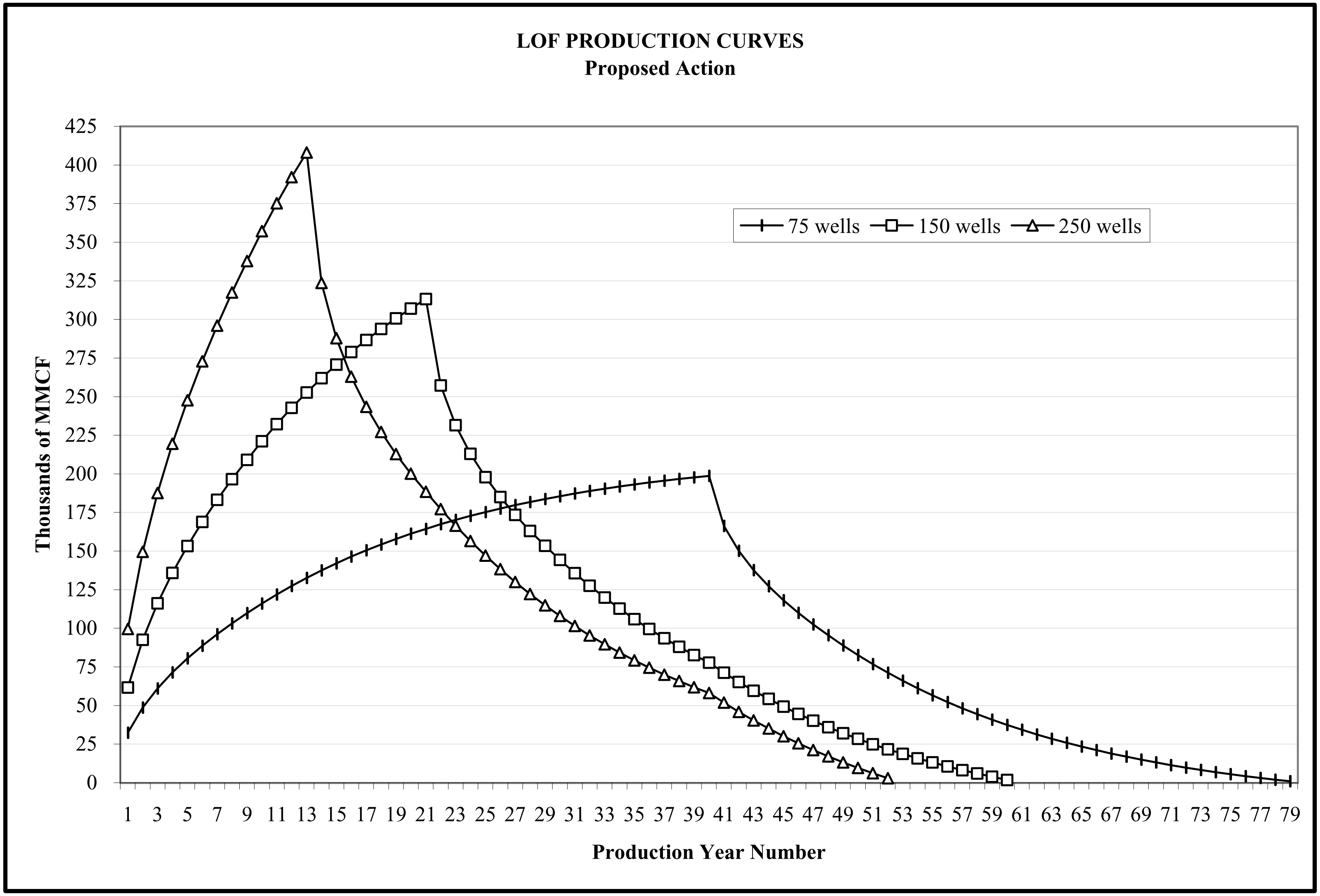
MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl	NG Production	Discount Factor	Natural Gas	Condensate	Discount Factor	Condensate	Labor Earnings	Discount Factor	Labor
Total Production for Year	$3,500		$21			PV of LOP Production			PV of LOP Production			PV of LOP Labor
32,095.13	112,332,967.38	304,903.77	$6,402,979	49	0.185320243	20,817,572.77	49	0.185320243	1,186,601.65	49	0.185320243	785,613.56
28,420.68	99,472,369.62	269,996.43	$5,669,925	50	0.179053375	17,810,863.45	50	0.179053375	1,015,219.22	50	0.179053375	672,146.37
24,966.69	87,383,407.80	237,183.54	$4,980,854	51	0.172998429	15,117,192.31	51	0.172998429	861,679.96	51	0.172998429	570,492.60
21,719.94	76,019,784.35	206,339.41	$4,333,128	52	0.167148241	12,706,573.24	52	0.167148241	724,274.67	52	0.167148241	479,520.66
18,667.99	65,337,978.19	177,345.94	$3,724,265	53	0.161495885	10,551,814.62	53	0.161495885	601,453.43	53	0.161495885	398,204.38
15,799.17	55,297,080.40	150,092.08	$3,151,934	54	0.156034672	8,628,261.78	54	0.156034672	491,810.92	54	0.156034672	325,613.34
13,102.47	45,858,636.42	124,473.44	$2,613,942	55	0.150758137	6,913,562.58	55	0.150758137	394,073.07	55	0.150758137	260,904.02
10,567.57	36,986,498.87	100,391.93	$2,108,230	56	0.145660036	5,387,454.74	56	0.145660036	307,084.92	56	0.145660036	203,311.77
8,184.77	28,646,689.20	77,755.30	$1,632,861	57	0.140734334	4,031,572.72	57	0.140734334	229,799.65	57	0.140734334	152,143.49
5,944.93	20,807,268.10	56,476.87	$1,186,014	58	0.135975202	2,829,272.48	58	0.135975202	161,268.53	58	0.135975202	106,771.08
3,839.49	13,438,211.68	36,475.15	$765,978	59	0.131377007	1,765,472.02	59	0.131377007	100,631.91	59	0.131377007	66,625.38
1,860.37	6,511,298.24	17,673.52	$371,144	60	0.126934306	826,507.12	60	0.126934306	47,110.91	60	0.126934306	31,190.73
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,947,039.84	$27,814,642,928	75,496,878.45	1,585,434,447.39			14,491,307,089			826,004,504			546,872,947

Proposed Action - 250 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	NG Production	Discount Factor	PV of LOP Production	Condensate	Discount Factor	PV of LOP Production	Labor Earnings	Discount Factor	PV of LOP Labor
99,548.36	348,419,248.68	945,709.39	$19,859,897	1	0.966183575	336,636,955.25	1	0.966183575	19,188,306.45	1	0.966183575	12,704,005.42
149,457.57	523,101,509.02	1,419,846.95	$29,816,786	2	0.9335107	488,320,856.05	2	0.9335107	27,834,288.79	2	0.9335107	18,428,252.47
187,584.25	656,544,860.69	1,782,050.34	$37,423,057	3	0.901942706	592,165,848.04	3	0.901942706	33,753,453.34	3	0.901942706	22,347,154.77
219,562.60	768,469,092.52	2,085,844.68	$43,802,738	4	0.871442228	669,676,417.90	4	0.871442228	38,171,555.82	4	0.871442228	25,272,248.66
247,608.45	866,629,571.40	2,352,280.27	$49,397,886	5	0.841973167	729,678,844.72	5	0.841973167	41,591,694.15	5	0.841973167	27,536,620.24
272,863.62	955,022,679.10	2,592,204.41	$54,436,293	6	0.813500644	776,911,564.78	6	0.813500644	44,283,959.19	6	0.813500644	29,319,088.63
296,007.47	1,036,026,141.49	2,812,070.96	$59,053,490	7	0.785990961	814,307,182.24	7	0.785990961	46,415,509.39	7	0.785990961	30,730,324.44
317,482.71	1,111,189,498.79	3,016,085.78	$63,337,801	8	0.759411556	843,850,146.52	8	0.759411556	48,099,458.35	8	0.759411556	31,845,216.83
337,855.22	1,182,493,279.38	3,209,624.62	$67,402,117	9	0.733730972	867,631,943.48	9	0.733730972	49,455,020.78	9	0.733730972	32,742,694.28
357,088.34	1,249,809,188.25	3,392,339.23	$71,239,124	10	0.708918814	886,013,247.10	10	0.708918814	50,502,755.08	10	0.708918814	33,436,367.92
375,167.47	1,313,086,145.26	3,564,090.97	$74,845,910	11	0.684945714	899,392,726.96	11	0.684945714	51,265,385.44	11	0.684945714	33,941,282.73
392,161.85	1,372,566,486.61	3,725,537.61	$78,236,290	12	0.661783298	908,341,576.63	12	0.661783298	51,775,469.87	12	0.661783298	34,278,994.42
408,136.57	1,428,478,001.35	3,877,297.43	$81,423,246	13	0.639404153	913,374,766.44	13	0.639404153	52,062,361.69	13	0.639404153	34,468,936.94
323,604.45	1,132,615,574.91	3,074,242.27	$64,559,088	14	0.61778179	699,709,277.56	14	0.61778179	39,883,428.82	14	0.61778179	26,405,628.72
287,810.49	1,007,336,727.34	2,734,199.69	$57,418,193	15	0.596890619	601,269,842.35	15	0.596890619	34,272,381.01	15	0.596890619	22,690,721.31
262,952.17	920,332,582.98	2,498,045.58	$52,458,957	16	0.576705912	530,761,241.35	16	0.576705912	30,253,390.76	16	0.576705912	20,029,867.73
243,446.06	852,061,202.31	2,312,737.55	$48,567,489	17	0.557203779	474,771,722.24	17	0.557203779	27,061,988.17	17	0.557203779	17,916,935.25
227,124.12	794,934,403.39	2,157,679.09	$45,311,261	18	0.53836114	427,961,791.28	18	0.53836114	24,393,822.10	18	0.53836114	16,150,422.08
212,889.42	745,112,953.33	2,022,449.44	$42,471,438	19	0.52015569	387,574,742.66	19	0.52015569	22,091,760.33	19	0.52015569	14,626,295.64
200,104.81	700,366,848.25	1,900,995.73	$39,920,910	20	0.502565884	351,980,484.52	20	0.502565884	20,062,887.62	20	0.502565884	13,283,039.52
188,367.26	659,285,406.11	1,789,488.96	$37,579,268	21	0.485570903	320,129,809.87	21	0.485570903	18,247,399.16	21	0.485570903	12,081,058.76
177,148.18	620,018,626.42	1,682,907.70	$35,341,062	22	0.469150631	290,882,129.67	22	0.469150631	16,580,281.39	22	0.469150631	10,977,309.81
166,519.28	582,817,496.55	1,581,933.20	$33,220,597	23	0.453285634	264,182,798.19	23	0.453285634	15,058,419.50	23	0.453285634	9,969,730.44
156,528.12	547,848,430.68	1,487,017.17	$31,227,361	24	0.437957134	239,934,128.51	24	0.437957134	13,676,245.32	24	0.437957134	9,054,634.14
147,136.43	514,977,506.98	1,397,796.09	$29,353,718	25	0.423146989	217,911,181.62	25	0.423146989	12,420,937.35	25	0.423146989	8,223,532.17
138,308.24	484,078,844.91	1,313,928.29	$27,592,494	26	0.408837671	197,909,667.43	26	0.408837671	11,280,851.04	26	0.408837671	7,468,715.03
130,009.74	455,034,104.32	1,235,092.57	$25,936,944	27	0.395012242	179,744,041.88	27	0.395012242	10,245,410.39	27	0.395012242	6,783,180.65
122,209.16	427,732,048.17	1,160,986.99	$24,380,727	28	0.38165434	163,245,792.71	28	0.38165434	9,305,010.18	28	0.38165434	6,160,569.73
114,876.60	402,068,115.03	1,091,327.74	$22,917,883	29	0.368748155	148,261,875.59	29	0.368748155	8,450,926.91	29	0.368748155	5,595,106.66
107,984.01	377,944,021.47	1,025,848.06	$21,542,809	30	0.356278411	134,653,295.27	30	0.356278411	7,675,237.83	30	0.356278411	5,081,546.06
101,504.96	355,267,372.58	964,297.15	$20,250,240	31	0.344230348	122,293,811.44	31	0.344230348	6,970,747.25	31	0.344230348	4,615,123.86
95,414.66	333,951,324.35	906,439.31	$19,035,225	32	0.332589709	111,068,773.65	32	0.332589709	6,330,920.10	32	0.332589709	4,191,513.38
89,689.78	313,914,239.86	852,052.94	$17,893,112	33	0.321342714	100,874,053.68	33	0.321342714	5,749,821.06	33	0.321342714	3,806,785.04
84,308.39	295,079,381.25	800,929.75	$16,819,525	34	0.310476052	91,615,081.26	34	0.310476052	5,222,059.63	34	0.310476052	3,457,369.94
79,249.89	277,374,613.86	752,873.95	$15,810,353	35	0.299976862	83,205,966.17	35	0.299976862	4,742,740.07	35	0.299976862	3,140,026.75
74,494.90	260,732,134.95	707,701.51	$14,861,732	36	0.289832717	75,568,702.97	36	0.289832717	4,307,416.07	36	0.289832717	2,851,811.71
70,025.20	245,088,205.91	665,239.42	$13,970,028	37	0.28003161	68,632,444.95	37	0.28003161	3,912,049.36	37	0.28003161	2,590,051.21
65,823.69	230,382,913.59	625,325.05	$13,131,826	38	0.270561942	62,332,848.56	38	0.270561942	3,552,972.37	38	0.270561942	2,352,317.04
61,874.27	216,559,939.38	587,805.55	$12,343,917	39	0.261412505	56,611,476.14	39	0.261412505	3,226,854.14	39	0.261412505	2,136,403.89
58,161.81	203,566,342.84	552,537.22	$11,603,282	40	0.252572468	51,415,253.65	40	0.252572468	2,930,669.46	40	0.252572468	1,940,308.84
51,847.14	181,464,986.22	492,547.82	$10,343,504	41	0.24403137	44,283,149.24	41	0.24403137	2,524,139.51	41	0.24403137	1,671,157.49
45,911.35	160,689,712.06	436,157.79	$9,159,314	42	0.235779102	37,887,275.96	42	0.235779102	2,159,574.73	42	0.235779102	1,429,790.02
40,331.70	141,160,954.45	383,151.16	$8,046,174	43	0.227805895	32,157,297.62	43	0.227805895	1,832,965.96	43	0.227805895	1,213,552.10
35,086.84	122,803,923.39	333,324.93	$6,999,824	44	0.220102314	27,029,427.75	44	0.220102314	1,540,677.38	44	0.220102314	1,020,036.54
30,156.66	105,548,313.98	286,488.28	$6,016,254	45	0.212659241	22,445,824.33	45	0.212659241	1,279,411.99	45	0.212659241	847,060.52
25,522.30	89,328,041.16	242,461.83	$5,091,698	46	0.205467866	18,354,041.96	46	0.205467866	1,046,180.39	46	0.205467866	692,644.84
21,166.00	74,080,984.60	201,076.96	$4,222,616	47	0.198519677	14,706,533.13	47	0.198519677	838,272.39	47	0.198519677	554,995.15

Proposed Action - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
17,071.07	59,748,751.10	162,175.18	$3,405,679	48	0.191806451	11,460,195.91	48	0.191806451	653,231.17	48	0.191806451	432,484.87
13,221.84	46,276,451.01	125,607.51	$2,637,758	49	0.185320243	8,575,963.13	49	0.185320243	488,829.90	49	0.185320243	323,639.70
9,603.57	33,612,488.91	91,233.90	$1,915,912	50	0.179053375	6,018,429.56	50	0.179053375	343,050.49	50	0.179053375	227,123.49
6,202.39	21,708,363.57	58,922.70	$1,237,377	51	0.172998429	3,755,512.81	51	0.172998429	214,064.23	51	0.172998429	141,725.54
3,005.28	10,518,485.12	28,550.17	$599,554	52	0.167148241	1,758,146.29	52	0.167148241	100,214.34	52	0.167148241	66,348.92
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,947,216.72	$27,815,262,020	75,498,558.84	1,585,469,735.63			16,409,236,109			935,326,458			619,251,752


LOF PRODUCTION CURVES
Proposed Action
Thousands of MMCF
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
75 wells
150 wells
250 wells
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79
Production Year Number

Alternative A - 75 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	NG Production	Discount Factor	PV of LOP Production	Condensate	Discount Factor	PV of LOP Production	Labor Earnings	Discount Factor	PV of LOP Labor
31,754.86	111,142,012.71	301,671.18	$6,335,095	1	0.966183575	107,383,587.15	1	0.966183575	6,120,864.47	1	0.966183575	4,052,441.81
47,695.65	166,934,765.94	453,108.65	$9,515,282	2	0.9335107	155,835,390.27	2	0.9335107	8,882,617.25	2	0.9335107	5,880,915.96
59,855.47	209,494,157.81	568,627.00	$11,941,167	3	0.901942706	188,951,727.52	3	0.901942706	10,770,248.47	3	0.901942706	7,130,660.29
70,048.30	245,169,044.01	665,458.83	$13,974,636	4	0.871442228	213,650,657.88	4	0.871442228	12,178,087.50	4	0.871442228	8,062,748.53
78,984.72	276,446,533.41	750,354.88	$15,757,452	5	0.841973167	232,760,563.20	5	0.841973167	13,267,352.10	5	0.841973167	8,783,918.13
87,030.25	304,605,884.36	826,787.40	$17,362,535	6	0.813500644	247,797,083.18	6	0.813500644	14,124,433.74	6	0.813500644	9,351,366.33
94,402.11	330,407,377.85	896,820.03	$18,833,221	7	0.785990961	259,697,212.33	7	0.785990961	14,802,741.10	7	0.785990961	9,800,453.40
101,241.75	354,346,114.42	961,796.60	$20,197,729	8	0.759411556	269,094,534.19	8	0.759411556	15,338,388.45	8	0.759411556	10,155,089.53
107,740.56	377,091,964.68	1,023,535.33	$21,494,242	9	0.733730972	276,684,053.85	9	0.733730972	15,770,991.07	9	0.733730972	10,441,502.82
113,879.34	398,577,678.94	1,081,853.70	$22,718,928	10	0.708918814	282,559,215.32	10	0.708918814	16,105,875.27	10	0.708918814	10,663,219.67
119,649.79	418,774,251.42	1,136,672.97	$23,870,132	11	0.684945714	286,837,628.53	11	0.684945714	16,349,744.83	11	0.684945714	10,824,678.43
125,074.01	437,759,030.53	1,188,203.08	$24,952,265	12	0.661783298	289,701,615.08	12	0.661783298	16,512,992.06	12	0.661783298	10,932,759.55
130,172.78	455,604,721.22	1,236,641.39	$25,969,469	13	0.639404153	291,315,550.85	13	0.639404153	16,604,986.40	13	0.639404153	10,993,666.26
134,965.62	472,379,670.21	1,282,173.39	$26,925,641	14	0.61778179	291,827,558.35	14	0.61778179	16,634,170.83	14	0.61778179	11,012,988.40
139,470.89	488,148,122.10	1,324,973.47	$27,824,443	15	0.596890619	291,371,034.58	15	0.596890619	16,608,148.97	15	0.596890619	10,995,760.10
143,705.85	502,970,466.67	1,365,205.55	$28,669,317	16	0.576705912	290,066,041.55	16	0.576705912	16,533,764.37	16	0.576705912	10,946,512.28
147,686.71	516,903,469.22	1,403,023.70	$29,463,498	17	0.557203779	288,020,566.65	17	0.557203779	16,417,172.30	17	0.557203779	10,869,320.14
151,428.71	530,000,491.52	1,438,572.76	$30,210,028	18	0.53836114	285,331,668.58	18	0.53836114	16,263,905.11	18	0.53836114	10,767,846.51
154,946.20	542,311,692.01	1,471,988.88	$30,911,766	19	0.52015569	282,086,512.56	19	0.52015569	16,078,931.22	19	0.52015569	10,645,380.81
158,252.63	553,884,219.80	1,503,400.03	$31,571,401	20	0.502565884	278,363,312.80	20	0.502565884	15,866,708.83	20	0.502565884	10,504,874.70
161,360.68	564,762,395.47	1,532,926.50	$32,191,457	21	0.485570903	274,232,186.26	21	0.485570903	15,631,234.62	21	0.485570903	10,348,974.24
164,282.25	574,987,880.61	1,560,681.39	$32,774,309	22	0.469150631	269,755,926.87	22	0.469150631	15,376,087.83	22	0.469150631	10,180,049.17
167,028.52	584,599,836.32	1,586,770.98	$33,322,191	23	0.453285634	264,990,707.20	23	0.453285634	15,104,470.31	23	0.453285634	10,000,219.31
169,610.02	593,635,074.29	1,611,295.20	$33,837,199	24	0.437957134	259,986,715.71	24	0.437957134	14,819,242.80	24	0.437957134	9,811,378.68
172,036.63	602,128,197.96	1,634,347.97	$34,321,307	25	0.423146989	254,788,734.12	25	0.423146989	14,522,957.84	25	0.423146989	9,615,217.25
174,317.64	610,111,734.25	1,656,017.56	$34,776,369	26	0.408837671	249,436,660.35	26	0.408837671	14,217,889.64	26	0.408837671	9,413,240.69
176,461.79	617,616,258.57	1,676,386.99	$35,204,127	27	0.395012242	243,965,983.19	27	0.395012242	13,906,061.04	27	0.395012242	9,206,788.27
178,477.29	624,670,511.66	1,695,534.25	$35,606,219	28	0.38165434	238,408,212.09	28	0.38165434	13,589,268.09	28	0.38165434	8,997,049.11
180,371.86	631,301,509.14	1,713,532.67	$35,984,186	29	0.368748155	232,791,266.73	29	0.368748155	13,269,102.20	29	0.368748155	8,785,076.82
182,152.76	637,534,646.89	1,730,451.18	$36,339,475	30	0.356278411	227,139,830.70	30	0.356278411	12,946,970.35	30	0.356278411	8,571,802.93
183,826.80	643,393,796.14	1,746,354.59	$36,673,446	31	0.344230348	221,475,670.61	31	0.344230348	12,624,113.22	31	0.344230348	8,358,048.86
185,400.40	648,901,396.65	1,761,303.79	$36,987,380	32	0.332589709	215,817,926.43	32	0.332589709	12,301,621.81	32	0.332589709	8,144,536.91
186,879.58	654,078,541.29	1,775,356.04	$37,282,477	33	0.321342714	210,183,373.38	33	0.321342714	11,980,452.28	33	0.321342714	7,931,900.14
188,270.02	658,945,057.37	1,788,565.16	$37,559,868	34	0.310476052	204,586,659.78	34	0.310476052	11,661,439.61	34	0.310476052	7,720,691.37
189,577.02	663,519,582.67	1,800,981.72	$37,820,616	35	0.299976862	199,040,522.06	35	0.299976862	11,345,309.76	35	0.299976862	7,511,391.22
190,805.61	667,819,636.67	1,812,653.30	$38,065,719	36	0.289832717	193,555,979.48	36	0.289832717	11,032,690.83	36	0.289832717	7,304,415.55
191,960.48	671,861,687.41	1,823,624.58	$38,296,116	37	0.28003161	188,142,510.17	37	0.28003161	10,724,123.08	37	0.28003161	7,100,122.05
193,046.06	675,661,215.45	1,833,937.58	$38,512,689	38	0.270561942	182,808,210.75	38	0.270561942	10,420,068.01	38	0.270561942	6,898,816.26
194,066.51	679,232,771.92	1,843,631.81	$38,716,268	39	0.261412505	177,559,940.10	39	0.261412505	10,120,916.59	39	0.261412505	6,700,757.02
195,025.72	682,590,034.84	1,852,744.38	$38,907,632	40	0.252572468	172,403,449.86	40	0.252572468	9,826,996.64	40	0.252572468	6,506,161.39
195,025.72	682,590,034.84	1,852,744.38	$38,907,632	41	0.24403137	166,573,381.51	41	0.24403137	9,494,682.75	41	0.24403137	6,286,146.27
195,025.72	682,590,034.84	1,852,744.38	$38,907,632	42	0.235779102	160,940,465.23	42	0.235779102	9,173,606.52	42	0.235779102	6,073,571.28
163,270.86	571,448,022.13	1,551,073.20	$32,572,537	43	0.227805895	130,179,228.32	43	0.227805895	7,420,216.01	43	0.227805895	4,912,703.72
147,330.08	515,655,268.90	1,399,635.73	$29,392,350	44	0.220102314	113,496,918.09	44	0.220102314	6,469,324.33	44	0.220102314	4,283,146.69
135,170.25	473,095,877.03	1,284,117.38	$26,966,465	45	0.212659241	100,608,210.08	45	0.212659241	5,734,667.97	45	0.212659241	3,796,752.63
124,977.43	437,420,990.83	1,187,285.55	$24,932,996	46	0.205467866	89,875,957.36	46	0.205467866	5,122,929.57	46	0.205467866	3,391,738.88
116,041.00	406,143,501.43	1,102,389.50	$23,150,180	47	0.198519677	80,627,476.69	47	0.198519677	4,595,766.17	47	0.198519677	3,042,719.72

Alternative A - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
107,995.47	377,984,150.48	1,025,956.98	$21,545,097	48	0.191806451	72,499,798.49	48	0.191806451	4,132,488.51	48	0.191806451	2,735,997.40
100,623.62	352,182,656.99	955,924.35	$20,074,411	49	0.185320243	65,266,575.45	49	0.185320243	3,720,194.80	49	0.185320243	2,463,030.02
93,783.98	328,243,920.42	890,947.78	$18,709,903	50	0.179053375	58,773,181.62	50	0.179053375	3,350,071.35	50	0.179053375	2,217,982.33
87,285.16	305,498,070.16	829,209.05	$17,413,390	51	0.172998429	52,850,686.35	51	0.172998429	3,012,489.12	51	0.172998429	1,994,479.20
81,146.39	284,012,355.90	770,890.68	$16,188,704	52	0.167148241	47,472,165.73	52	0.167148241	2,705,913.45	52	0.167148241	1,791,504.59
75,375.94	263,815,783.42	716,071.41	$15,037,500	53	0.161495885	42,605,163.44	53	0.161495885	2,428,494.32	53	0.161495885	1,607,833.66
69,951.72	244,831,004.31	664,541.30	$13,955,367	54	0.156034672	38,202,125.35	54	0.156034672	2,177,521.14	54	0.156034672	1,441,671.81
64,852.95	226,985,313.61	616,102.99	$12,938,163	55	0.150758137	34,219,882.96	55	0.150758137	1,950,533.33	55	0.150758137	1,291,389.94
60,060.10	210,210,364.63	570,570.99	$11,981,991	56	0.145660036	30,619,249.18	56	0.145660036	1,745,297.20	56	0.145660036	1,155,509.23
55,554.83	194,441,912.73	527,770.91	$11,083,189	57	0.140734334	27,364,653.06	57	0.140734334	1,559,785.22	57	0.140734334	1,032,687.28
51,319.88	179,619,568.17	487,538.83	$10,238,315	58	0.135975202	24,423,807.03	58	0.135975202	1,392,157.00	58	0.135975202	921,705.63
47,339.02	165,686,565.62	449,720.68	$9,444,134	59	0.131377007	21,767,405.02	59	0.131377007	1,240,742.09	59	0.131377007	821,458.33
43,597.01	152,589,543.31	414,171.62	$8,697,604	60	0.126934306	19,368,847.76	60	0.126934306	1,104,024.32	60	0.126934306	730,941.58
40,079.53	140,278,342.83	380,755.50	$7,995,866	61	0.122641841	17,203,994.28	61	0.122641841	980,627.67	61	0.122641841	649,244.34
36,773.09	128,705,815.03	349,344.36	$7,336,231	62	0.118494533	15,250,935.42	62	0.118494533	869,303.32	62	0.118494533	575,539.80
33,665.04	117,827,639.36	319,817.88	$6,716,175	63	0.114487471	13,489,788.48	63	0.114487471	768,917.94	63	0.114487471	509,077.64
30,743.47	107,602,154.23	292,062.99	$6,133,323	64	0.110615914	11,902,510.67	64	0.110615914	678,443.11	64	0.110615914	449,176.95
27,997.20	97,990,198.52	265,973.40	$5,585,441	65	0.106875279	10,472,729.85	65	0.106875279	596,945.60	65	0.106875279	395,219.88
25,415.70	88,954,960.55	241,449.18	$5,070,433	66	0.10326114	9,185,590.60	66	0.10326114	523,578.66	66	0.10326114	346,645.82
22,989.10	80,461,836.87	218,396.41	$4,586,325	67	0.099769217	8,027,614.46	67	0.099769217	457,574.02	67	0.099769217	302,946.11
20,708.09	72,478,300.59	196,726.82	$4,131,263	68	0.096395379	6,986,573.24	68	0.096395379	398,234.67	68	0.096395379	263,659.30
18,563.94	64,973,776.26	176,357.39	$3,703,505	69	0.093135632	6,051,373.69	69	0.093135632	344,928.30	69	0.093135632	228,366.74
16,548.44	57,919,523.18	157,210.13	$3,301,413	70	0.089986118	5,211,953.02	70	0.089986118	297,081.32	70	0.089986118	196,688.68
14,653.86	51,288,525.69	139,211.71	$2,923,446	71	0.086943109	4,459,183.87	71	0.086943109	254,173.48	71	0.086943109	168,280.68
12,872.97	45,055,387.95	122,293.20	$2,568,157	72	0.084003004	3,784,787.92	72	0.084003004	215,732.91	72	0.084003004	142,830.33
11,198.93	39,196,238.70	106,389.79	$2,234,186	73	0.081162322	3,181,257.76	73	0.081162322	181,331.69	73	0.081162322	120,054.31
9,625.33	33,688,638.19	91,440.59	$1,920,252	74	0.078417703	2,641,785.61	74	0.078417703	150,581.78	74	0.078417703	99,695.71
8,146.14	28,511,493.55	77,388.34	$1,625,155	75	0.075765896	2,160,198.87	75	0.075765896	123,131.34	75	0.075765896	81,521.58
6,755.71	23,644,977.47	64,179.22	$1,347,764	76	0.073203765	1,730,901.36	76	0.073203765	98,661.38	76	0.073203765	65,320.76
5,448.70	19,070,452.17	51,762.66	$1,087,016	77	0.070728275	1,348,820.18	77	0.070728275	76,882.75	77	0.070728275	50,901.78
4,220.11	14,770,398.17	40,091.08	$841,913	78	0.068336498	1,009,357.28	78	0.068336498	57,533.36	78	0.068336498	38,091.12
3,065.24	10,728,347.43	29,119.80	$611,516	79	0.066025601	708,345.59	79	0.066025601	40,375.70	79	0.066025601	26,731.55
1,979.66	6,928,819.38	18,806.80	$394,943	80	0.063792852	442,009.15	80	0.063792852	25,194.52	80	0.063792852	16,680.54
959.22	3,357,262.91	9,112.57	$191,364	81	0.061635605	206,926.93	81	0.061635605	11,794.84	81	0.061635605	7,809.01
8,191,080.42	$28,668,784,963	77,815,263.97	1,634,120,543.40			11,093,597,797			632,335,074			418,650,194

Alternative A - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
63,509.27	222,282,436.83	603,338.04	$12,670,099	1	0.966183575	214,765,639.45	1	0.966183575	12,241,641.45	1	0.966183575	8,104,825.70
95,390.61	333,867,145.83	906,210.82	$19,030,427	2	0.9335107	311,668,553.13	2	0.9335107	17,765,107.53	2	0.9335107	11,761,747.86
119,710.09	418,985,321.27	1,137,245.87	$23,882,163	3	0.901942706	377,900,754.30	3	0.901942706	21,540,343.00	3	0.901942706	14,261,218.67
140,095.60	490,334,583.75	1,330,908.16	$27,949,071	4	0.871442228	427,298,261.98	4	0.871442228	24,356,000.93	4	0.871442228	16,125,381.81
157,968.32	552,889,115.50	1,500,699.03	$31,514,680	5	0.841973167	465,517,799.50	5	0.841973167	26,534,514.57	5	0.841973167	17,567,710.72
174,059.26	609,207,414.90	1,653,562.98	$34,724,823	6	0.813500644	495,590,624.54	6	0.813500644	28,248,665.60	6	0.813500644	18,702,598.99
188,802.87	660,810,033.09	1,793,627.23	$37,666,172	7	0.785990961	519,390,712.74	7	0.785990961	29,605,270.63	7	0.785990961	19,600,766.72
202,482.05	708,687,164.08	1,923,579.45	$40,395,168	8	0.759411556	538,185,222.14	8	0.759411556	30,676,557.66	8	0.759411556	20,310,033.91
215,479.58	754,178,539.47	2,047,056.04	$42,988,177	9	0.733730972	553,364,152.97	9	0.733730972	31,541,756.72	9	0.733730972	20,882,856.40
227,757.05	797,149,660.89	2,163,691.94	$45,437,531	10	0.708918814	565,114,391.95	10	0.708918814	32,211,520.34	10	0.708918814	21,326,286.92
239,297.86	837,542,517.19	2,273,329.69	$47,739,923	11	0.684945714	573,671,157.21	11	0.684945714	32,699,255.96	11	0.684945714	21,649,202.13
250,146.23	875,511,804.05	2,376,389.18	$49,904,173	12	0.661783298	579,399,089.37	12	0.661783298	33,025,748.09	12	0.661783298	21,865,362.83
260,343.69	911,202,930.37	2,473,265.10	$51,938,567	13	0.639404153	582,626,937.84	13	0.639404153	33,209,735.46	13	0.639404153	21,987,175.38
269,929.31	944,752,588.57	2,564,328.45	$53,850,898	14	0.61778179	583,650,945.53	14	0.61778179	33,268,103.90	14	0.61778179	22,025,819.38
278,939.79	976,289,266.98	2,649,928.01	$55,648,488	15	0.596890619	582,737,904.52	15	0.596890619	33,216,060.56	15	0.596890619	21,991,363.04
287,409.64	1,005,933,744.25	2,730,391.59	$57,338,223	16	0.576705912	580,127,937.10	16	0.576705912	33,067,292.41	16	0.576705912	21,892,868.09
295,371.30	1,033,799,550.20	2,806,027.35	$58,926,574	17	0.557203779	576,037,016.55	17	0.557203779	32,834,109.94	17	0.557203779	21,738,484.93
302,855.26	1,059,993,407.61	2,877,124.96	$60,419,624	18	0.53836114	570,659,258.84	18	0.53836114	32,527,577.75	18	0.53836114	21,535,539.11
309,890.18	1,084,615,632.60	2,943,956.72	$61,823,091	19	0.52015569	564,168,993.18	19	0.52015569	32,157,632.61	19	0.52015569	21,290,609.46
316,503.01	1,107,760,522.79	3,006,778.56	$63,142,350	20	0.502565884	556,722,646.87	20	0.502565884	31,733,190.87	20	0.502565884	21,009,599.25
322,719.06	1,129,516,718.65	3,065,831.09	$64,382,453	21	0.485570903	548,460,452.84	21	0.485570903	31,262,245.81	21	0.485570903	20,697,800.57
265,052.89	927,685,105.94	2,518,002.43	$52,878,051	22	0.469150631	435,224,052.59	22	0.469150631	24,807,771.00	22	0.469150631	16,424,485.30
238,664.05	835,324,170.96	2,267,308.46	$47,613,478	23	0.453285634	378,640,446.08	23	0.453285634	21,582,505.43	23	0.453285634	14,289,133.15
219,507.53	768,276,342.32	2,085,321.50	$43,791,752	24	0.437957134	336,472,104.92	24	0.437957134	19,178,909.98	24	0.437957134	12,697,784.30
203,975.20	713,913,205.79	1,937,764.42	$40,693,053	25	0.423146989	302,090,223.63	25	0.423146989	17,219,142.75	25	0.423146989	11,400,280.86
190,664.47	667,325,632.52	1,811,312.43	$38,037,561	26	0.408837671	272,827,857.26	26	0.408837671	15,551,187.86	26	0.408837671	10,295,977.68
178,861.79	626,016,274.49	1,699,187.03	$35,682,928	27	0.395012242	247,284,092.31	27	0.395012242	14,095,193.26	27	0.395012242	9,332,007.08
168,149.16	588,522,061.64	1,597,417.02	$33,545,758	28	0.38165434	224,611,999.24	28	0.38165434	12,802,883.96	28	0.38165434	8,476,407.63
158,259.09	553,906,830.85	1,503,461.40	$31,572,689	29	0.368748155	204,252,121.90	29	0.368748155	11,642,370.95	29	0.368748155	7,708,066.58
148,823.33	520,881,641.86	1,413,821.60	$29,690,254	30	0.356278411	185,578,883.47	30	0.356278411	10,577,996.36	30	0.356278411	7,003,375.90
139,893.92	489,628,735.19	1,328,992.28	$27,908,838	31	0.344230348	168,545,070.10	31	0.344230348	9,607,069.00	31	0.344230348	6,360,553.86
131,500.29	460,251,001.19	1,249,252.72	$26,234,307	32	0.332589709	153,074,746.37	32	0.332589709	8,725,260.54	32	0.332589709	5,776,734.78
123,610.27	432,635,929.61	1,174,297.52	$24,660,248	33	0.321342714	139,024,403.63	33	0.321342714	7,924,391.01	33	0.321342714	5,246,502.94
116,193.65	406,677,765.89	1,103,839.65	$23,180,633	34	0.310476052	126,263,707.12	34	0.310476052	7,197,031.31	34	0.310476052	4,764,939.78
109,222.03	382,277,092.90	1,037,609.25	$21,789,794	35	0.299976862	114,674,282.61	35	0.299976862	6,536,434.11	35	0.299976862	4,327,578.08
102,668.70	359,340,461.03	975,352.68	$20,482,406	36	0.289832717	104,148,622.00	36	0.289832717	5,936,471.45	36	0.289832717	3,930,360.70
96,508.58	337,780,027.48	916,831.50	$19,253,462	37	0.28003161	94,589,084.99	37	0.28003161	5,391,577.84	37	0.28003161	3,569,602.89
90,718.06	317,513,223.30	861,821.61	$18,098,254	38	0.270561942	85,906,994.38	38	0.270561942	4,896,698.68	38	0.270561942	3,241,958.15
85,274.98	298,462,427.78	810,112.30	$17,012,358	39	0.261412505	78,021,810.77	39	0.261412505	4,447,243.21	39	0.261412505	2,944,387.09
80,158.48	280,554,680.63	761,505.56	$15,991,617	40	0.252572468	70,860,388.15	40	0.252572468	4,039,042.12	40	0.252572468	2,674,129.33
73,545.65	257,409,790.44	698,683.72	$14,672,358	41	0.24403137	62,816,063.87	41	0.24403137	3,580,515.64	41	0.24403137	2,370,552.62
67,329.60	235,653,594.59	639,631.19	$13,432,255	42	0.235779102	55,562,192.84	42	0.235779102	3,167,044.99	42	0.235779102	2,096,806.03
61,486.51	215,202,770.47	584,121.81	$12,266,558	43	0.227805895	49,024,459.81	43	0.227805895	2,794,394.21	43	0.227805895	1,850,085.06
55,994.00	195,978,996.45	531,942.99	$11,170,803	44	0.220102314	43,135,430.68	44	0.220102314	2,458,719.55	44	0.220102314	1,627,844.88
50,831.04	177,908,649.65	482,894.91	$10,140,793	45	0.212659241	37,833,918.38	45	0.212659241	2,156,533.35	45	0.212659241	1,427,776.41
45,977.86	160,922,523.69	436,789.71	$9,172,584	46	0.205467866	33,064,407.47	46	0.205467866	1,884,671.23	46	0.205467866	1,247,784.61
41,415.88	144,955,565.22	393,450.82	$8,262,467	47	0.198519677	28,776,531.97	47	0.198519677	1,640,262.32	47	0.198519677	1,085,968.76
37,127.61	129,946,623.84	352,712.26	$7,406,958	48	0.191806451	24,924,600.76	48	0.191806451	1,420,702.24	48	0.191806451	940,604.58

Alternative A - 150 Wells/Year Development Rate

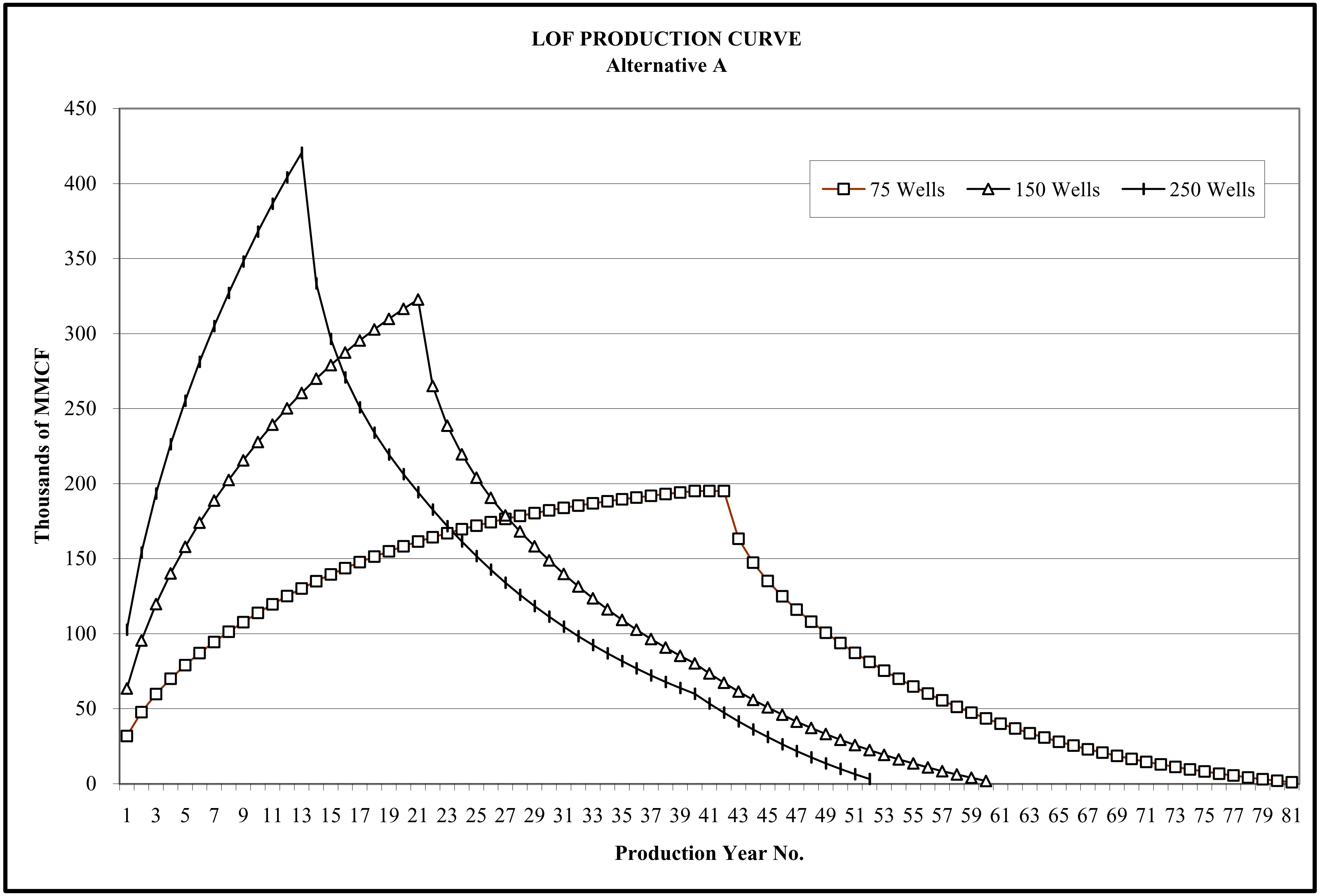
MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
33,096.63	115,838,218.50	314,418.02	$6,602,778	49	0.185320243	21,467,166.76	49	0.185320243	1,223,628.51	49	0.185320243	810,127.94
29,307.52	102,576,318.31	278,421.44	$5,846,850	50	0.179053375	18,366,635.94	50	0.179053375	1,046,898.25	50	0.179053375	693,120.11
25,745.75	90,110,131.90	244,584.64	$5,136,278	51	0.172998429	15,588,911.30	51	0.172998429	888,567.94	51	0.172998429	588,294.33
22,397.69	78,391,917.15	212,778.06	$4,468,339	52	0.167148241	13,103,071.07	52	0.167148241	746,875.05	52	0.167148241	494,483.70
19,250.51	67,376,794.85	182,879.87	$3,840,477	53	0.161495885	10,881,075.12	53	0.161495885	620,221.28	53	0.161495885	410,630.01
16,292.17	57,022,579.58	154,775.57	$3,250,287	54	0.156034672	8,897,499.48	54	0.156034672	507,157.47	54	0.156034672	335,773.84
13,511.32	47,289,616.97	128,357.53	$2,695,508	55	0.150758137	7,129,294.54	55	0.150758137	406,369.79	55	0.150758137	269,045.32
10,897.32	38,140,631.76	103,524.57	$2,174,016	56	0.145660036	5,555,565.78	56	0.145660036	316,667.25	56	0.145660036	209,655.94
8,440.17	29,540,585.23	80,181.59	$1,683,813	57	0.140734334	4,157,374.58	57	0.140734334	236,970.35	57	0.140734334	156,891.00
6,130.44	21,456,541.51	58,239.18	$1,223,023	58	0.135975202	2,917,557.56	58	0.135975202	166,300.78	58	0.135975202	110,102.79
3,959.30	13,857,539.73	37,613.32	$789,880	59	0.131377007	1,820,562.09	59	0.131377007	103,772.04	59	0.131377007	68,704.37
1,918.42	6,714,477.84	18,225.01	$382,725	60	0.126934306	852,297.58	60	0.126934306	48,580.96	60	0.126934306	32,164.01
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
8,191,021.88	$28,668,580,078	77,814,707.85	1,634,108,864.94			14,935,023,962			851,296,366			563,617,934

Alternative A -250 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
102,579.32	359,027,637.20	974,503.59	$20,464,575	1	0.966183575	346,886,605.99	1	0.966183575	19,772,536.54	1	0.966183575	13,090,806.74
154,073.65	539,257,775.91	1,463,699.68	$30,737,693	2	0.9335107	503,402,904.06	2	0.9335107	28,693,965.53	2	0.9335107	18,997,418.79
193,354.15	676,739,521.41	1,836,864.42	$38,574,153	3	0.901942706	610,380,274.97	3	0.901942706	34,791,675.67	3	0.901942706	23,034,530.82
226,280.54	791,981,901.74	2,149,665.16	$45,142,968	4	0.871442228	690,166,472.75	4	0.871442228	39,339,488.95	4	0.871442228	26,045,502.35
255,148.33	893,019,149.89	2,423,909.12	$50,902,092	5	0.841973167	751,898,161.69	5	0.841973167	42,858,195.22	5	0.841973167	28,375,132.83
281,138.21	983,983,718.45	2,670,812.95	$56,087,072	6	0.813500644	800,471,388.95	6	0.813500644	45,626,869.17	6	0.813500644	30,208,189.28
304,951.88	1,067,331,581.41	2,897,042.86	$60,837,900	7	0.785990961	838,912,975.04	7	0.785990961	47,818,039.58	7	0.785990961	31,658,897.85
327,046.31	1,144,662,086.96	3,106,939.95	$65,245,739	8	0.759411556	869,269,616.80	8	0.759411556	49,548,368.16	8	0.759411556	32,804,496.80
348,039.76	1,218,139,151.79	3,306,377.70	$69,433,932	9	0.733730972	893,786,424.10	9	0.733730972	50,945,826.17	9	0.733730972	33,729,712.07
367,870.15	1,287,545,535.90	3,494,766.45	$73,390,096	10	0.708918814	912,765,253.91	10	0.708918814	52,027,619.47	10	0.708918814	34,445,935.15
386,510.73	1,352,787,540.45	3,671,851.90	$77,108,890	11	0.684945714	926,586,027.41	11	0.684945714	52,815,403.56	11	0.684945714	34,967,503.50
404,032.87	1,414,115,027.86	3,838,312.22	$80,604,557	12	0.661783298	935,837,707.30	12	0.661783298	53,342,749.32	12	0.661783298	35,316,643.40
420,503.67	1,471,762,860.66	3,994,784.91	$83,890,483	13	0.639404153	941,051,285.24	13	0.639404153	53,639,923.26	13	0.639404153	35,513,393.40
333,406.91	1,166,924,185.42	3,167,365.65	$66,514,679	14	0.61778179	720,904,512.38	14	0.61778179	41,091,557.21	14	0.61778179	27,205,494.49
296,466.19	1,037,631,670.46	2,816,428.82	$59,145,005	15	0.596890619	619,352,609.69	15	0.596890619	35,303,098.75	15	0.596890619	23,373,128.78
270,866.08	948,031,290.59	2,573,227.79	$54,037,784	16	0.576705912	546,735,249.77	16	0.576705912	31,163,909.24	16	0.576705912	20,632,694.86
250,799.25	877,797,389.61	2,382,592.91	$50,034,451	17	0.557203779	489,112,023.07	17	0.557203779	27,879,385.31	17	0.557203779	18,458,109.53
234,019.46	819,068,111.77	2,223,184.87	$46,686,882	18	0.53836114	440,954,442.02	18	0.53836114	25,134,403.20	18	0.53836114	16,640,738.73
219,392.30	767,873,033.71	2,084,226.81	$43,768,763	19	0.52015569	399,413,527.98	19	0.52015569	22,766,571.09	19	0.52015569	15,073,067.72
206,259.57	721,908,489.72	1,959,465.90	$41,148,784	20	0.502565884	362,806,578.61	20	0.502565884	20,679,974.98	20	0.502565884	13,691,594.66
194,205.23	679,718,302.52	1,844,949.68	$38,743,943	21	0.485570903	330,051,429.83	21	0.485570903	18,812,931.50	21	0.485570903	12,455,480.86
182,649.47	639,273,136.96	1,735,169.94	$36,438,569	22	0.469150631	299,915,395.43	22	0.469150631	17,095,177.54	22	0.469150631	11,318,207.19
171,690.50	600,916,737.11	1,631,059.72	$34,252,254	23	0.453285634	272,386,923.91	23	0.453285634	15,526,054.66	23	0.453285634	10,279,337.73
161,389.06	564,861,716.50	1,533,196.09	$32,197,118	24	0.437957134	247,385,218.41	24	0.437957134	14,100,957.45	24	0.437957134	9,335,823.37
151,705.71	530,969,993.94	1,441,204.27	$30,265,290	25	0.423146989	224,678,354.33	25	0.423146989	12,806,666.20	25	0.423146989	8,478,911.74
142,603.37	499,111,780.22	1,354,731.97	$28,449,371	26	0.408837671	204,055,697.69	26	0.408837671	11,631,174.77	26	0.408837671	7,700,653.92
134,047.16	469,165,060.86	1,273,448.02	$26,742,408	27	0.395012242	185,325,942.71	27	0.395012242	10,563,578.73	27	0.395012242	6,993,830.43
126,004.33	441,015,145.88	1,197,041.11	$25,137,863	28	0.38165434	168,315,344.60	28	0.38165434	9,593,974.64	28	0.38165434	6,351,884.47
118,444.06	414,554,225.15	1,125,218.61	$23,629,591	29	0.368748155	152,866,105.66	29	0.368748155	8,713,368.02	29	0.368748155	5,768,861.10
111,337.42	389,680,964.37	1,057,705.47	$22,211,815	30	0.356278411	138,834,914.63	30	0.356278411	7,913,590.13	30	0.356278411	5,239,352.01
104,657.17	366,300,098.76	994,243.13	$20,879,106	31	0.344230348	126,091,610.62	31	0.344230348	7,187,221.81	31	0.344230348	4,758,445.20
98,377.74	344,322,087.37	934,588.52	$19,626,359	32	0.332589709	114,517,982.70	32	0.332589709	6,527,525.01	32	0.332589709	4,321,679.63
92,475.07	323,662,759.28	878,513.20	$18,448,777	33	0.321342714	104,006,669.37	33	0.321342714	5,928,380.15	33	0.321342714	3,925,003.69
86,926.57	304,242,992.75	825,802.41	$17,341,851	34	0.310476052	94,460,163.18	34	0.310476052	5,384,229.30	34	0.310476052	3,564,737.64
81,710.98	285,988,412.78	776,254.26	$16,301,340	35	0.299976862	85,789,906.54	35	0.299976862	4,890,024.67	35	0.299976862	3,237,539.49
76,808.32	268,829,109.36	729,679.01	$15,323,259	36	0.289832717	77,915,471.06	36	0.289832717	4,441,181.85	36	0.289832717	2,940,374.05
72,199.82	252,699,365.37	685,898.28	$14,403,864	37	0.28003161	70,763,810.19	37	0.28003161	4,033,537.18	37	0.28003161	2,670,484.67
67,867.83	237,537,407.17	644,744.39	$13,539,632	38	0.270561942	64,268,582.24	38	0.270561942	3,663,309.19	38	0.270561942	2,425,367.76
63,795.76	223,285,166.72	606,059.74	$12,727,255	39	0.261412505	58,369,534.67	39	0.261412505	3,327,063.48	39	0.261412505	2,202,749.50
59,968.02	209,888,059.47	569,696.16	$11,963,619	40	0.252572468	53,011,945.22	40	0.252572468	3,021,680.88	40	0.252572468	2,000,564.79
53,457.24	187,100,350.70	507,843.81	$10,664,720	41	0.24403137	45,658,354.95	41	0.24403137	2,602,526.23	41	0.24403137	1,723,055.00
47,337.12	165,679,905.80	449,702.60	$9,443,755	42	0.235779102	39,063,859.36	42	0.235779102	2,226,639.98	42	0.235779102	1,474,191.92
41,584.20	145,544,687.23	395,049.87	$8,296,047	43	0.227805895	33,155,937.79	43	0.227805895	1,889,888.45	43	0.227805895	1,251,238.78
36,176.45	126,617,582.53	343,676.30	$7,217,202	44	0.220102314	27,868,822.95	44	0.220102314	1,588,522.91	44	0.220102314	1,051,713.64
31,093.17	108,826,103.42	295,385.14	$6,203,088	45	0.212659241	23,142,876.54	45	0.212659241	1,319,143.96	45	0.212659241	873,365.88
26,314.89	92,102,112.54	249,991.45	$5,249,820	46	0.205467866	18,924,024.48	46	0.205467866	1,078,669.40	46	0.205467866	714,154.84
21,823.30	76,381,560.72	207,321.38	$4,353,749	47	0.198519677	15,163,242.76	47	0.198519677	864,304.84	47	0.198519677	572,230.46
17,601.21	61,604,241.42	167,211.51	$3,511,442	48	0.191806451	11,816,090.92	48	0.191806451	673,517.18	48	0.191806451	445,915.64

Alternative A -250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
13,632.45	47,713,560.58	129,508.24	$2,719,673	49	0.185320243	8,842,288.62	49	0.185320243	504,010.45	49	0.185320243	333,690.29
9,901.81	34,656,320.63	94,067.16	$1,975,410	50	0.179053375	6,205,331.16	50	0.179053375	353,703.88	50	0.179053375	234,176.79
6,395.00	22,382,513.97	60,752.54	$1,275,803	51	0.172998429	3,872,139.76	51	0.172998429	220,711.97	51	0.172998429	146,126.81
3,098.61	10,845,135.36	29,436.80	$618,173	52	0.167148241	1,812,745.30	52	0.167148241	103,326.48	52	0.167148241	68,409.38
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
8,190,018.36	$28,665,067,758	77,805,174.42	1,633,908,662.73			16,909,230,759			963,826,153			638,120,550


LOF PRODUCTION CURVE
Alternative A
Thousands of MMCF
450
400
350
300
250
200
150
100
50
0
75 Wells
150 Wells
250 Wells
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81
Production Year No.

Alternative B - 75 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
24,931.03	87,258,622.01	236,844.83	$4,973,741	1	0.966183575	84,307,847.35	1	0.966183575	4,805,547.30	1	0.966183575	3,181,609.54
37,430.36	131,006,254.73	355,588.41	$7,467,357	2	0.9335107	122,295,740.61	2	0.9335107	6,970,857.21	2	0.9335107	4,615,196.66
46,978.85	164,425,962.98	446,299.04	$9,372,280	3	0.901942706	148,302,797.93	3	0.901942706	8,453,259.48	3	0.901942706	5,596,650.99
54,987.54	192,456,396.70	522,381.65	$10,970,015	4	0.871442228	167,714,631.08	4	0.871442228	9,559,733.97	4	0.871442228	6,329,214.75
62,011.38	217,039,819.73	589,108.08	$12,371,270	5	0.841973167	182,741,704.35	5	0.841973167	10,416,277.15	5	0.841973167	6,896,306.44
68,336.31	239,177,090.79	649,194.96	$13,633,094	6	0.813500644	194,570,717.46	6	0.813500644	11,090,530.90	6	0.813500644	7,342,709.74
74,132.48	259,463,690.43	704,258.59	$14,789,430	7	0.785990961	203,936,115.31	7	0.785990961	11,624,358.57	7	0.785990961	7,696,141.12
79,510.77	278,287,687.35	755,352.29	$15,862,398	8	0.759411556	211,334,885.73	8	0.759411556	12,046,088.49	8	0.759411556	7,975,355.92
84,612.88	296,145,089.37	803,822.39	$16,880,270	9	0.733730972	217,290,824.33	9	0.733730972	12,385,576.99	9	0.733730972	8,200,121.13
89,429.65	313,003,764.76	849,581.65	$17,841,215	10	0.708918814	221,894,257.60	10	0.708918814	12,647,972.68	10	0.708918814	8,373,845.49
93,957.41	328,850,920.30	892,595.36	$18,744,502	11	0.684945714	225,245,028.32	11	0.684945714	12,838,966.61	11	0.684945714	8,500,296.88
98,213.50	343,747,246.95	933,028.24	$19,593,593	12	0.661783298	227,486,186.87	12	0.661783298	12,966,712.65	12	0.661783298	8,584,873.72
102,214.23	357,749,792.47	971,035.15	$20,391,738	13	0.639404153	228,746,703.01	13	0.639404153	13,038,562.07	13	0.639404153	8,632,443.08
105,974.91	370,912,184.85	1,006,761.64	$21,141,995	14	0.61778179	229,142,793.59	14	0.61778179	13,061,139.23	14	0.61778179	8,647,390.74
109,509.95	383,284,833.65	1,040,344.55	$21,847,236	15	0.596890619	228,779,121.47	15	0.596890619	13,040,409.92	15	0.596890619	8,633,666.49
112,832.89	394,915,123.35	1,071,912.48	$22,510,162	16	0.576705912	227,749,886.26	16	0.576705912	12,981,743.52	16	0.576705912	8,594,825.21
115,956.46	405,847,594.74	1,101,586.33	$23,133,313	17	0.557203779	226,139,813.66	17	0.557203779	12,889,969.38	17	0.557203779	8,534,064.29
118,892.61	416,124,117.81	1,129,479.75	$23,719,075	18	0.53836114	224,025,054.26	18	0.53836114	12,769,428.09	18	0.53836114	8,454,257.50
121,652.59	425,784,049.12	1,155,699.56	$24,269,691	19	0.52015569	221,473,996.02	19	0.52015569	12,624,017.77	19	0.52015569	8,357,985.66
124,246.97	434,864,384.33	1,180,346.19	$24,787,270	20	0.502565884	218,548,003.92	20	0.502565884	12,457,236.22	20	0.502565884	8,247,564.57
126,685.69	443,399,899.25	1,203,514.01	$25,273,794	21	0.485570903	215,302,089.39	21	0.485570903	12,272,219.10	21	0.485570903	8,125,070.25
128,978.08	451,423,283.43	1,225,291.77	$25,731,127	22	0.469150631	211,785,518.16	22	0.469150631	12,071,774.54	22	0.469150631	7,992,361.88
131,132.93	458,965,264.11	1,245,762.86	$26,161,020	23	0.453285634	208,042,360.53	23	0.453285634	11,858,414.55	23	0.453285634	7,851,102.60
133,158.49	466,054,725.66	1,265,005.68	$26,565,119	24	0.437957134	204,111,991.89	24	0.437957134	11,634,383.54	24	0.437957134	7,702,778.35
135,062.52	472,718,819.51	1,283,093.94	$26,944,973	25	0.423146989	200,029,545.25	25	0.423146989	11,401,684.08	25	0.423146989	7,548,714.98
136,852.31	478,983,067.76	1,300,096.90	$27,302,035	26	0.408837671	195,826,321.77	26	0.408837671	11,162,100.34	26	0.408837671	7,390,093.73
138,534.70	484,871,461.14	1,316,079.68	$27,637,673	27	0.395012242	191,530,163.10	27	0.395012242	10,917,219.30	27	0.395012242	7,227,965.30
140,116.16	490,406,550.89	1,331,103.50	$27,953,173	28	0.38165434	187,165,788.71	28	0.38165434	10,668,449.96	28	0.38165434	7,063,262.53
141,602.72	495,609,534.99	1,345,225.88	$28,249,743	29	0.368748155	182,755,101.61	29	0.368748155	10,417,040.79	29	0.368748155	6,896,812.02
143,000.10	500,500,340.01	1,358,500.92	$28,528,519	30	0.356278411	178,317,465.65	30	0.356278411	10,164,095.54	30	0.356278411	6,729,344.52
144,313.63	505,097,696.46	1,370,979.46	$28,790,569	31	0.344230348	173,869,956.03	31	0.344230348	9,910,587.49	31	0.344230348	6,561,504.40
145,548.35	509,419,211.58	1,382,709.29	$29,036,895	32	0.332589709	169,427,587.14	32	0.332589709	9,657,372.47	32	0.332589709	6,393,858.28
146,708.98	513,481,435.78	1,393,735.33	$29,268,442	33	0.321342714	165,003,517.97	33	0.321342714	9,405,200.52	33	0.321342714	6,226,902.76
147,799.98	517,299,926.56	1,404,099.80	$29,486,096	34	0.310476052	160,609,238.80	34	0.310476052	9,154,726.61	34	0.310476052	6,061,071.45
148,825.52	520,889,307.98	1,413,842.41	$29,690,691	35	0.299976862	156,254,739.88	35	0.299976862	8,906,520.17	35	0.299976862	5,896,741.37
149,789.52	524,263,326.66	1,423,000.46	$29,883,010	36	0.289832717	151,948,664.17	36	0.289832717	8,661,073.86	36	0.289832717	5,734,238.69
150,695.69	527,434,904.22	1,431,609.03	$30,063,790	37	0.28003161	147,698,445.52	37	0.28003161	8,418,811.39	37	0.28003161	5,573,843.94
151,547.48	530,416,187.37	1,439,701.08	$30,233,723	38	0.270561942	143,510,433.85	38	0.270561942	8,180,094.73	38	0.270561942	5,415,796.75
152,348.17	533,218,593.69	1,447,307.61	$30,393,460	39	0.261412505	139,390,008.07	39	0.261412505	7,945,230.46	39	0.261412505	5,260,300.12
153,100.82	535,852,855.48	1,454,457.75	$30,543,613	40	0.252572468	135,341,678.30	40	0.252572468	7,714,475.66	40	0.252572468	5,107,524.26
128,169.78	448,594,233.47	1,217,612.92	$25,569,871	41	0.24403137	109,471,065.47	41	0.24403137	6,239,850.73	41	0.24403137	4,131,219.07
115,670.46	404,846,600.75	1,098,869.34	$23,076,256	42	0.235779102	95,454,367.84	42	0.235779102	5,440,898.97	42	0.235779102	3,602,256.93
106,121.97	371,426,892.50	1,008,158.71	$21,171,333	43	0.227805895	84,613,235.80	43	0.227805895	4,822,954.44	43	0.227805895	3,193,134.29
98,113.27	343,396,458.77	932,076.10	$19,573,598	44	0.220102314	75,582,355.31	44	0.220102314	4,308,194.25	44	0.220102314	2,852,326.92
91,089.44	318,813,035.75	865,349.67	$18,172,343	45	0.212659241	67,798,538.17	45	0.212659241	3,864,516.68	45	0.212659241	2,558,581.23
84,764.50	296,675,764.69	805,262.79	$16,910,519	46	0.205467866	60,957,336.15	46	0.205467866	3,474,568.16	46	0.205467866	2,300,407.95
78,968.33	276,389,165.05	750,199.16	$15,754,182	47	0.198519677	54,868,687.75	47	0.198519677	3,127,515.20	47	0.198519677	2,070,634.54

Alternative B - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
73,590.05	257,565,168.13	699,105.46	$14,681,215	48	0.191806451	49,402,660.83	48	0.191806451	2,815,951.67	48	0.191806451	1,864,357.61
68,487.93	239,707,766.11	650,635.37	$13,663,343	49	0.185320243	44,422,701.38	49	0.185320243	2,532,093.98	49	0.185320243	1,676,423.90
63,671.17	222,849,090.72	604,876.10	$12,702,398	50	0.179053375	39,901,881.70	50	0.179053375	2,274,407.26	50	0.179053375	1,505,817.21
59,143.41	207,001,935.17	561,862.40	$11,799,110	51	0.172998429	35,811,009.69	51	0.172998429	2,041,227.55	51	0.172998429	1,351,435.88
54,887.32	192,105,608.53	521,429.51	$10,950,020	52	0.167148241	32,110,114.56	52	0.167148241	1,830,276.53	52	0.167148241	1,211,771.50
50,886.59	178,103,063.01	483,422.60	$10,151,875	53	0.161495885	28,762,911.80	53	0.161495885	1,639,485.97	53	0.161495885	1,085,454.77
47,125.91	164,940,670.63	447,696.11	$9,401,618	54	0.156034672	25,736,463.37	54	0.156034672	1,466,978.41	54	0.156034672	971,242.65
43,590.86	152,568,021.83	414,113.20	$8,696,377	55	0.150758137	23,000,870.70	55	0.150758137	1,311,049.63	55	0.150758137	868,006.86
40,267.92	140,937,732.13	382,545.27	$8,033,451	56	0.145660036	20,528,995.07	56	0.145660036	1,170,152.72	56	0.145660036	774,723.22
37,144.36	130,005,260.74	352,871.42	$7,410,300	57	0.140734334	18,296,203.77	57	0.140734334	1,042,883.61	57	0.140734334	690,462.14
34,208.21	119,728,737.67	324,978.00	$6,824,538	58	0.135975202	16,280,139.27	58	0.135975202	927,967.94	58	0.135975202	614,379.90
31,448.23	110,068,806.36	298,758.19	$6,273,922	59	0.131377007	14,460,510.30	59	0.131377007	824,249.09	59	0.131377007	545,710.74
28,853.85	100,988,471.15	274,111.56	$5,756,343	60	0.126934306	12,818,901.49	60	0.126934306	730,677.38	60	0.126934306	483,759.70
26,415.13	92,452,956.23	250,943.74	$5,269,819	61	0.122641841	11,338,600.80	61	0.122641841	646,300.25	61	0.122641841	427,896.12
24,122.73	84,429,572.04	229,165.98	$4,812,486	62	0.118494533	10,004,442.69	62	0.118494533	570,253.23	62	0.118494533	377,547.66
21,967.88	76,887,591.37	208,694.89	$4,382,593	63	0.114487471	8,802,665.91	63	0.114487471	501,751.96	63	0.114487471	332,195.01
19,942.32	69,798,129.82	189,452.07	$3,978,493	64	0.110615914	7,720,783.94	64	0.110615914	440,084.68	64	0.110615914	291,366.94
18,038.30	63,134,035.96	171,363.81	$3,598,640	65	0.106875279	6,747,467.74	65	0.106875279	384,605.66	65	0.106875279	254,635.94
16,248.51	56,869,787.72	154,360.85	$3,241,578	66	0.10326114	5,872,439.09	66	0.10326114	334,729.03	66	0.10326114	221,614.11
14,566.11	50,981,394.34	138,378.07	$2,905,939	67	0.099769217	5,086,373.79	67	0.099769217	289,923.31	67	0.099769217	191,949.57
12,984.66	45,446,304.59	123,354.26	$2,590,439	68	0.096395379	4,380,813.74	68	0.096395379	249,706.38	68	0.096395379	165,323.15
11,498.09	40,243,320.49	109,231.87	$2,293,869	69	0.093135632	3,748,087.07	69	0.093135632	213,640.96	69	0.093135632	141,445.31
10,100.72	35,352,515.47	95,956.83	$2,015,093	70	0.089986118	3,181,235.61	70	0.089986118	181,330.43	70	0.089986118	120,053.47
8,787.19	30,755,159.02	83,478.29	$1,753,044	71	0.086943109	2,673,949.13	71	0.086943109	152,415.10	71	0.086943109	100,909.49
7,552.47	26,433,643.90	71,748.46	$1,506,718	72	0.084003004	2,220,505.48	72	0.084003004	126,568.81	72	0.084003004	83,797.44
6,391.83	22,371,419.70	60,722.42	$1,275,171	73	0.081162322	1,815,716.38	73	0.081162322	103,495.83	73	0.081162322	68,521.50
5,300.84	18,552,928.92	50,357.95	$1,057,517	74	0.078417703	1,454,878.06	74	0.078417703	82,928.05	74	0.078417703	54,904.19
4,275.30	14,963,547.50	40,615.34	$852,922	75	0.075765896	1,133,726.59	75	0.075765896	64,622.42	75	0.075765896	42,784.57
3,311.29	11,589,528.82	31,457.29	$660,603	76	0.073203765	848,397.14	76	0.073203765	48,358.64	76	0.073203765	32,016.81
2,405.13	8,417,951.26	22,848.72	$479,823	77	0.070728275	595,387.17	77	0.070728275	33,937.07	77	0.070728275	22,468.72
1,553.33	5,436,668.11	14,756.67	$309,890	78	0.068336498	371,522.86	78	0.068336498	21,176.80	78	0.068336498	14,020.53
752.65	2,634,261.78	7,150.14	$150,153	79	0.066025601	173,928.72	79	0.066025601	9,913.94	79	0.066025601	6,563.72
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,124,032.63	$21,434,117,719	58,178,310.02	1,221,744,510.49			8,518,096,597			485,531,506			321,455,929

Alternative B - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
47,487.67	166,206,845.45	451,132.87	$9,473,790	1	0.966183575	160,586,324.10	1	0.966183575	9,153,420.47	1	0.966183575	6,060,206.70
71,295.90	249,535,642.80	677,311.03	$14,223,532	2	0.9335107	232,944,192.68	2	0.9335107	13,277,818.98	2	0.9335107	8,790,847.94
89,483.49	313,192,209.41	850,093.14	$17,851,956	3	0.901942706	282,481,428.75	3	0.901942706	16,101,441.44	3	0.901942706	10,660,284.16
104,738.14	366,583,494.52	995,012.34	$20,895,259	4	0.871442228	319,456,337.10	4	0.871442228	18,209,011.21	4	0.871442228	12,055,643.25
118,116.87	413,409,047.07	1,122,110.27	$23,564,316	5	0.841973167	348,079,324.57	5	0.841973167	19,840,521.50	5	0.841973167	13,135,817.55
130,164.36	455,575,264.07	1,236,561.43	$25,967,790	6	0.813500644	370,610,770.85	6	0.813500644	21,124,813.94	6	0.813500644	13,986,109.27
141,204.68	494,216,393.78	1,341,444.50	$28,170,334	7	0.785990961	388,449,618.13	7	0.785990961	22,141,628.23	7	0.785990961	14,659,311.69
151,449.03	530,071,614.44	1,438,765.81	$30,214,082	8	0.759411556	402,542,509.63	8	0.759411556	22,944,923.05	8	0.759411556	15,191,149.23
161,167.34	564,085,702.55	1,531,089.76	$32,152,885	9	0.733730972	413,887,150.93	9	0.733730972	23,591,567.60	9	0.733730972	15,619,273.30
170,342.13	596,197,454.85	1,618,250.23	$33,983,255	10	0.708918814	422,655,592.43	10	0.708918814	24,091,368.77	10	0.708918814	15,950,176.75
178,966.43	626,382,503.28	1,700,181.08	$35,703,803	11	0.684945714	429,038,010.78	11	0.684945714	24,455,166.61	11	0.684945714	16,191,036.45
187,073.27	654,756,449.65	1,777,196.08	$37,321,118	12	0.661783298	433,306,882.82	12	0.661783298	24,698,492.32	12	0.661783298	16,352,135.14
194,693.70	681,427,956.31	1,849,590.17	$38,841,394	13	0.639404153	435,707,865.19	13	0.639404153	24,835,348.32	13	0.639404153	16,442,743.42
201,856.91	706,499,171.80	1,917,640.61	$40,270,453	14	0.61778179	436,462,323.18	14	0.61778179	24,878,352.42	14	0.61778179	16,471,215.15
208,590.32	730,066,114.30	1,981,608.02	$41,613,769	15	0.596890619	435,769,614.60	15	0.596890619	24,838,868.03	15	0.596890619	16,445,073.72
214,919.73	752,219,039.91	2,041,737.39	$42,876,485	16	0.576705912	433,809,167.22	16	0.576705912	24,727,122.53	16	0.576705912	16,371,090.35
220,869.37	773,042,788.23	2,098,259.00	$44,063,439	17	0.557203779	430,742,363.26	17	0.557203779	24,552,314.71	17	0.557203779	16,255,355.30
226,462.03	792,617,111.57	2,151,389.30	$45,179,175	18	0.53836114	426,714,251.41	18	0.53836114	24,322,712.33	18	0.53836114	16,103,342.42
231,719.14	811,016,974.79	2,201,331.79	$46,227,968	19	0.52015569	421,855,094.44	19	0.52015569	24,045,740.38	19	0.52015569	15,919,967.55
236,660.81	828,312,845.81	2,248,277.72	$47,213,832	20	0.502565884	416,281,777.94	20	0.502565884	23,728,061.34	20	0.502565884	15,709,641.74
241,305.99	844,570,964.22	2,292,406.90	$48,140,545	21	0.485570903	410,099,085.60	21	0.485570903	23,375,647.88	21	0.485570903	15,476,319.29
198,184.79	693,646,750.39	1,882,755.47	$39,537,865	22	0.469150631	325,424,810.47	22	0.469150631	18,549,214.20	22	0.469150631	12,280,881.50
178,481.04	624,683,625.87	1,695,569.84	$35,606,967	23	0.453285634	283,160,113.14	23	0.453285634	16,140,126.45	23	0.453285634	10,685,896.35
164,151.65	574,530,791.21	1,559,440.72	$32,748,255	24	0.437957134	251,619,858.65	24	0.437957134	14,342,331.94	24	0.437957134	9,495,630.23
152,523.72	533,833,014.10	1,448,975.32	$30,428,482	25	0.423146989	225,889,832.69	25	0.423146989	12,875,720.46	25	0.423146989	8,524,630.51
142,554.10	498,939,359.11	1,354,263.97	$28,439,543	26	0.408837671	203,985,205.44	26	0.408837671	11,627,156.71	26	0.408837671	7,697,993.68
133,711.18	467,989,125.89	1,270,256.20	$26,675,380	27	0.395012242	184,861,434.00	27	0.395012242	10,537,101.74	27	0.395012242	6,976,300.80
125,683.15	439,891,020.88	1,193,989.91	$25,073,788	28	0.38165434	167,886,317.42	28	0.38165434	9,569,520.09	28	0.38165434	6,335,693.85
118,270.36	413,946,242.92	1,123,568.37	$23,594,936	29	0.368748155	152,641,913.33	29	0.368748155	8,700,589.06	29	0.368748155	5,760,400.53
111,213.71	389,247,970.90	1,056,530.21	$22,187,134	30	0.356278411	138,680,648.40	30	0.356278411	7,904,796.96	30	0.356278411	5,233,530.31
104,540.88	365,893,085.21	993,138.37	$20,855,906	31	0.344230348	125,951,504.20	31	0.344230348	7,179,235.74	31	0.344230348	4,753,157.87
98,268.43	343,939,491.48	933,550.05	$19,604,551	32	0.332589709	114,390,735.25	32	0.332589709	6,520,271.91	32	0.332589709	4,316,877.57
92,372.32	323,303,112.53	877,537.02	$18,428,277	33	0.321342714	103,891,099.50	33	0.321342714	5,921,792.67	33	0.321342714	3,920,642.31
86,829.98	303,904,919.29	824,884.78	$17,322,580	34	0.310476052	94,355,199.47	34	0.310476052	5,378,246.37	34	0.310476052	3,560,776.52
81,620.18	285,670,618.58	775,391.68	$16,283,225	35	0.299976862	85,694,575.63	35	0.299976862	4,884,590.81	35	0.299976862	3,233,941.90
76,722.96	268,530,376.25	728,868.16	$15,306,231	36	0.289832717	77,828,888.43	36	0.289832717	4,436,246.64	36	0.289832717	2,937,106.59
72,119.59	252,418,548.81	685,136.06	$14,387,857	37	0.28003161	70,685,172.67	37	0.28003161	4,029,054.84	37	0.28003161	2,667,517.05
67,792.41	237,273,433.24	644,027.89	$13,524,586	38	0.270561942	64,197,160.94	38	0.270561942	3,659,238.17	38	0.270561942	2,422,672.46
63,724.86	223,037,024.98	605,386.21	$12,713,110	39	0.261412505	58,304,667.31	39	0.261412505	3,323,366.04	39	0.261412505	2,200,301.54
59,901.37	209,654,801.63	569,063.03	$11,950,324	40	0.252572468	52,953,030.72	40	0.252572468	3,018,322.75	40	0.252572468	1,998,341.47
54,959.69	192,358,930.62	522,117.10	$10,964,459	41	0.24403137	46,941,613.42	41	0.24403137	2,675,671.96	41	0.24403137	1,771,482.61
50,314.52	176,100,812.20	477,987.92	$10,037,746	42	0.235779102	41,520,891.31	42	0.235779102	2,366,690.80	42	0.235779102	1,566,915.40
45,948.05	160,818,180.59	436,506.49	$9,166,636	43	0.227805895	36,635,329.62	43	0.227805895	2,088,213.79	43	0.227805895	1,382,544.07
41,843.57	146,452,507.75	397,513.95	$8,347,793	44	0.220102314	32,234,535.90	44	0.220102314	1,837,368.55	44	0.220102314	1,216,466.92
37,985.36	132,948,775.81	360,860.96	$7,578,080	45	0.212659241	28,272,785.74	45	0.212659241	1,611,548.79	45	0.212659241	1,066,958.39
34,358.65	120,255,267.80	326,407.16	$6,854,550	46	0.205467866	24,708,593.20	46	0.205467866	1,408,389.81	46	0.205467866	932,452.89
30,949.53	108,323,370.24	294,020.58	$6,174,432	47	0.198519677	21,504,320.46	47	0.198519677	1,225,746.27	47	0.198519677	811,530.05

Alternative B - 150 Wells/Year Development Rate

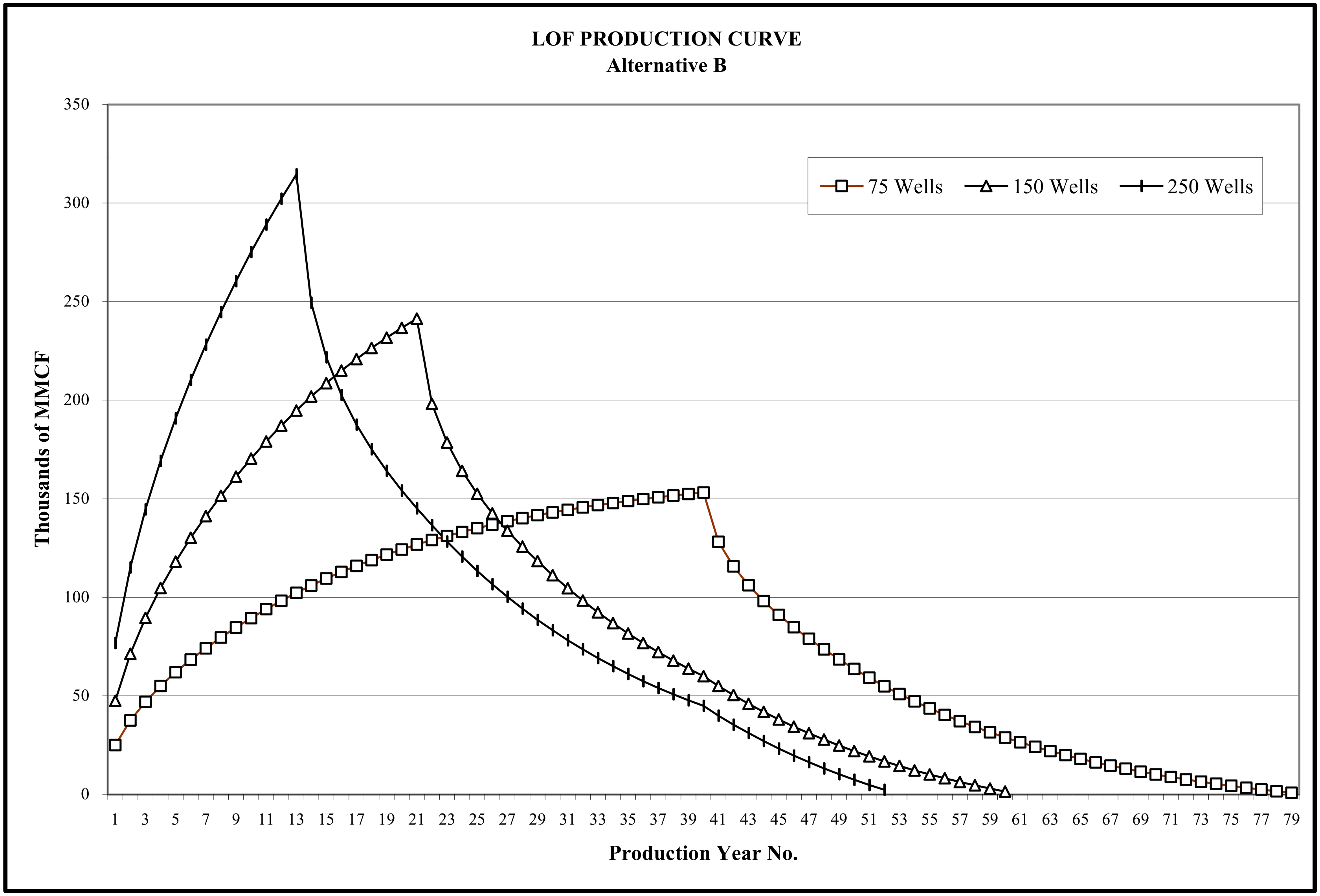
MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
27,744.97	97,107,386.46	263,577.19	$5,535,121	48	0.191806451	18,625,823.18	48	0.191806451	1,061,671.92	48	0.191806451	702,901.31
24,732.67	86,564,361.77	234,960.41	$4,934,169	49	0.185320243	16,042,128.53	49	0.185320243	914,401.33	49	0.185320243	605,397.85
21,901.12	76,653,919.07	208,060.64	$4,369,273	50	0.179053375	13,725,142.88	50	0.179053375	782,333.14	50	0.179053375	517,959.44
19,239.46	67,338,102.98	182,774.85	$3,838,272	51	0.172998429	11,649,386.06	51	0.172998429	664,015.01	51	0.172998429	439,624.53
16,737.50	58,581,236.37	159,006.21	$3,339,130	52	0.167148241	9,791,750.62	52	0.167148241	558,129.79	52	0.167148241	369,521.08
14,385.65	50,349,781.66	136,663.69	$2,869,938	53	0.161495885	8,131,282.55	53	0.161495885	463,483.11	53	0.161495885	306,858.34
12,174.92	42,612,214.25	115,661.72	$2,428,896	54	0.156034672	6,648,982.85	54	0.156034672	378,992.02	54	0.156034672	250,919.31
10,096.83	35,338,900.82	95,919.87	$2,014,317	55	0.150758137	5,327,626.84	55	0.150758137	303,674.73	55	0.150758137	201,053.98
8,143.42	28,501,986.05	77,362.53	$1,624,613	56	0.145660036	4,151,600.30	56	0.145660036	236,641.22	56	0.145660036	156,673.09
6,307.22	22,075,285.87	59,918.63	$1,258,291	57	0.140734334	3,106,750.65	57	0.140734334	177,084.79	57	0.140734334	117,242.56
4,581.20	16,034,187.70	43,521.37	$913,949	58	0.135975202	2,180,251.91	58	0.135975202	124,274.36	58	0.135975202	82,278.35
2,958.73	10,355,554.96	28,107.93	$590,267	59	0.131377007	1,360,481.81	59	0.131377007	77,547.46	59	0.131377007	51,341.86
1,433.61	5,017,639.88	13,619.31	$286,005	60	0.126934306	636,910.63	60	0.126934306	36,303.91	60	0.126934306	24,035.73
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,124,030.66	$21,434,110,805	58,178,291.26	1,221,744,116.38			11,167,078,042			636,523,448			421,423,191

Alternative B - 250 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
76,710.70	268,487,461.45	728,751.68	$15,303,785	1	0.966183575	259,408,175.32	1	0.966183575	14,786,265.99	1	0.966183575	9,789,545.72
115,170.07	403,095,258.19	1,094,115.70	$22,976,430	2	0.9335107	376,293,736.79	2	0.9335107	21,448,743.00	2	0.9335107	14,200,573.04
144,549.97	505,924,897.52	1,373,224.72	$28,837,719	3	0.901942706	456,315,270.93	3	0.901942706	26,009,970.44	3	0.901942706	17,220,425.69
169,192.05	592,172,191.16	1,607,324.52	$33,753,815	4	0.871442228	516,043,853.44	4	0.871442228	29,414,499.65	4	0.871442228	19,474,462.94
190,803.81	667,813,321.96	1,812,636.16	$38,065,359	5	0.841973167	562,280,897.56	5	0.841973167	32,050,011.16	5	0.841973167	21,219,356.51
210,265.10	735,927,848.35	1,997,518.45	$41,947,887	6	0.813500644	598,677,778.80	6	0.813500644	34,124,633.39	6	0.813500644	22,592,902.02
228,099.43	798,348,013.99	2,166,944.61	$45,505,837	7	0.785990961	627,494,322.47	7	0.785990961	35,767,176.38	7	0.785990961	23,680,380.74
244,647.96	856,267,873.72	2,324,155.66	$48,807,269	8	0.759411556	650,259,718.52	8	0.759411556	37,064,803.96	8	0.759411556	24,539,501.26
260,346.74	911,213,602.01	2,473,294.06	$51,939,175	9	0.733730972	668,585,642.08	9	0.733730972	38,109,381.60	9	0.733730972	25,231,084.96
275,167.52	963,086,332.25	2,614,091.47	$54,895,921	10	0.708918814	682,750,020.16	10	0.708918814	38,916,751.15	10	0.708918814	25,765,620.26
289,099.06	1,011,846,700.73	2,746,441.04	$57,675,262	11	0.684945714	693,060,060.62	11	0.684945714	39,504,423.46	11	0.684945714	26,154,700.57
302,194.70	1,057,681,448.46	2,870,849.65	$60,287,843	12	0.661783298	699,955,917.50	12	0.661783298	39,897,487.30	12	0.661783298	26,414,936.41
314,504.60	1,100,766,106.60	2,987,793.72	$62,743,668	13	0.639404153	703,834,419.97	13	0.639404153	40,118,561.94	13	0.639404153	26,561,303.34
249,365.21	872,778,222.55	2,368,969.46	$49,748,359	14	0.61778179	539,186,492.84	14	0.61778179	30,733,630.09	14	0.61778179	20,347,819.87
221,782.87	776,240,028.48	2,106,937.22	$44,245,682	15	0.596890619	463,330,390.80	15	0.596890619	26,409,832.28	15	0.596890619	17,485,162.29
202,627.38	709,195,815.10	1,924,960.07	$40,424,161	16	0.576705912	408,997,419.13	16	0.576705912	23,312,852.89	16	0.576705912	15,434,744.60
187,596.23	656,586,819.02	1,782,164.22	$37,425,449	17	0.557203779	365,852,657.09	17	0.557203779	20,853,601.45	17	0.557203779	13,806,547.57
175,018.77	612,565,687.80	1,662,678.30	$34,916,244	18	0.53836114	329,781,561.74	18	0.53836114	18,797,549.02	18	0.53836114	12,445,296.58
164,049.70	574,173,959.86	1,558,472.18	$32,727,916	19	0.52015569	298,659,852.49	19	0.52015569	17,023,611.59	19	0.52015569	11,270,825.51
154,198.06	539,693,224.09	1,464,881.61	$30,762,514	20	0.502565884	271,231,402.49	20	0.502565884	15,460,189.94	20	0.502565884	10,235,730.67
145,153.27	508,036,427.88	1,378,956.02	$28,958,076	21	0.485570903	246,687,706.96	21	0.485570903	14,061,199.30	21	0.485570903	9,309,500.69
136,507.99	477,777,979.81	1,296,825.95	$27,233,345	22	0.469150631	224,149,840.59	22	0.469150631	12,776,540.91	22	0.469150631	8,458,966.68
128,317.51	449,111,291.55	1,219,016.36	$25,599,344	23	0.453285634	203,575,696.34	23	0.453285634	11,603,814.69	23	0.453285634	7,682,539.63
120,618.46	422,164,601.67	1,145,875.35	$24,063,382	24	0.437957134	184,889,998.98	24	0.437957134	10,538,729.94	24	0.437957134	6,977,378.78
113,381.35	396,834,711.80	1,077,122.79	$22,619,579	25	0.423146989	167,919,413.54	25	0.423146989	9,571,406.57	25	0.423146989	6,336,942.83
106,578.46	373,024,620.12	1,012,495.40	$21,262,403	26	0.408837671	152,506,516.84	26	0.408837671	8,692,871.46	26	0.408837671	5,755,290.93
100,183.75	350,643,135.29	951,745.65	$19,986,659	27	0.395012242	138,508,331.12	27	0.395012242	7,894,974.87	27	0.395012242	5,227,027.40
94,172.73	329,604,539.55	894,640.89	$18,787,459	28	0.38165434	125,795,003.13	28	0.38165434	7,170,315.18	28	0.38165434	4,747,251.83
88,522.36	309,828,259.28	840,962.42	$17,660,211	29	0.368748155	114,248,598.97	29	0.368748155	6,512,170.14	29	0.368748155	4,311,513.63
83,211.02	291,238,558.59	790,504.66	$16,600,598	30	0.356278411	103,762,010.76	30	0.356278411	5,914,434.61	30	0.356278411	3,915,770.76
78,218.35	273,764,239.22	743,074.36	$15,604,562	31	0.344230348	94,237,959.45	31	0.344230348	5,371,563.69	31	0.344230348	3,556,352.11
73,525.25	257,338,380.33	698,489.89	$14,668,288	32	0.332589709	85,588,096.93	32	0.332589709	4,878,521.52	32	0.332589709	3,229,923.60
69,113.74	241,898,073.64	656,580.49	$13,788,190	33	0.321342714	77,732,183.41	33	0.321342714	4,430,734.45	33	0.321342714	2,933,457.14
64,966.91	227,384,185.97	617,185.65	$12,960,899	34	0.310476052	70,597,344.31	34	0.310476052	4,024,048.63	34	0.310476052	2,664,202.58
61,068.89	213,741,131.33	580,154.50	$12,183,244	35	0.299976862	64,117,393.78	35	0.299976862	3,654,691.45	35	0.299976862	2,419,662.21
57,404.76	200,916,661.85	545,345.23	$11,452,250	36	0.289832717	58,232,221.91	36	0.289832717	3,319,236.65	36	0.289832717	2,197,567.59
53,960.47	188,861,661.41	512,624.51	$10,765,115	37	0.28003161	52,887,235.15	37	0.28003161	3,014,572.40	37	0.28003161	1,995,858.48
50,722.85	177,529,961.76	481,867.04	$10,119,208	38	0.270561942	48,032,851.26	38	0.270561942	2,737,872.52	38	0.270561942	1,812,663.74
47,679.48	166,878,164.52	452,955.02	$9,512,055	39	0.261412505	43,624,038.95	39	0.261412505	2,486,570.22	39	0.261412505	1,646,283.98
44,818.71	156,865,474.51	425,777.72	$8,941,332	40	0.252572468	39,619,900.07	40	0.252572468	2,258,334.30	40	0.252572468	1,495,175.79
39,952.71	139,834,467.59	379,550.70	$7,970,565	41	0.24403137	34,123,996.73	41	0.24403137	1,945,067.81	41	0.24403137	1,287,771.39
35,378.66	123,825,321.91	336,097.30	$7,058,043	42	0.235779102	29,195,423.16	42	0.235779102	1,664,139.12	42	0.235779102	1,101,776.88
31,079.06	108,776,725.04	295,251.11	$6,200,273	43	0.227805895	24,779,979.24	43	0.227805895	1,412,458.82	43	0.227805895	935,146.86
27,037.44	94,631,044.83	256,855.69	$5,393,970	44	0.220102314	20,828,511.97	44	0.220102314	1,187,225.18	44	0.220102314	786,026.38
23,238.32	81,334,105.26	220,764.00	$4,636,044	45	0.212659241	17,296,449.08	45	0.212659241	985,897.60	45	0.212659241	652,733.40
19,667.14	68,834,982.09	186,837.81	$3,923,594	46	0.205467866	14,143,376.85	46	0.205467866	806,172.48	46	0.205467866	533,742.76
16,310.23	57,085,806.23	154,947.19	$3,253,891	47	0.198519677	11,332,655.81	47	0.198519677	645,961.38	47	0.198519677	427,671.76

Alternative B - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
13,154.74	46,041,580.65	124,970.00	$2,624,370	48	0.191806451	8,831,072.19	48	0.191806451	503,371.11	48	0.191806451	333,267.00
10,188.57	35,660,008.16	96,791.45	$2,032,620	49	0.185320243	6,608,521.36	49	0.185320243	376,685.72	49	0.185320243	249,392.38
7,400.38	25,901,329.99	70,303.61	$1,476,376	50	0.179053375	4,637,720.54	50	0.179053375	264,350.07	50	0.179053375	175,018.30
4,779.48	16,728,171.79	45,405.04	$953,506	51	0.172998429	2,893,947.45	51	0.172998429	164,955.00	51	0.172998429	109,211.79
2,315.83	8,105,402.57	22,000.38	$462,008	52	0.167148241	1,354,803.78	52	0.167148241	77,223.82	52	0.167148241	51,127.59
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,124,018.81	$21,434,069,320	58,178,178.65	1,221,741,751.71			12,644,738,391			720,750,088			477,187,137


LOF PRODUCTION CURVE
Alternative B
Thousands of MMCF
0
50
100
150
200
250
300
350
Production Year No.
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79
75 Wells
150 Wells
250 Wells

Alternative C - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
63,766.97	223,184,378.84	605,786.17	$12,721,510	1	0.966183575	215,637,081.00	1	0.966183575	12,291,313.62	1	0.966183575	8,137,712.16
95,736.93	335,079,250.01	909,500.82	$19,099,517	2	0.9335107	312,800,065.36	2	0.9335107	17,829,603.73	2	0.9335107	11,804,448.87
120,159.44	420,558,025.84	1,141,514.64	$23,971,807	3	0.901942706	379,319,243.72	3	0.901942706	21,621,196.89	3	0.901942706	14,314,749.62
140,643.56	492,252,463.76	1,336,113.83	$28,058,390	4	0.871442228	428,969,583.61	4	0.871442228	24,451,266.27	4	0.871442228	16,188,454.15
158,608.67	555,130,360.27	1,506,782.41	$31,642,431	5	0.841973167	467,404,867.46	5	0.841973167	26,642,077.45	5	0.841973167	17,638,924.89
174,786.18	611,751,647.12	1,660,468.76	$34,869,844	6	0.813500644	497,660,359.09	6	0.813500644	28,366,640.47	6	0.813500644	18,780,706.63
189,611.26	663,639,405.92	1,801,306.96	$37,827,446	7	0.785990961	521,614,574.21	7	0.785990961	29,732,030.73	7	0.785990961	19,684,690.80
203,367.49	711,786,213.77	1,931,991.15	$40,571,814	8	0.759411556	540,538,676.29	8	0.759411556	30,810,704.55	8	0.759411556	20,398,848.57
216,417.35	757,460,725.47	2,055,964.83	$43,175,261	9	0.733730972	555,772,394.50	9	0.733730972	31,679,026.49	9	0.733730972	20,973,738.62
228,737.36	800,580,757.98	2,173,004.91	$45,633,103	10	0.708918814	567,546,761.23	10	0.708918814	32,350,165.39	10	0.708918814	21,418,079.68
240,318.17	841,113,590.25	2,283,022.60	$47,943,475	11	0.684945714	576,117,148.40	11	0.684945714	32,838,677.46	11	0.684945714	21,741,508.95
251,204.13	879,214,453.71	2,386,439.23	$50,115,224	12	0.661783298	581,849,441.08	12	0.661783298	33,165,418.14	12	0.661783298	21,957,834.21
261,436.93	915,029,261.43	2,483,650.85	$52,156,668	13	0.639404153	585,073,509.82	13	0.639404153	33,349,190.06	13	0.639404153	22,079,504.11
271,055.77	948,695,179.66	2,575,029.77	$54,075,625	14	0.61778179	586,086,606.52	14	0.61778179	33,406,936.57	14	0.61778179	22,117,736.36
280,097.47	980,341,142.71	2,660,925.96	$55,879,445	15	0.596890619	585,156,431.13	15	0.596890619	33,353,916.57	15	0.596890619	22,082,633.40
288,596.67	1,010,088,347.52	2,741,668.37	$57,575,036	16	0.576705912	582,523,921.37	16	0.576705912	33,203,863.52	16	0.576705912	21,983,287.74
296,585.92	1,038,050,717.68	2,817,566.23	$59,168,891	17	0.557203779	578,405,783.13	17	0.557203779	32,969,129.64	17	0.557203779	21,827,877.44
240,328.85	841,150,966.69	2,283,124.05	$47,945,605	18	0.53836114	452,842,992.96	18	0.53836114	25,812,050.60	18	0.53836114	17,089,388.87
215,418.18	753,963,644.73	2,046,472.75	$42,975,928	19	0.52015569	392,178,480.15	19	0.52015569	22,354,173.37	19	0.52015569	14,800,031.48
197,631.42	691,709,964.61	1,877,498.48	$39,427,468	20	0.502565884	347,629,830.13	20	0.502565884	19,814,900.32	20	0.502565884	13,118,854.53
183,384.89	641,847,116.19	1,742,156.46	$36,585,286	21	0.485570903	311,662,283.69	21	0.485570903	17,764,750.17	21	0.485570903	11,761,511.26
171,283.12	599,490,914.23	1,627,189.62	$34,170,982	22	0.469150631	281,251,540.54	22	0.469150631	16,031,337.81	22	0.469150631	10,613,870.64
160,617.15	562,160,019.08	1,525,862.91	$32,043,121	23	0.453285634	254,819,060.42	23	0.453285634	14,524,686.44	23	0.453285634	9,616,361.70
150,972.92	528,405,227.75	1,434,242.76	$30,119,098	24	0.437957134	231,418,839.08	24	0.437957134	13,190,873.83	24	0.437957134	8,733,284.15
142,086.69	497,303,409.32	1,349,823.54	$28,346,294	25	0.423146989	210,432,440.41	25	0.423146989	11,994,649.10	25	0.423146989	7,941,299.44
133,614.63	467,651,187.71	1,269,338.94	$26,656,118	26	0.408837671	191,193,422.33	26	0.408837671	10,898,025.07	26	0.408837671	7,215,257.37
125,597.75	439,592,107.99	1,193,178.58	$25,056,750	27	0.395012242	173,644,264.28	27	0.395012242	9,897,723.06	27	0.395012242	6,552,987.25
118,061.88	413,216,571.25	1,121,587.84	$23,553,345	28	0.38165434	157,705,897.94	28	0.38165434	8,989,236.18	28	0.38165434	5,951,505.18
110,978.16	388,423,564.91	1,054,292.53	$22,140,143	29	0.368748155	143,230,472.91	29	0.368748155	8,164,136.96	29	0.368748155	5,405,231.59
104,319.47	365,118,142.82	991,034.96	$20,811,734	30	0.356278411	130,083,711.60	30	0.356278411	7,414,771.56	30	0.356278411	4,909,099.11
98,060.30	343,211,046.38	931,572.84	$19,563,030	31	0.344230348	118,143,658.07	31	0.344230348	6,734,188.51	31	0.344230348	4,458,505.37
92,176.68	322,618,375.95	875,678.45	$18,389,247	32	0.332589709	107,299,551.65	32	0.332589709	6,116,074.44	32	0.332589709	4,049,270.48
86,646.08	303,261,266.19	823,137.72	$17,285,892	33	0.321342714	97,450,798.21	33	0.321342714	5,554,695.50	33	0.321342714	3,677,598.22
81,447.31	285,065,585.44	773,749.45	$16,248,738	34	0.310476052	88,506,037.48	34	0.310476052	5,044,844.14	34	0.310476052	3,340,040.84
76,560.47	267,961,645.85	727,324.47	$15,273,814	35	0.299976862	80,382,293.57	35	0.299976862	4,581,790.73	35	0.299976862	3,033,466.99
71,966.84	251,883,943.98	683,684.99	$14,357,385	36	0.289832717	73,004,207.75	36	0.289832717	4,161,239.84	36	0.289832717	2,755,032.79
67,648.83	236,770,904.80	642,663.88	$13,495,942	37	0.28003161	66,303,337.73	37	0.28003161	3,779,290.25	37	0.28003161	2,502,155.36
63,589.90	222,564,649.04	604,104.05	$12,686,185	38	0.270561942	60,217,523.72	38	0.270561942	3,432,398.85	38	0.270561942	2,272,488.91
59,774.51	209,210,768.62	567,857.80	$11,925,014	39	0.261412505	54,690,311.01	39	0.261412505	3,117,347.73	39	0.261412505	2,063,902.96
56,188.03	196,658,121.80	533,786.33	$11,209,513	40	0.252572468	49,670,427.21	40	0.252572468	2,831,214.35	40	0.252572468	1,874,462.58
51,007.19	178,525,154.33	484,568.28	$10,175,934	41	0.24403137	43,565,738.03	41	0.24403137	2,483,247.07	41	0.24403137	1,644,083.82
46,137.19	161,480,164.92	438,303.30	$9,204,369	42	0.235779102	38,073,648.22	42	0.235779102	2,170,197.95	42	0.235779102	1,436,823.34
41,559.39	145,457,874.82	394,814.23	$8,291,099	43	0.227805895	33,136,161.41	43	0.227805895	1,888,761.20	43	0.227805895	1,250,492.46
37,256.26	130,396,922.03	353,934.50	$7,432,625	44	0.220102314	28,700,664.32	44	0.220102314	1,635,937.87	44	0.220102314	1,083,105.67
33,211.32	116,239,626.50	315,507.56	$6,625,659	45	0.212659241	24,719,430.73	45	0.212659241	1,409,007.55	45	0.212659241	932,861.88
29,409.08	102,931,769.38	279,386.23	$5,867,111	46	0.205467866	21,149,170.96	46	0.205467866	1,205,502.74	46	0.205467866	798,127.41
25,834.97	90,422,383.75	245,432.18	$5,154,076	47	0.198519677	17,950,622.41	47	0.198519677	1,023,185.48	47	0.198519677	677,420.59

Alternative C - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
22,475.30	78,663,561.96	213,515.38	$4,483,823	48	0.191806451	15,088,178.65	48	0.191806451	860,026.18	48	0.191806451	569,397.69
19,317.22	67,610,269.34	183,513.59	$3,853,785	49	0.185320243	12,529,551.52	49	0.185320243	714,184.44	49	0.185320243	472,840.22
16,348.62	57,220,174.30	155,311.90	$3,261,550	50	0.179053375	10,245,465.30	50	0.179053375	583,991.52	50	0.179053375	386,643.37
13,558.14	47,453,484.88	128,802.32	$2,704,849	51	0.172998429	8,209,378.36	51	0.172998429	467,934.57	51	0.172998429	309,805.52
10,935.08	38,272,796.62	103,883.31	$2,181,549	52	0.167148241	6,397,230.64	52	0.167148241	364,642.15	52	0.167148241	241,418.69
8,469.41	29,642,949.27	80,459.43	$1,689,648	53	0.161495885	4,787,214.33	53	0.161495885	272,871.22	53	0.161495885	180,659.89
6,151.68	21,530,892.75	58,440.99	$1,227,261	54	0.156034672	3,359,565.78	54	0.156034672	191,495.25	54	0.156034672	126,783.29
3,973.02	13,905,559.01	37,743.66	$792,617	55	0.150758137	2,096,376.17	55	0.150758137	119,493.44	55	0.150758137	79,113.04
1,925.07	6,737,744.88	18,288.16	$384,051	56	0.145660036	981,420.16	56	0.145660036	55,940.95	56	0.145660036	37,036.83
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,657,053.26	$23,299,689,896	63,242,005.93	1,328,082,124.57			12,907,227,648			735,711,976			487,092,957

Alternative C - 150 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
120,448.71	421,570,493.36	1,144,262.77	$24,029,518	1	0.966183575	407,314,486.34	1	0.966183575	23,216,925.72	1	0.966183575	15,371,234.09
180,836.42	632,927,472.25	1,717,946.00	$36,076,866	2	0.9335107	590,844,567.90	2	0.9335107	33,678,140.37	2	0.9335107	22,297,292.30
226,967.82	794,387,382.14	2,156,194.32	$45,280,081	3	0.901942706	716,491,904.80	3	0.901942706	40,840,038.57	3	0.901942706	27,038,971.50
265,660.06	929,810,209.33	2,523,770.57	$52,999,182	4	0.871442228	810,275,880.15	4	0.871442228	46,185,725.17	4	0.871442228	30,578,191.17
299,594.16	1,048,579,569.40	2,846,144.55	$59,769,035	5	0.841973167	882,875,860.75	5	0.841973167	50,323,924.06	5	0.841973167	33,317,969.23
330,151.68	1,155,530,889.00	3,136,440.98	$65,865,261	6	0.813500644	940,025,122.72	6	0.813500644	53,581,431.99	6	0.813500644	35,474,668.08
358,154.60	1,253,541,100.08	3,402,468.70	$71,451,843	7	0.785990961	985,271,973.51	7	0.785990961	56,160,502.49	7	0.785990961	37,182,193.74
384,138.59	1,344,485,070.45	3,649,316.62	$76,635,649	8	0.759411556	1,021,017,499.66	8	0.759411556	58,197,997.48	8	0.759411556	38,531,158.40
408,788.33	1,430,759,148.12	3,883,489.12	$81,553,271	9	0.733730972	1,049,792,300.72	9	0.733730972	59,838,161.14	9	0.733730972	39,617,061.84
311,610.74	1,090,637,605.04	2,960,302.07	$62,166,343	10	0.708918814	773,173,517.16	10	0.708918814	44,070,890.48	10	0.708918814	29,178,022.19
273,097.90	955,842,642.67	2,594,430.03	$54,483,031	11	0.684945714	654,700,321.10	11	0.684945714	37,317,918.30	11	0.684945714	24,707,080.72
247,528.87	866,351,030.41	2,351,524.23	$49,382,009	12	0.661783298	573,336,642.38	12	0.661783298	32,680,188.62	12	0.661783298	21,636,578.21
228,165.26	798,578,395.59	2,167,569.93	$45,518,969	13	0.639404153	510,614,342.59	13	0.639404153	29,105,017.53	13	0.639404153	19,269,564.06
212,400.06	743,400,214.40	2,017,800.58	$42,373,812	14	0.61778179	459,259,115.34	14	0.61778179	26,177,769.57	14	0.61778179	17,331,520.49
198,921.32	696,224,602.78	1,889,752.49	$39,684,802	15	0.596890619	415,569,933.85	15	0.596890619	23,687,486.23	15	0.596890619	15,682,778.16
186,972.44	654,403,556.35	1,776,238.22	$37,301,003	16	0.576705912	377,398,399.59	16	0.576705912	21,511,708.78	16	0.576705912	14,242,260.80
176,079.26	616,277,396.27	1,672,752.93	$35,127,812	17	0.557203779	343,392,094.38	17	0.557203779	19,573,349.38	17	0.557203779	12,958,930.86
165,614.87	579,652,060.11	1,573,341.31	$33,040,167	18	0.53836114	312,062,143.62	18	0.53836114	17,787,542.19	18	0.53836114	11,776,601.18
155,677.98	544,872,925.01	1,478,940.80	$31,057,757	19	0.52015569	283,418,752.48	19	0.52015569	16,154,868.89	19	0.52015569	10,695,656.88
146,337.30	512,180,533.70	1,390,204.31	$29,194,290	20	0.502565884	257,404,462.91	20	0.502565884	14,672,054.39	20	0.502565884	9,713,929.62
137,557.05	481,449,682.91	1,306,792.00	$27,442,632	21	0.485570903	233,777,957.20	21	0.485570903	13,325,343.56	21	0.485570903	8,822,312.55
129,303.63	452,562,691.36	1,228,384.45	$25,796,073	22	0.469150631	212,320,072.11	22	0.469150631	12,102,244.11	22	0.469150631	8,012,534.88
121,545.41	425,408,919.02	1,154,681.35	$24,248,308	23	0.453285634	192,831,751.39	23	0.453285634	10,991,409.83	23	0.453285634	7,277,084.63
114,252.68	399,884,371.83	1,085,400.44	$22,793,409	24	0.437957134	175,132,213.38	24	0.437957134	9,982,536.16	24	0.437957134	6,609,139.47
107,397.51	375,891,298.29	1,020,276.38	$21,425,804	25	0.423146989	159,057,271.16	25	0.423146989	9,066,264.46	25	0.423146989	6,002,503.30
100,953.66	353,337,813.73	959,059.78	$20,140,255	26	0.408837671	144,457,808.77	26	0.408837671	8,234,095.10	26	0.408837671	5,451,548.79
94,896.44	332,137,538.60	901,516.18	$18,931,840	27	0.395012242	131,198,393.88	27	0.395012242	7,478,308.45	27	0.395012242	4,951,164.99
89,202.65	312,209,281.65	847,425.19	$17,795,929	28	0.38165434	119,156,027.45	28	0.38165434	6,791,893.56	28	0.38165434	4,496,710.16
83,850.49	293,476,719.88	796,579.67	$16,728,173	29	0.368748155	108,218,998.98	29	0.368748155	6,168,482.94	29	0.368748155	4,083,968.58
78,819.46	275,868,112.55	748,784.88	$15,724,482	30	0.356278411	98,285,852.68	30	0.356278411	5,602,293.60	30	0.356278411	3,709,111.51
74,090.29	259,316,019.57	703,857.77	$14,781,013	31	0.344230348	89,264,443.76	31	0.344230348	5,088,073.29	31	0.344230348	3,368,661.58
69,644.87	243,757,054.65	661,626.29	$13,894,152	32	0.332589709	81,071,087.78	32	0.332589709	4,621,052.00	32	0.332589709	3,059,460.71
65,466.18	229,131,628.95	621,928.71	$13,060,503	33	0.321342714	73,629,779.42	33	0.321342714	4,196,897.43	33	0.321342714	2,778,640.62
61,538.21	215,383,728.95	584,612.98	$12,276,873	34	0.310476052	66,871,489.79	34	0.310476052	3,811,674.92	34	0.310476052	2,523,596.28
57,845.92	202,460,703.26	549,536.19	$11,540,260	35	0.299976862	60,733,526.37	35	0.299976862	3,461,811.00	35	0.299976862	2,291,961.82
54,375.16	190,313,059.66	516,564.02	$10,847,844	36	0.289832717	55,158,951.08	36	0.289832717	3,144,060.21	36	0.289832717	2,081,588.50
51,112.65	178,894,274.86	485,570.17	$10,196,974	37	0.28003161	50,096,051.85	37	0.28003161	2,855,474.96	37	0.28003161	1,890,524.80
48,045.89	168,160,619.59	456,435.97	$9,585,155	38	0.270561942	45,497,863.84	38	0.270561942	2,593,378.24	38	0.270561942	1,716,998.39
45,163.14	158,070,984.54	429,049.82	$9,010,046	39	0.261412505	41,321,731.97	39	0.261412505	2,355,338.72	39	0.261412505	1,559,399.52
42,453.35	148,586,728.15	403,306.83	$8,469,444	40	0.252572468	37,528,916.67	40	0.252572468	2,139,148.25	40	0.252572468	1,416,266.26
36,488.08	127,708,286.53	346,636.78	$7,279,372	41	0.24403137	31,164,828.15	41	0.24403137	1,776,395.20	41	0.24403137	1,176,098.28
30,880.73	108,082,551.45	293,366.93	$6,160,705	42	0.235779102	25,483,606.89	42	0.235779102	1,452,565.59	42	0.235779102	961,700.36
25,609.82	89,634,360.34	243,293.26	$5,109,159	43	0.227805895	20,419,235.71	43	0.227805895	1,163,896.44	43	0.227805895	770,581.12
20,655.16	72,293,060.28	196,224.02	$4,120,704	44	0.220102314	15,911,869.88	44	0.220102314	906,976.58	44	0.220102314	600,482.15
15,997.78	55,992,237.51	151,978.93	$3,191,558	45	0.212659241	11,907,266.73	45	0.212659241	678,714.20	45	0.212659241	449,356.43
11,619.85	40,669,464.08	110,388.55	$2,318,159	46	0.205467866	8,356,267.98	46	0.205467866	476,307.27	46	0.205467866	315,348.84
7,504.59	26,266,055.90	71,293.58	$1,497,165	47	0.198519677	5,214,328.93	47	0.198519677	297,216.75	47	0.198519677	196,778.35

Alternative C - 150 Wells/Year Development Rate

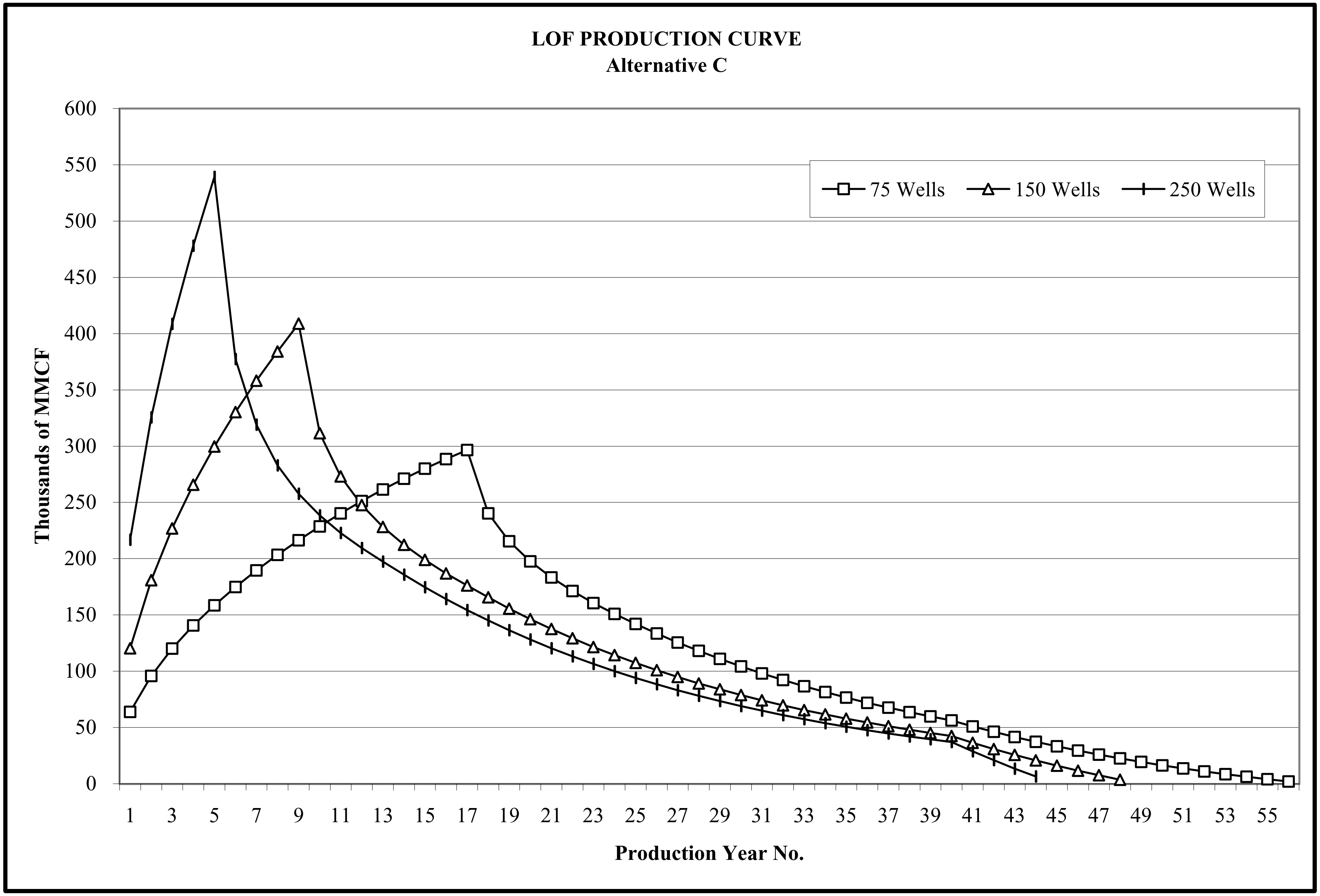
MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
3,636.24	12,726,851.44	34,544.31	$725,431	48	0.191806451	2,441,092.21	48	0.191806451	139,142.26	48	0.191806451	92,121.94
-	-	-	$0	49	0.185320243	-	49	0.185320243	-	49	0.185320243	-
-	-	-	$0	50	0.179053375	-	50	0.179053375	-	50	0.179053375	-
-	-	-	$0	51	0.172998429	-	51	0.172998429	-	51	0.172998429	-
-	-	-	$0	52	0.167148241	-	52	0.167148241	-	52	0.167148241	-
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,657,053.26	$23,299,689,896	63,242,005.93	1,328,082,124.57			14,660,748,008			835,662,636			553,267,308

Alternative C - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
216,805.95	758,820,817.48	2,059,656.50	$43,252,787	1	0.966183575	733,160,210.13	1	0.966183575	41,790,131.98	1	0.966183575	27,668,000.01
325,502.95	1,139,260,335.96	3,092,278.05	$64,937,839	2	0.9335107	1,063,511,714.12	2	0.9335107	60,620,167.71	2	0.9335107	40,134,805.07
408,538.81	1,429,885,848.77	3,881,118.73	$81,503,493	3	0.901942706	1,289,675,111.24	3	0.901942706	73,511,481.34	3	0.901942706	48,669,759.35
478,184.28	1,673,644,987.63	4,542,750.68	$95,397,764	4	0.871442228	1,458,484,916.40	4	0.871442228	83,133,640.23	4	0.871442228	55,040,303.78
539,265.18	1,887,428,125.50	5,123,019.20	$107,583,403	5	0.841973167	1,589,163,836.04	5	0.841973167	90,582,338.65	5	0.841973167	59,971,864.84
377,462.33	1,321,118,143.21	3,585,892.10	$75,303,734	6	0.813500644	1,074,730,460.70	6	0.813500644	61,259,636.26	6	0.813500644	40,558,178.13
319,170.17	1,117,095,593.33	3,032,116.61	$63,674,449	7	0.785990961	878,027,038.58	7	0.785990961	50,047,541.20	7	0.785990961	33,134,984.38
282,905.12	990,167,917.60	2,687,598.63	$56,439,571	8	0.759411556	751,944,959.22	8	0.759411556	42,860,862.68	8	0.759411556	28,376,898.87
257,628.82	901,700,876.21	2,447,473.81	$51,396,950	9	0.733730972	661,605,860.53	9	0.733730972	37,711,534.05	9	0.733730972	24,967,681.96
238,435.62	834,524,676.01	2,265,138.41	$47,567,907	10	0.708918814	591,610,243.33	10	0.708918814	33,721,783.87	10	0.708918814	22,326,187.36
222,806.96	779,824,368.06	2,116,666.14	$44,449,989	11	0.684945714	534,137,358.36	11	0.684945714	30,445,829.43	11	0.684945714	20,157,275.63
209,414.09	732,949,298.87	1,989,433.81	$41,778,110	12	0.661783298	485,053,604.48	12	0.661783298	27,648,055.46	12	0.661783298	18,304,952.93
197,434.52	691,020,833.89	1,875,627.98	$39,388,188	13	0.639404153	441,841,590.96	13	0.639404153	25,184,970.68	13	0.639404153	16,674,217.96
185,769.13	650,191,942.69	1,764,806.70	$37,060,941	14	0.61778179	401,676,742.38	14	0.61778179	22,895,574.32	14	0.61778179	15,158,476.90
174,622.98	611,180,418.63	1,658,918.28	$34,837,284	15	0.596890619	364,807,858.17	15	0.596890619	20,794,047.92	15	0.596890619	13,767,118.95
164,145.59	574,509,578.64	1,559,383.14	$32,747,046	16	0.576705912	331,323,070.34	16	0.576705912	18,885,415.01	16	0.576705912	12,503,470.03
154,296.85	540,038,977.18	1,465,820.08	$30,782,222	17	0.557203779	300,911,759.13	17	0.557203779	17,151,970.27	17	0.557203779	11,355,807.97
145,039.04	507,636,624.85	1,377,870.84	$28,935,288	18	0.53836114	273,291,831.83	18	0.53836114	15,577,634.41	18	0.53836114	10,313,487.15
136,336.69	477,178,413.88	1,295,198.55	$27,199,170	19	0.52015569	248,207,067.31	19	0.52015569	14,147,802.84	19	0.52015569	9,366,838.31
128,156.48	448,547,693.94	1,217,486.60	$25,567,219	20	0.502565884	225,424,768.52	20	0.502565884	12,849,211.81	20	0.502565884	8,507,079.91
120,467.09	421,634,817.20	1,144,437.36	$24,033,185	21	0.485570903	204,733,598.85	21	0.485570903	11,669,815.13	21	0.485570903	7,726,236.55
113,239.06	396,336,722.52	1,075,771.10	$22,591,193	22	0.469150631	185,941,623.36	22	0.469150631	10,598,672.53	22	0.469150631	7,017,064.98
106,444.72	372,556,509.82	1,011,224.81	$21,235,721	23	0.453285634	168,874,513.60	23	0.453285634	9,625,847.28	23	0.453285634	6,372,986.39
100,058.03	350,203,110.72	950,551.30	$19,961,577	24	0.437957134	153,373,950.65	24	0.437957134	8,742,315.19	24	0.437957134	5,788,026.15
94,054.55	329,190,917.44	893,518.20	$18,763,882	25	0.423146989	139,296,145.61	25	0.423146989	7,939,880.30	25	0.423146989	5,256,757.94
88,411.27	309,439,457.46	839,907.10	$17,638,049	26	0.408837671	126,510,507.04	26	0.408837671	7,211,098.90	26	0.408837671	4,774,253.51
83,106.60	290,873,083.99	789,512.66	$16,579,766	27	0.395012242	114,898,429.14	27	0.395012242	6,549,210.46	27	0.395012242	4,336,036.92
78,120.20	273,420,696.67	742,141.89	$15,584,980	28	0.38165434	104,352,195.64	28	0.38165434	5,948,075.15	28	0.38165434	3,938,043.16
73,432.99	257,015,452.70	697,613.37	$14,649,881	29	0.368748155	94,773,973.98	29	0.368748155	5,402,116.52	29	0.368748155	3,576,580.23
69,027.01	241,594,523.20	655,756.56	$13,770,888	30	0.356278411	86,074,912.73	30	0.356278411	4,906,270.03	30	0.356278411	3,248,295.06
64,885.38	227,098,846.92	616,411.16	$12,944,634	31	0.344230348	78,174,315.20	31	0.344230348	4,455,935.97	31	0.344230348	2,950,142.31
60,992.26	213,472,911.36	579,426.47	$12,167,956	32	0.332589709	70,998,893.39	32	0.332589709	4,046,936.92	32	0.332589709	2,679,356.24
57,332.72	200,664,532.17	544,660.87	$11,437,878	33	0.321342714	64,482,085.30	33	0.321342714	3,675,478.86	33	0.321342714	2,433,424.93
53,892.76	188,624,658.28	511,981.22	$10,751,606	34	0.310476052	58,563,439.18	34	0.310476052	3,338,116.03	34	0.310476052	2,210,067.07
50,659.19	177,307,177.80	481,262.34	$10,106,509	35	0.299976862	53,188,050.75	35	0.299976862	3,031,718.89	35	0.299976862	2,007,210.66
47,619.64	166,668,749.80	452,386.61	$9,500,119	36	0.289832717	48,306,056.52	36	0.289832717	2,753,445.22	36	0.289832717	1,822,973.96
44,762.46	156,668,627.06	425,243.42	$8,930,112	37	0.28003161	43,872,167.91	37	0.28003161	2,500,713.57	37	0.28003161	1,655,647.87
42,076.72	147,268,513.83	399,728.82	$8,394,305	38	0.270561942	39,845,255.13	38	0.270561942	2,271,179.54	38	0.270561942	1,503,680.24
39,552.12	138,432,408.56	375,745.11	$7,890,647	39	0.261412505	36,187,962.64	39	0.261412505	2,062,713.87	39	0.261412505	1,365,661.33
37,178.99	130,126,467.49	353,200.41	$7,417,209	40	0.252572468	32,866,363.07	40	0.252572468	1,873,382.70	40	0.252572468	1,240,310.81
28,795.78	100,785,221.23	273,559.89	$5,744,758	41	0.24403137	24,594,755.64	41	0.24403137	1,401,901.07	41	0.24403137	928,156.89
20,915.56	73,204,449.71	198,697.79	$4,172,654	42	0.235779102	17,260,079.39	42	0.235779102	983,824.53	42	0.235779102	651,360.88
13,508.15	47,278,522.40	128,327.42	$2,694,876	43	0.227805895	10,770,326.13	43	0.227805895	613,908.59	43	0.227805895	406,450.57
6,545.19	22,908,149.32	62,179.26	$1,305,765	44	0.220102314	5,042,136.68	44	0.220102314	287,401.79	44	0.220102314	190,280.15
-	-	-	$0	45	0.212659241	-	45	0.212659241	-	45	0.212659241	-
-	-	-	$0	46	0.205467866	-	46	0.205467866	-	46	0.205467866	-
-	-	-	$0	47	0.198519677	-	47	0.198519677	-	47	0.198519677	-

Alternative C - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
-	-	-	$0	48	0.191806451	-	48	0.191806451	-	48	0.191806451	-
-	-	-	$0	49	0.185320243	-	49	0.185320243	-	49	0.185320243	-
-	-	-	$0	50	0.179053375	-	50	0.179053375	-	50	0.179053375	-
-	-	-	$0	51	0.172998429	-	51	0.172998429	-	51	0.172998429	-
-	-	-	$0	52	0.167148241	-	52	0.167148241	-	52	0.167148241	-
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,657,000.00	$23,299,503,500	63,241,500.00	1,328,071,500.00			15,661,571,739			892,709,589			591,036,394


LOF PRODUCTION CURVE
Alternative C
Thousands of MMCF
0
50
100
150
200
250
300
350
400
450
500
550
600
75 Wells
150 Wells
250 Wells
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
Production Year No.

Alternative D - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
41,003.63	143,512,707.56	389,534.49	$8,180,224	1	0.966183575	138,659,620.84	1	0.966183575	7,903,598.39	1	0.966183575	5,232,736.77
61,561.06	215,463,692.70	584,830.02	$12,281,430	2	0.9335107	201,137,662.68	2	0.9335107	11,464,846.77	2	0.9335107	7,590,533.11
77,265.29	270,428,518.75	734,020.27	$15,414,426	3	0.901942706	243,911,029.89	3	0.901942706	13,902,928.70	3	0.901942706	9,204,714.45
90,437.06	316,529,697.32	859,152.04	$18,042,193	4	0.871442228	275,837,344.56	4	0.871442228	15,722,728.64	4	0.871442228	10,409,549.71
101,989.04	356,961,636.24	968,895.87	$20,346,813	5	0.841973167	300,552,119.31	5	0.841973167	17,131,470.80	5	0.841973167	11,342,235.88
112,391.55	393,370,430.73	1,067,719.74	$22,422,115	6	0.813500644	320,007,098.85	6	0.813500644	18,240,404.63	6	0.813500644	12,076,427.90
121,924.42	426,735,457.41	1,158,281.96	$24,323,921	7	0.785990961	335,410,212.13	7	0.785990961	19,118,382.09	7	0.785990961	12,657,710.59
130,769.99	457,694,966.27	1,242,314.91	$26,088,613	8	0.759411556	347,578,846.61	8	0.759411556	19,811,994.26	8	0.759411556	13,116,930.51
139,161.35	487,064,731.65	1,322,032.84	$27,762,690	9	0.733730972	357,374,479.07	9	0.733730972	20,370,345.31	9	0.733730972	13,486,598.09
147,083.40	514,791,907.93	1,397,292.32	$29,343,139	10	0.708918814	364,945,668.68	10	0.708918814	20,801,903.11	10	0.708918814	13,772,319.64
154,530.13	540,855,454.74	1,468,036.23	$30,828,761	11	0.684945714	370,456,625.47	11	0.684945714	21,116,027.65	11	0.684945714	13,980,292.13
161,530.05	565,355,189.46	1,534,535.51	$32,225,246	12	0.661783298	374,142,621.98	12	0.661783298	21,326,129.45	12	0.661783298	14,119,394.27
168,109.98	588,384,937.57	1,597,044.83	$33,537,941	13	0.639404153	376,215,772.61	13	0.639404153	21,444,299.04	13	0.639404153	14,197,630.83
174,295.11	610,032,900.13	1,655,803.59	$34,771,875	14	0.61778179	376,867,217.17	14	0.61778179	21,481,431.38	14	0.61778179	14,222,215.04
180,109.14	630,381,984.88	1,711,036.82	$35,931,773	15	0.596890619	376,269,092.93	15	0.596890619	21,447,338.30	15	0.596890619	14,199,643.03
185,574.32	649,510,124.26	1,762,956.05	$37,022,077	16	0.576705912	374,576,328.38	16	0.576705912	21,350,850.72	16	0.576705912	14,135,761.48
190,711.59	667,490,573.75	1,811,760.13	$38,046,963	17	0.557203779	371,928,270.43	17	0.557203779	21,199,911.41	17	0.557203779	14,035,829.07
195,540.63	684,392,196.22	1,857,635.96	$39,010,355	18	0.53836114	368,450,162.65	18	0.53836114	21,001,659.27	18	0.53836114	13,904,572.24
200,079.92	700,279,720.71	1,900,759.24	$39,915,944	19	0.52015569	364,254,481.59	19	0.52015569	20,762,505.45	19	0.52015569	13,746,235.63
204,346.86	715,213,993.37	1,941,295.12	$40,767,198	20	0.502565884	359,442,153.14	20	0.502565884	20,488,202.73	20	0.502565884	13,564,627.98
208,357.77	729,252,209.38	1,979,398.85	$41,567,376	21	0.485570903	354,103,653.70	21	0.485570903	20,183,908.26	21	0.485570903	13,363,163.68
212,128.04	742,448,132.70	2,015,216.36	$42,319,544	22	0.469150631	348,320,009.76	22	0.469150631	19,854,240.56	22	0.469150631	13,144,900.53
215,672.09	754,852,299.86	2,048,884.81	$43,026,581	23	0.453285634	342,163,703.00	23	0.453285634	19,503,331.07	23	0.453285634	12,912,573.82
219,003.49	766,512,216.52	2,080,533.16	$43,691,196	24	0.437957134	335,699,493.44	24	0.437957134	19,134,871.13	24	0.437957134	12,668,627.48
222,135.01	777,472,538.18	2,110,282.60	$44,315,935	25	0.423146989	328,985,163.77	25	0.423146989	18,752,154.33	25	0.423146989	12,415,242.11
225,078.64	787,775,240.57	2,138,247.08	$44,903,189	26	0.408837671	322,072,194.46	26	0.408837671	18,358,115.08	26	0.408837671	12,154,360.47
227,845.65	797,459,780.88	2,164,533.69	$45,455,208	27	0.395012242	315,006,376.20	27	0.395012242	17,955,363.44	27	0.395012242	11,887,710.62
230,446.64	806,563,248.71	2,189,243.10	$45,974,105	28	0.38165434	307,828,364.68	28	0.38165434	17,546,216.79	28	0.38165434	11,616,826.83
232,891.57	815,120,508.04	2,212,469.95	$46,461,869	29	0.368748155	300,574,183.42	29	0.368748155	17,132,728.45	29	0.368748155	11,343,068.53
235,189.81	823,164,331.76	2,234,303.19	$46,920,367	30	0.356278411	293,275,679.78	30	0.356278411	16,716,713.75	30	0.356278411	11,067,637.60
196,346.52	687,212,818.05	1,865,291.93	$39,171,131	31	0.344230348	236,559,507.79	31	0.344230348	13,483,891.94	31	0.344230348	8,927,282.70
177,819.82	622,369,355.22	1,689,288.25	$35,475,053	32	0.332589709	206,993,642.50	32	0.332589709	11,798,637.62	32	0.332589709	7,811,526.08
164,024.46	574,085,600.13	1,558,232.34	$32,722,879	33	0.321342714	184,478,224.60	33	0.321342714	10,515,258.80	33	0.321342714	6,961,839.24
152,647.04	534,264,628.30	1,450,146.85	$30,453,084	34	0.310476052	165,876,372.42	34	0.310476052	9,454,953.23	34	0.310476052	6,259,842.54
142,781.74	499,736,083.86	1,356,426.51	$28,484,957	35	0.299976862	149,909,262.09	35	0.299976862	8,544,827.94	35	0.299976862	5,657,275.73
133,964.71	468,876,480.44	1,272,664.73	$26,725,959	36	0.289832717	135,895,744.06	36	0.289832717	7,746,057.41	36	0.289832717	5,128,433.59
125,922.20	440,727,693.35	1,196,260.88	$25,121,479	37	0.28003161	123,417,685.64	37	0.28003161	7,034,808.08	37	0.28003161	4,657,536.62
118,477.56	414,671,450.11	1,125,536.79	$23,636,273	38	0.270561942	112,194,312.93	38	0.270561942	6,395,075.84	38	0.270561942	4,233,988.98
111,403.07	389,910,754.68	1,058,329.19	$22,224,913	39	0.261412505	101,927,546.94	39	0.261412505	5,809,870.18	39	0.261412505	3,846,541.77
104,718.89	366,516,103.89	994,829.42	$20,891,418	40	0.252572468	92,571,876.99	40	0.252572468	5,276,596.99	40	0.252572468	3,493,477.49
97,272.16	340,452,557.08	924,085.51	$19,405,796	41	0.24403137	83,081,104.01	41	0.24403137	4,735,622.93	41	0.24403137	3,135,314.70
90,272.23	315,952,822.36	857,586.23	$18,009,311	42	0.235779102	74,495,072.63	42	0.235779102	4,246,219.14	42	0.235779102	2,811,295.05
83,692.31	292,923,074.25	795,076.92	$16,696,615	43	0.227805895	66,729,603.20	43	0.227805895	3,803,587.38	43	0.227805895	2,518,241.77
77,507.17	271,275,111.69	736,318.16	$15,462,681	44	0.220102314	59,708,279.90	44	0.220102314	3,403,371.95	44	0.220102314	2,253,271.07
71,693.15	250,926,026.93	681,084.93	$14,302,784	45	0.212659241	53,361,738.41	45	0.212659241	3,041,619.09	45	0.212659241	2,013,765.28
66,227.97	231,797,887.56	629,165.69	$13,212,480	46	0.205467866	47,627,017.21	46	0.205467866	2,714,739.98	46	0.205467866	1,797,348.38
61,090.70	213,817,438.06	580,361.62	$12,187,594	47	0.198519677	42,446,968.72	47	0.198519677	2,419,477.22	47	0.198519677	1,601,863.71

Alternative D - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
56,261.66	196,915,815.60	534,485.79	$11,224,201	48	0.191806451	37,769,723.76	48	0.191806451	2,152,874.25	48	0.191806451	1,425,353.84
51,722.37	181,028,291.11	491,362.50	$10,318,613	49	0.185320243	33,548,206.83	49	0.185320243	1,912,247.79	49	0.185320243	1,266,042.23
47,455.43	166,094,018.45	450,826.62	$9,467,359	50	0.179053375	29,739,694.49	50	0.179053375	1,695,162.59	50	0.179053375	1,122,316.59
43,444.51	152,055,802.43	412,722.89	$8,667,181	51	0.172998429	26,305,415.02	51	0.172998429	1,499,408.66	51	0.172998429	992,713.75
39,674.25	138,859,879.12	376,905.39	$7,915,013	52	0.167148241	23,210,184.55	52	0.167148241	1,322,980.52	52	0.167148241	875,905.94
36,130.20	126,455,711.96	343,236.93	$7,207,976	53	0.161495885	20,422,077.13	53	0.161495885	1,164,058.40	53	0.161495885	770,688.35
32,798.80	114,795,795.29	311,588.59	$6,543,360	54	0.156034672	17,912,124.22	54	0.156034672	1,020,991.08	54	0.156034672	675,967.74
29,667.28	103,835,473.64	281,839.14	$5,918,622	55	0.150758137	15,654,042.54	55	0.150758137	892,280.42	55	0.150758137	590,752.26
26,723.65	93,532,771.25	253,874.66	$5,331,368	56	0.145660036	13,623,986.78	56	0.145660036	776,567.25	56	0.145660036	514,142.01
23,956.64	83,848,230.94	227,588.06	$4,779,349	57	0.140734334	11,800,324.93	57	0.140734334	672,618.52	57	0.140734334	445,320.66
21,355.65	74,744,763.10	202,878.64	$4,260,451	58	0.135975202	10,163,434.25	58	0.135975202	579,315.75	58	0.135975202	383,547.68
18,910.72	66,187,503.78	179,651.80	$3,772,688	59	0.131377007	8,695,516.12	59	0.131377007	495,644.42	59	0.131377007	328,151.39
16,612.48	58,143,680.06	157,818.56	$3,314,190	60	0.126934306	7,380,427.67	60	0.126934306	420,684.38	60	0.126934306	278,522.58
14,452.14	50,582,486.21	137,295.32	$2,883,202	61	0.122641841	6,203,529.25	61	0.122641841	353,601.17	61	0.122641841	234,108.79
12,421.42	43,474,963.90	118,003.47	$2,478,073	62	0.118494533	5,151,545.53	62	0.118494533	293,638.10	62	0.118494533	194,409.03
10,512.54	36,793,892.94	99,869.14	$2,097,252	63	0.114487471	4,212,439.76	63	0.114487471	240,109.07	63	0.114487471	158,969.05
8,718.20	30,513,686.19	82,822.86	$1,739,280	64	0.110615914	3,375,299.30	64	0.110615914	192,392.06	64	0.110615914	127,377.04
7,031.51	24,610,291.71	66,799.36	$1,402,787	65	0.106875279	2,630,231.81	65	0.106875279	149,923.21	65	0.106875279	99,259.69
5,446.03	19,061,100.66	51,737.27	$1,086,483	66	0.10326114	1,968,270.98	66	0.10326114	112,191.45	66	0.10326114	74,278.61
3,955.67	13,844,861.06	37,578.91	$789,157	67	0.099769217	1,381,290.95	67	0.099769217	78,733.58	67	0.099769217	52,127.16
2,554.74	8,941,595.44	24,270.04	$509,671	68	0.096395379	861,928.48	68	0.096395379	49,129.92	68	0.096395379	32,527.46
1,237.86	4,332,525.49	11,759.71	$246,954	69	0.093135632	403,512.50	69	0.093135632	23,000.21	69	0.093135632	15,227.75
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,554,068.67	$26,439,243,855	71,763,652.39	1,507,036,700.21			12,065,732,798			687,746,769			455,336,624

Alternative D - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
82,006.70	287,023,458.16	779,063.67	$16,360,337	1	0.966183575	277,317,350.88	1	0.966183575	15,807,089.00	1	0.966183575	10,465,402.19
123,121.27	430,924,447.29	1,169,652.07	$24,562,693	2	0.9335107	402,272,582.60	2	0.9335107	22,929,537.21	2	0.9335107	15,180,962.72
154,529.53	540,853,349.87	1,468,030.52	$30,828,641	3	0.901942706	487,818,733.75	3	0.901942706	27,805,667.82	3	0.901942706	18,409,303.37
180,872.88	633,055,078.36	1,718,292.36	$36,084,139	4	0.871442228	551,670,927.75	4	0.871442228	31,445,242.88	4	0.871442228	20,818,957.47
203,976.69	713,918,404.87	1,937,778.53	$40,693,349	5	0.841973167	601,100,140.23	5	0.841973167	34,262,707.99	5	0.841973167	22,684,317.09
224,781.57	786,735,497.36	2,135,424.92	$44,843,923	6	0.813500644	640,009,834.00	6	0.813500644	36,480,560.54	6	0.813500644	24,152,691.12
243,847.17	853,465,095.76	2,316,548.12	$48,647,510	7	0.785990961	670,815,850.53	7	0.785990961	38,236,503.48	7	0.785990961	25,315,248.57
261,538.20	915,383,691.31	2,484,612.88	$52,176,870	8	0.759411556	695,152,953.55	8	0.759411556	39,623,718.35	8	0.759411556	26,233,682.16
278,320.81	974,122,821.57	2,644,047.66	$55,525,001	9	0.733730972	714,744,084.90	9	0.733730972	40,740,412.84	9	0.733730972	26,973,012.28
294,164.80	1,029,576,796.03	2,794,565.59	$58,685,877	10	0.708918814	729,886,360.87	10	0.708918814	41,603,522.57	10	0.708918814	27,544,451.49
309,058.15	1,081,703,534.24	2,936,052.45	$61,657,101	11	0.684945714	740,908,199.30	11	0.684945714	42,231,767.36	11	0.684945714	27,960,393.63
323,057.91	1,130,702,669.59	3,069,050.10	$64,450,052	12	0.661783298	748,280,142.07	12	0.661783298	42,651,968.10	12	0.661783298	28,238,596.00
336,217.67	1,176,761,851.78	3,194,067.88	$67,075,426	13	0.639404153	752,426,415.05	13	0.639404153	42,888,305.66	13	0.639404153	28,395,068.05
348,587.85	1,220,057,481.71	3,311,584.59	$69,543,276	14	0.61778179	753,729,295.29	14	0.61778179	42,962,569.83	14	0.61778179	28,444,236.15
360,215.82	1,260,755,373.73	3,422,050.30	$71,863,056	15	0.596890619	752,533,054.96	15	0.596890619	42,894,384.13	15	0.596890619	28,399,092.43
289,139.41	1,011,987,933.49	2,746,824.39	$57,683,312	16	0.576705912	583,619,423.83	16	0.576705912	33,266,307.16	16	0.576705912	22,024,629.82
258,299.31	904,047,598.15	2,453,843.48	$51,530,713	17	0.557203779	503,738,738.48	17	0.557203779	28,713,108.09	17	0.557203779	19,010,092.51
236,549.06	827,921,710.03	2,247,216.07	$47,191,537	18	0.53836114	445,720,875.27	18	0.53836114	25,406,089.89	18	0.53836114	16,820,614.39
219,284.23	767,494,813.87	2,083,200.21	$43,747,204	19	0.52015569	399,216,794.78	19	0.52015569	22,755,357.30	19	0.52015569	15,065,643.40
204,714.24	716,499,829.04	1,944,785.25	$40,840,490	20	0.502565884	360,088,370.28	20	0.502565884	20,525,037.11	20	0.502565884	13,589,014.92
191,931.14	671,758,977.15	1,823,345.80	$38,290,262	21	0.485570903	326,186,613.02	21	0.485570903	18,592,636.94	21	0.485570903	12,309,630.40
180,406.01	631,421,045.44	1,713,857.12	$35,991,000	22	0.469150631	296,231,581.74	22	0.469150631	16,885,200.16	22	0.469150631	11,179,187.43
169,803.03	594,310,615.06	1,613,128.81	$33,875,705	23	0.453285634	269,392,463.69	23	0.453285634	15,355,370.43	23	0.453285634	10,166,332.79
159,683.19	558,891,159.14	1,516,990.29	$31,856,796	24	0.437957134	244,770,370.22	24	0.437957134	13,951,911.10	24	0.437957134	9,237,144.23
150,102.19	525,357,678.53	1,425,970.84	$29,945,388	25	0.423146989	222,303,519.96	25	0.423146989	12,671,300.64	25	0.423146989	8,389,290.24
141,096.06	493,836,204.61	1,340,412.56	$28,148,664	26	0.408837671	201,898,843.65	26	0.408837671	11,508,234.09	26	0.408837671	7,619,258.56
132,630.29	464,206,017.81	1,259,987.76	$26,459,743	27	0.395012242	183,367,059.99	27	0.395012242	10,451,922.42	27	0.395012242	6,919,906.11
124,672.47	436,353,647.16	1,184,388.47	$24,872,158	28	0.38165434	166,536,263.39	28	0.38165434	9,492,567.01	28	0.38165434	6,284,745.51
117,192.12	410,172,419.19	1,113,325.14	$23,379,828	29	0.368748155	151,250,322.80	29	0.368748155	8,621,268.40	29	0.368748155	5,707,884.68
110,160.59	385,562,064.93	1,046,525.60	$21,977,038	30	0.356278411	137,367,439.68	30	0.356278411	7,829,944.06	30	0.356278411	5,183,972.44
103,550.95	362,428,331.61	983,734.04	$20,658,415	31	0.344230348	124,758,830.86	31	0.344230348	7,111,253.36	31	0.344230348	4,708,148.76
97,337.89	340,682,625.50	924,709.98	$19,418,910	32	0.332589709	113,307,535.14	32	0.332589709	6,458,529.50	32	0.332589709	4,275,999.76
91,497.62	320,241,661.87	869,227.37	$18,253,775	33	0.321342714	102,907,324.64	33	0.321342714	5,865,717.50	33	0.321342714	3,883,516.62
86,007.76	301,027,157.38	817,073.71	$17,158,548	34	0.310476052	93,461,723.31	34	0.310476052	5,327,318.23	34	0.310476052	3,527,058.51
80,847.29	282,965,524.16	768,049.28	$16,129,035	35	0.299976862	84,883,109.90	35	0.299976862	4,838,337.26	35	0.299976862	3,203,318.80
75,996.45	265,987,590.01	721,966.32	$15,161,293	36	0.289832717	77,091,905.79	36	0.289832717	4,394,238.63	36	0.289832717	2,909,294.34
71,436.67	250,028,331.39	678,648.33	$14,251,615	37	0.28003161	70,015,836.24	37	0.28003161	3,990,902.67	37	0.28003161	2,642,257.63
67,150.47	235,026,630.60	637,929.43	$13,396,518	38	0.270561942	63,589,261.65	38	0.270561942	3,624,587.91	38	0.270561942	2,399,731.56
63,121.44	220,925,033.30	599,653.66	$12,592,727	39	0.261412505	57,752,566.28	39	0.261412505	3,291,896.28	39	0.261412505	2,179,466.35
59,334.15	207,669,531.35	563,674.44	$11,837,163	40	0.252572468	52,451,606.10	40	0.252572468	2,989,741.55	40	0.252572468	1,979,418.71
53,446.93	187,064,267.06	507,745.87	$10,662,663	41	0.24403137	45,649,549.41	41	0.24403137	2,602,024.32	41	0.24403137	1,722,722.70
47,912.95	167,695,318.51	455,173.01	$9,558,633	42	0.235779102	39,539,051.55	42	0.235779102	2,253,725.94	42	0.235779102	1,492,124.73
42,711.00	149,488,506.97	405,754.52	$8,520,845	43	0.227805895	34,054,363.17	43	0.227805895	1,941,098.70	43	0.227805895	1,285,143.56
37,821.17	132,374,105.01	359,301.14	$7,545,324	44	0.220102314	29,135,846.87	44	0.220102314	1,660,743.27	44	0.220102314	1,099,528.59
33,224.73	116,286,567.25	315,634.97	$6,628,334	45	0.212659241	24,729,413.12	45	0.212659241	1,409,576.55	45	0.212659241	933,238.59
28,904.08	101,164,282.66	274,588.77	$5,766,364	46	0.205467866	20,786,009.23	46	0.205467866	1,184,802.53	46	0.205467866	784,422.42
24,842.67	86,949,334.96	236,005.34	$4,956,112	47	0.198519677	17,261,153.88	47	0.198519677	983,885.77	47	0.198519677	651,401.43

Alternative D - 150 Wells/Year Development Rate

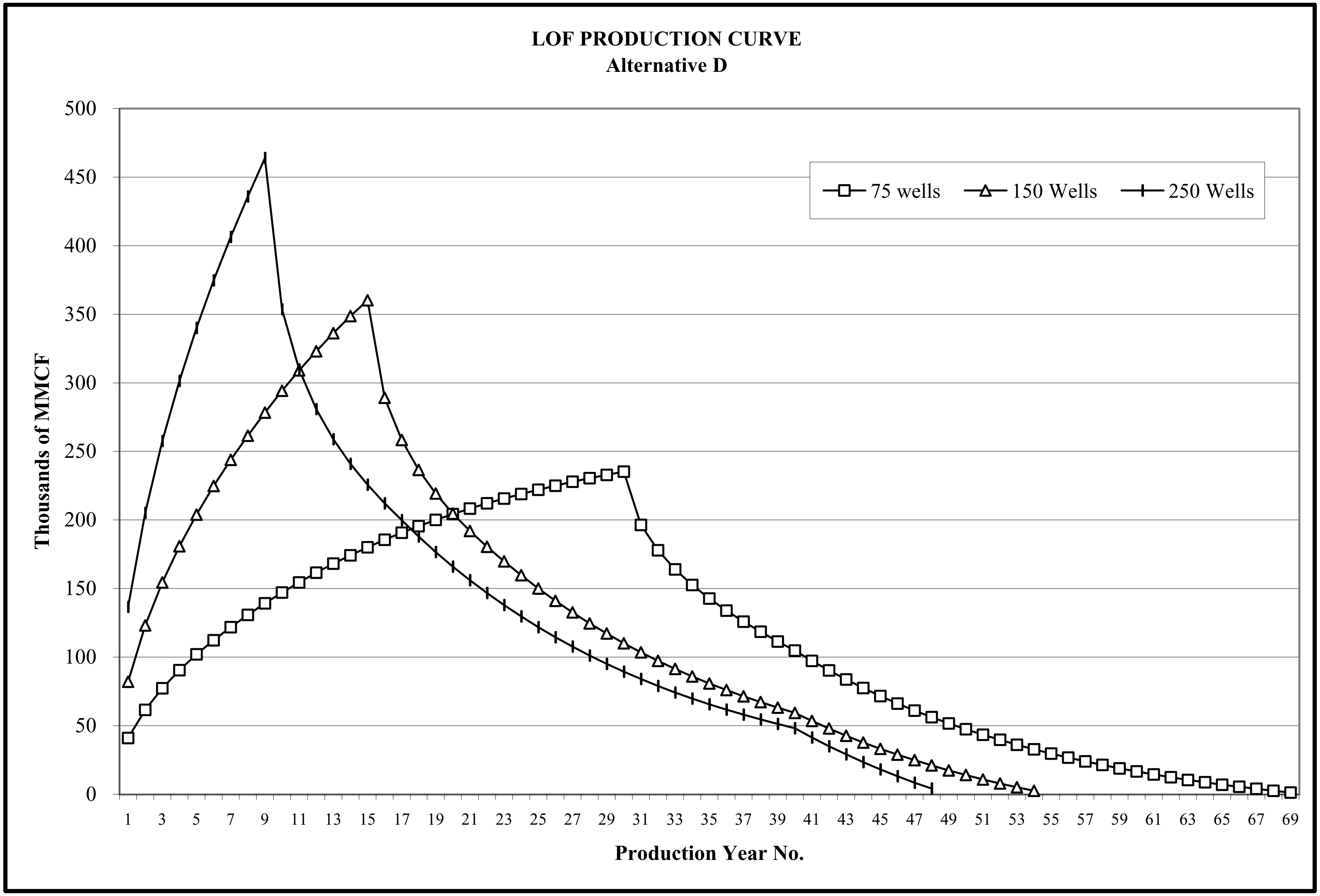
MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
21,024.94	73,587,284.15	199,736.91	$4,194,475	48	0.191806451	14,114,515.82	48	0.191806451	804,527.40	48	0.191806451	532,653.60
17,436.27	61,026,956.30	165,644.60	$3,478,537	49	0.185320243	11,309,530.35	49	0.185320243	644,643.23	49	0.185320243	426,799.06
14,062.93	49,220,247.83	133,597.82	$2,805,554	50	0.179053375	8,813,051.47	50	0.179053375	502,343.93	50	0.179053375	332,586.94
10,891.98	38,121,941.39	103,473.84	$2,172,951	51	0.172998429	6,595,035.99	51	0.172998429	375,917.05	51	0.172998429	248,883.47
7,911.30	27,689,533.32	75,157.30	$1,578,303	52	0.167148241	4,628,256.79	52	0.167148241	263,810.64	52	0.167148241	174,661.15
5,109.45	17,883,068.94	48,539.76	$1,019,335	53	0.161495885	2,888,042.05	53	0.161495885	164,618.40	53	0.161495885	108,988.93
2,475.71	8,664,991.90	23,519.26	$493,905	54	0.156034672	1,352,039.17	54	0.156034672	77,066.23	54	0.156034672	51,023.25
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,554,017.17	$26,439,063,589	71,763,163.10	1,507,026,425.05			15,111,430,165			861,351,519			570,275,152

Alternative D - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
136,677.84	478,372,430.26	1,298,439.45	$27,267,229	1	0.966183575	462,195,584.79	1	0.966183575	26,345,148.33	1	0.966183575	17,442,336.98
205,202.12	718,207,412.16	1,949,420.12	$40,937,822	2	0.9335107	670,454,304.33	2	0.9335107	38,215,895.35	2	0.9335107	25,301,604.54
257,549.21	901,422,249.78	2,446,717.54	$51,381,068	3	0.901942706	813,031,222.91	3	0.901942706	46,342,779.71	3	0.901942706	30,682,172.29
301,454.80	1,055,091,797.27	2,863,820.59	$60,140,232	4	0.871442228	919,451,546.24	4	0.871442228	52,408,738.14	4	0.871442228	34,698,262.45
339,961.15	1,189,864,008.12	3,229,630.88	$67,822,248	5	0.841973167	1,001,833,567.05	5	0.841973167	57,104,513.32	5	0.841973167	37,807,195.15
374,635.95	1,311,225,828.93	3,559,041.54	$74,739,872	6	0.813500644	1,066,683,056.67	6	0.813500644	60,800,934.23	6	0.813500644	40,254,485.19
406,411.95	1,422,441,826.27	3,860,913.53	$81,079,184	7	0.785990961	1,118,026,417.54	7	0.785990961	63,727,505.80	7	0.785990961	42,192,080.95
435,897.00	1,525,639,485.51	4,141,021.46	$86,961,451	8	0.759411556	1,158,588,255.92	8	0.759411556	66,039,530.59	8	0.759411556	43,722,803.60
463,868.01	1,623,538,035.94	4,406,746.10	$92,541,668	9	0.733730972	1,191,240,141.50	9	0.733730972	67,900,688.07	9	0.733730972	44,955,020.46
353,596.83	1,237,588,896.46	3,359,169.86	$70,542,567	10	0.708918814	877,350,052.34	10	0.708918814	50,008,952.98	10	0.708918814	33,109,436.28
309,894.80	1,084,631,811.58	2,944,000.63	$61,824,013	11	0.684945714	742,913,910.31	11	0.684945714	42,346,092.89	11	0.684945714	28,036,085.15
280,880.63	983,082,199.55	2,668,365.97	$56,035,685	12	0.661783298	650,587,380.51	12	0.661783298	37,083,480.69	12	0.661783298	24,551,866.57
258,907.99	906,177,955.69	2,459,625.88	$51,652,143	13	0.639404153	579,413,948.17	13	0.639404153	33,026,595.05	13	0.639404153	21,865,923.58
241,018.61	843,565,128.06	2,289,676.78	$48,083,212	14	0.61778179	521,139,175.03	14	0.61778179	29,704,932.98	14	0.61778179	19,666,750.19
225,723.75	790,033,127.28	2,144,375.63	$45,031,888	15	0.596890619	471,563,362.08	15	0.596890619	26,879,111.64	15	0.596890619	17,795,858.16
212,164.90	742,577,159.81	2,015,566.58	$42,326,898	16	0.576705912	428,248,637.97	16	0.576705912	24,410,172.36	16	0.576705912	16,161,247.10
199,803.98	699,313,923.56	1,898,137.79	$39,860,894	17	0.557203779	389,660,361.22	17	0.557203779	22,210,640.59	17	0.557203779	14,705,002.71
187,929.64	657,753,730.55	1,785,331.55	$37,491,963	18	0.53836114	354,109,047.92	18	0.53836114	20,184,215.73	18	0.53836114	13,363,367.25
176,653.86	618,288,493.68	1,678,211.63	$35,242,444	19	0.52015569	321,606,278.29	19	0.52015569	18,331,557.86	19	0.52015569	12,136,777.73
166,054.62	581,191,166.12	1,577,518.88	$33,127,896	20	0.502565884	292,086,852.43	20	0.502565884	16,648,950.59	20	0.502565884	11,022,773.64
156,091.34	546,319,674.86	1,482,867.69	$31,140,221	21	0.485570903	265,276,937.76	21	0.485570903	15,120,785.45	21	0.485570903	10,011,021.08
146,725.85	513,540,482.36	1,393,895.59	$29,271,807	22	0.469150631	240,927,841.22	22	0.469150631	13,732,886.95	22	0.469150631	9,092,134.87
137,922.30	482,728,041.10	1,310,261.83	$27,515,498	23	0.453285634	218,813,685.96	23	0.453285634	12,472,380.10	23	0.453285634	8,257,590.88
129,646.96	453,764,344.96	1,231,646.08	$25,864,568	24	0.437957134	198,729,331.98	24	0.437957134	11,327,571.92	24	0.437957134	7,499,647.53
121,868.13	426,538,471.52	1,157,747.28	$24,312,693	25	0.423146989	180,488,470.03	25	0.423146989	10,287,842.79	25	0.423146989	6,811,273.88
114,556.04	400,946,155.68	1,088,282.42	$22,853,931	26	0.408837671	163,921,892.40	26	0.408837671	9,343,547.87	26	0.408837671	6,186,084.38
107,682.68	376,889,379.18	1,022,985.46	$21,482,695	27	0.395012242	148,875,918.77	27	0.395012242	8,485,927.37	27	0.395012242	5,618,279.42
101,221.72	354,276,011.17	961,606.32	$20,193,733	28	0.38165434	135,210,977.36	28	0.38165434	7,707,025.71	28	0.38165434	5,102,591.86
95,148.41	333,019,444.97	903,909.92	$18,982,108	29	0.368748155	122,800,305.90	29	0.368748155	6,999,617.44	29	0.368748155	4,634,237.94
89,439.51	313,038,273.58	849,675.31	$17,843,182	30	0.356278411	111,528,778.57	30	0.356278411	6,357,140.38	30	0.356278411	4,208,873.05
84,073.13	294,255,970.09	798,694.78	$16,772,590	31	0.344230348	101,291,835.11	31	0.344230348	5,773,634.60	31	0.344230348	3,822,551.27
79,028.75	276,600,607.64	750,773.08	$15,766,235	32	0.332589709	91,994,515.49	32	0.332589709	5,243,687.38	32	0.332589709	3,471,689.03
74,287.02	260,004,568.43	705,726.69	$14,820,260	33	0.321342714	83,550,573.58	33	0.321342714	4,762,382.69	33	0.321342714	3,153,031.55
69,829.80	244,404,291.76	663,383.08	$13,931,045	34	0.310476052	75,881,679.55	34	0.310476052	4,325,255.73	34	0.310476052	2,863,622.82
65,640.01	229,740,032.04	623,580.09	$13,095,182	35	0.299976862	68,916,693.81	35	0.299976862	3,928,251.55	35	0.299976862	2,600,778.19
61,701.61	215,955,628.53	586,165.28	$12,309,471	36	0.289832717	62,591,006.48	36	0.289832717	3,567,687.37	36	0.289832717	2,362,059.40
57,999.51	202,998,289.42	550,995.36	$11,570,902	37	0.28003161	56,845,937.86	37	0.28003161	3,240,218.46	37	0.28003161	2,145,252.00
54,519.54	190,818,393.45	517,935.64	$10,876,648	38	0.270561942	51,628,195.15	38	0.270561942	2,942,807.12	38	0.270561942	1,948,344.83
51,248.37	179,369,292.25	486,859.51	$10,224,050	39	0.261412505	46,889,375.93	39	0.261412505	2,672,694.43	39	0.261412505	1,769,511.27
48,173.47	168,607,137.76	457,647.95	$9,610,607	40	0.252572468	42,585,520.94	40	0.252572468	2,427,374.69	40	0.252572468	1,607,092.39
41,404.45	144,915,558.27	393,342.23	$8,260,187	41	0.24403137	35,363,942.25	41	0.24403137	2,015,744.71	41	0.24403137	1,334,564.45
35,041.56	122,645,473.58	332,894.86	$6,990,792	42	0.235779102	28,917,239.58	42	0.235779102	1,648,282.66	42	0.235779102	1,091,278.79
29,060.46	101,711,593.83	276,074.33	$5,797,561	43	0.227805895	23,170,500.70	43	0.227805895	1,320,718.54	43	0.227805895	874,408.36
23,438.21	82,033,746.39	222,663.03	$4,675,924	44	0.220102314	18,055,817.43	44	0.220102314	1,029,181.59	44	0.220102314	681,390.44
18,153.31	63,536,568.98	172,456.40	$3,621,584	45	0.212659241	13,511,638.53	45	0.212659241	770,163.40	45	0.212659241	509,902.21
13,185.49	46,149,222.20	125,262.17	$2,630,506	46	0.205467866	9,482,182.18	46	0.205467866	540,484.38	46	0.205467866	357,838.59
8,515.75	29,805,114.91	80,899.60	$1,698,892	47	0.198519677	5,916,901.78	47	0.198519677	337,263.40	47	0.198519677	223,292.04

Alternative D - 250 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
4,126.19	14,441,653.17	39,198.77	$823,174	48	0.191806451	2,770,002.24	48	0.191806451	157,890.13	48	0.191806451	104,534.34
-	-	-	$0	49	0.185320243	-	49	0.185320243	-	49	0.185320243	-
-	-	-	$0	50	0.179053375	-	50	0.179053375	-	50	0.179053375	-
-	-	-	$0	51	0.172998429	-	51	0.172998429	-	51	0.172998429	-
-	-	-	$0	52	0.167148241	-	52	0.167148241	-	52	0.167148241	-
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,554,017.17	$26,439,063,589	71,763,163.10	1,507,026,425.05			16,636,120,802			948,258,886			627,813,927


LOF PRODUCTION CURVE
Alternative D
75 wells
150 Wells
250 Wells
Thousands of MMCF
0
50
100
150
200
250
300
350
400
450
500
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69
Production Year No.

Alternative E - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
25,655.53	89,794,366.68	243,727.57	$5,118,279	1	0.966183575	86,757,842.20	1	0.966183575	4,945,197.01	1	0.966183575	3,274,067.45
38,518.09	134,813,328.77	365,921.89	$7,684,360	2	0.9335107	125,849,684.96	2	0.9335107	7,173,432.04	2	0.9335107	4,749,315.41
48,344.07	169,204,232.74	459,268.63	$9,644,641	3	0.901942706	152,612,523.49	3	0.901942706	8,698,913.84	3	0.901942706	5,759,291.41
56,585.50	198,049,247.26	537,562.24	$11,288,807	4	0.871442228	172,588,477.23	4	0.871442228	9,837,543.20	4	0.871442228	6,513,143.95
63,813.45	223,347,079.14	606,227.79	$12,730,784	5	0.841973167	188,052,247.54	5	0.841973167	10,718,978.11	5	0.841973167	7,096,715.72
70,322.19	246,127,672.57	668,060.83	$14,029,277	6	0.813500644	200,225,020.22	6	0.813500644	11,412,826.15	6	0.813500644	7,556,091.81
76,286.80	267,003,813.02	724,724.64	$15,219,217	7	0.785990961	209,862,583.51	7	0.785990961	11,962,167.26	7	0.785990961	7,919,794.18
81,821.38	286,374,846.70	777,303.16	$16,323,366	8	0.759411556	217,476,367.99	8	0.759411556	12,396,152.98	8	0.759411556	8,207,123.18
87,071.77	304,751,194.87	827,181.81	$17,370,818	9	0.733730972	223,605,390.49	9	0.733730972	12,745,507.26	9	0.733730972	8,438,420.23
92,028.51	322,099,792.61	874,270.87	$18,359,688	10	0.708918814	228,342,602.87	10	0.708918814	13,015,528.36	10	0.708918814	8,617,193.15
96,687.85	338,407,475.17	918,534.58	$19,289,226	11	0.684945714	231,790,749.61	11	0.684945714	13,212,072.73	11	0.684945714	8,747,319.31
101,067.63	353,736,697.23	960,142.46	$20,162,992	12	0.661783298	234,097,038.22	12	0.661783298	13,343,531.18	12	0.661783298	8,834,354.03
105,184.62	368,146,164.39	999,253.87	$20,984,331	13	0.639404153	235,394,186.40	13	0.639404153	13,417,468.62	13	0.639404153	8,883,305.81
109,054.59	381,691,063.11	1,036,018.60	$21,756,391	14	0.61778179	235,801,788.30	14	0.61778179	13,440,701.93	14	0.61778179	8,898,687.89
112,692.36	394,423,267.86	1,070,577.44	$22,482,126	15	0.596890619	235,427,548.35	15	0.596890619	13,419,370.26	15	0.596890619	8,884,564.82
116,111.87	406,391,540.15	1,103,062.75	$23,164,318	16	0.576705912	234,368,403.68	16	0.576705912	13,358,999.01	16	0.576705912	8,844,594.82
119,326.20	417,641,715.15	1,133,598.94	$23,805,578	17	0.557203779	232,711,542.13	17	0.557203779	13,264,557.90	17	0.557203779	8,782,068.18
122,347.68	428,216,879.61	1,162,302.96	$24,408,362	18	0.53836114	230,535,327.28	18	0.53836114	13,140,513.66	18	0.53836114	8,699,942.18
125,187.87	438,157,533.82	1,189,284.73	$24,974,979	19	0.52015569	227,910,134.50	19	0.52015569	12,990,877.67	19	0.52015569	8,600,872.66
127,857.64	447,501,748.54	1,214,647.60	$25,507,600	20	0.502565884	224,899,112.04	20	0.502565884	12,819,249.39	20	0.502565884	8,487,242.69
130,367.23	456,285,310.21	1,238,488.70	$26,008,263	21	0.485570903	221,558,870.03	21	0.485570903	12,628,855.59	21	0.485570903	8,361,188.64
132,726.25	464,541,858.33	1,260,899.33	$26,478,886	22	0.469150631	217,940,105.85	22	0.469150631	12,422,586.03	22	0.469150631	8,224,623.71
134,943.72	472,303,013.10	1,281,965.32	$26,921,272	23	0.453285634	214,088,170.53	23	0.453285634	12,203,025.72	23	0.453285634	8,079,259.38
137,028.14	479,598,498.29	1,301,767.35	$27,337,114	24	0.437957134	210,043,583.73	24	0.437957134	11,972,484.27	24	0.437957134	7,926,624.76
138,987.50	486,456,254.36	1,320,381.26	$27,728,006	25	0.423146989	205,842,499.44	25	0.423146989	11,733,022.47	25	0.423146989	7,768,084.24
140,829.30	492,902,545.09	1,337,878.34	$28,095,445	26	0.408837671	201,517,128.46	26	0.408837671	11,486,476.32	26	0.408837671	7,604,853.39
142,560.59	498,962,058.41	1,354,325.59	$28,440,837	27	0.395012242	197,096,121.52	27	0.395012242	11,234,478.93	27	0.395012242	7,438,013.43
144,188.00	504,658,000.90	1,369,786.00	$28,765,506	28	0.38165434	192,604,916.46	28	0.38165434	10,978,480.24	28	0.38165434	7,268,524.34
145,717.77	510,012,186.57	1,384,318.79	$29,070,695	29	0.368748155	188,066,052.81	29	0.368748155	10,719,765.01	29	0.368748155	7,097,236.70
147,155.75	515,045,121.06	1,397,979.61	$29,357,572	30	0.356278411	183,499,457.12	30	0.356278411	10,459,469.06	30	0.356278411	6,924,902.51
148,507.45	519,776,079.21	1,410,820.79	$29,627,237	31	0.344230348	178,922,700.84	31	0.344230348	10,198,593.95	31	0.344230348	6,752,184.88
149,778.05	524,223,179.93	1,422,891.49	$29,880,721	32	0.332589709	174,351,234.66	32	0.332589709	9,938,020.38	32	0.332589709	6,579,666.89
150,972.42	528,403,454.59	1,434,237.95	$30,118,997	33	0.321342714	169,798,599.99	33	0.321342714	9,678,520.20	33	0.321342714	6,407,859.57
152,095.12	532,332,912.80	1,444,903.62	$30,342,976	34	0.310476052	165,276,621.02	34	0.310476052	9,420,767.40	34	0.310476052	6,237,209.12
153,150.46	536,026,603.61	1,454,929.35	$30,553,516	35	0.299976862	160,795,578.32	35	0.299976862	9,165,347.96	35	0.299976862	6,068,103.53
154,142.48	539,498,673.12	1,464,353.54	$30,751,424	36	0.289832717	156,364,366.02	36	0.289832717	8,912,768.86	36	0.289832717	5,900,878.44
155,074.98	542,762,418.47	1,473,212.28	$30,937,458	37	0.28003161	151,990,634.01	37	0.28003161	8,663,466.14	37	0.28003161	5,735,822.55
155,951.53	545,830,339.34	1,481,539.49	$31,112,329	38	0.270561942	147,680,916.75	38	0.270561942	8,417,812.25	38	0.270561942	5,573,182.44
156,775.48	548,714,185.12	1,489,367.07	$31,276,709	39	0.261412505	143,440,749.43	39	0.261412505	8,176,122.72	39	0.261412505	5,413,167.00
157,550.00	551,425,000.00	1,496,725.00	$31,431,225	40	0.252572468	139,274,773.27	40	0.252572468	7,938,662.08	40	0.252572468	5,255,951.39
131,894.47	461,630,633.32	1,252,997.43	$26,312,946	41	0.24403137	112,652,355.99	41	0.24403137	6,421,184.29	41	0.24403137	4,251,274.61
119,031.91	416,611,671.23	1,130,803.11	$23,746,865	42	0.235779102	98,228,325.59	42	0.235779102	5,599,014.56	42	0.235779102	3,706,940.55
109,205.93	382,220,767.26	1,037,456.37	$21,786,584	43	0.227805895	87,072,144.10	43	0.227805895	4,963,112.21	43	0.227805895	3,285,928.57
100,964.50	353,375,752.74	959,162.76	$20,142,418	44	0.220102314	77,778,821.01	44	0.220102314	4,433,392.80	44	0.220102314	2,935,217.15
93,736.55	328,077,920.86	890,497.21	$18,700,441	45	0.212659241	69,768,801.61	45	0.212659241	3,976,821.69	45	0.212659241	2,632,935.04
87,227.81	305,297,327.43	828,664.17	$17,401,948	46	0.205467866	62,728,790.24	46	0.205467866	3,575,541.04	46	0.205467866	2,367,259.09
81,263.20	284,421,186.98	772,000.36	$16,212,008	47	0.198519677	56,463,202.15	47	0.198519677	3,218,402.52	47	0.198519677	2,130,808.32

Alternative E - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
75,728.62	265,050,153.30	719,421.84	$15,107,859	48	0.191806451	50,838,329.28	48	0.191806451	2,897,784.77	48	0.191806451	1,918,536.87
70,478.23	246,673,805.13	669,543.19	$14,060,407	49	0.185320243	45,713,649.42	49	0.185320243	2,605,678.02	49	0.185320243	1,725,141.70
65,521.49	229,325,207.39	622,454.13	$13,071,537	50	0.179053375	41,061,452.25	50	0.179053375	2,340,502.78	50	0.179053375	1,549,577.08
60,862.15	213,017,524.83	578,190.42	$12,141,999	51	0.172998429	36,851,697.25	51	0.172998429	2,100,546.74	51	0.172998429	1,390,709.35
56,482.37	197,688,302.77	536,582.54	$11,268,233	52	0.167148241	33,043,252.09	52	0.167148241	1,883,465.37	52	0.167148241	1,246,986.25
52,365.38	183,278,835.61	497,471.13	$10,446,894	53	0.161495885	29,598,777.77	53	0.161495885	1,687,130.33	53	0.161495885	1,116,998.68
48,495.41	169,733,936.89	460,706.40	$9,674,834	54	0.156034672	26,484,379.10	54	0.156034672	1,509,609.61	54	0.156034672	999,467.50
44,857.64	157,001,732.14	426,147.56	$8,949,099	55	0.150758137	23,669,288.61	55	0.150758137	1,349,149.45	55	0.150758137	893,231.61
41,438.13	145,033,459.85	393,662.25	$8,266,907	56	0.145660036	21,125,578.92	56	0.145660036	1,204,158.00	56	0.145660036	797,237.10
38,223.80	133,783,284.85	363,126.06	$7,625,647	57	0.140734334	18,827,901.47	57	0.140734334	1,073,190.38	57	0.140734334	710,527.35
35,202.32	123,208,120.39	334,422.04	$7,022,863	58	0.135975202	16,753,249.03	58	0.135975202	954,935.19	58	0.135975202	632,234.11
32,362.13	113,267,466.18	307,440.27	$6,456,246	59	0.131377007	14,880,740.65	59	0.131377007	848,202.22	59	0.131377007	561,569.39
29,692.36	103,923,251.46	282,077.40	$5,923,625	60	0.126934306	13,191,425.79	60	0.126934306	751,911.27	60	0.126934306	497,818.03
27,182.77	95,139,689.79	258,236.30	$5,422,962	61	0.122641841	11,668,106.75	61	0.122641841	665,082.08	61	0.122641841	440,331.01
24,823.75	86,883,141.67	235,825.67	$4,952,339	62	0.118494533	10,295,177.28	62	0.118494533	586,825.10	62	0.118494533	388,519.40
22,606.28	79,121,986.90	214,759.68	$4,509,953	63	0.114487471	9,058,476.20	63	0.114487471	516,333.14	63	0.114487471	341,848.77
20,521.86	71,826,501.71	194,957.65	$4,094,111	64	0.110615914	7,945,154.16	64	0.110615914	452,873.79	64	0.110615914	299,834.23
18,562.50	64,968,745.64	176,343.74	$3,703,219	65	0.106875279	6,943,552.85	65	0.106875279	395,782.51	65	0.106875279	262,035.80
16,720.70	58,522,454.91	158,846.66	$3,335,780	66	0.10326114	6,043,095.39	66	0.10326114	344,456.44	66	0.10326114	228,054.33
14,989.41	52,462,941.59	142,399.41	$2,990,388	67	0.099769217	5,234,186.60	67	0.099769217	298,348.64	67	0.099769217	197,527.73
13,362.00	46,766,999.10	126,939.00	$2,665,719	68	0.096395379	4,508,122.59	68	0.096395379	256,962.99	68	0.096395379	170,127.53
11,832.23	41,412,813.43	112,406.21	$2,360,530	69	0.093135632	3,857,008.54	69	0.093135632	219,849.49	69	0.093135632	145,555.79
10,394.25	36,379,878.94	98,745.39	$2,073,653	70	0.089986118	3,273,684.06	70	0.089986118	186,599.99	70	0.089986118	123,542.29
9,042.55	31,648,920.79	85,904.21	$1,803,988	71	0.086943109	2,751,655.56	71	0.086943109	156,844.37	71	0.086943109	103,841.98
7,771.95	27,201,820.07	73,833.51	$1,550,504	72	0.084003004	2,285,034.59	72	0.084003004	130,246.97	72	0.084003004	86,232.64
6,577.58	23,021,545.41	62,487.05	$1,312,228	73	0.081162322	1,868,482.09	73	0.081162322	106,503.48	73	0.081162322	70,512.78
5,454.88	19,092,087.20	51,821.38	$1,088,249	74	0.078417703	1,497,157.62	74	0.078417703	85,337.98	74	0.078417703	56,499.73
4,399.54	15,398,396.39	41,795.65	$877,709	75	0.075765896	1,166,673.30	75	0.075765896	66,500.38	75	0.075765896	44,027.92
3,407.52	11,926,326.88	32,371.46	$679,801	76	0.073203765	873,052.03	76	0.073203765	49,763.97	76	0.073203765	32,947.24
2,475.02	8,662,581.53	23,512.72	$493,767	77	0.070728275	612,689.45	77	0.070728275	34,923.30	77	0.070728275	23,121.67
1,598.47	5,594,660.66	15,185.51	$318,896	78	0.068336498	382,319.51	78	0.068336498	21,792.21	78	0.068336498	14,427.97
774.52	2,710,814.88	7,357.93	$154,516	79	0.066025601	178,983.18	79	0.066025601	10,202.04	79	0.066025601	6,754.47
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,302,000.00	$22,057,003,500	59,869,000.00	1,257,249,000.00			8,765,636,425			499,641,276			330,797,587

Alternative E - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
48,868.00	171,037,992.37	464,245.98	$9,749,166	1	0.966183575	165,254,098.91	1	0.966183575	9,419,483.64	1	0.966183575	6,236,359.18
73,368.27	256,788,949.60	696,998.58	$14,636,970	2	0.9335107	239,715,232.18	2	0.9335107	13,663,768.23	2	0.9335107	9,046,373.43
92,084.53	322,295,855.97	874,803.04	$18,370,864	3	0.901942706	290,692,396.36	3	0.901942706	16,569,466.59	3	0.901942706	10,970,149.65
107,782.60	377,239,095.23	1,023,934.69	$21,502,628	4	0.871442228	328,742,077.52	4	0.871442228	18,738,298.42	4	0.871442228	12,406,068.52
121,550.22	425,425,752.56	1,154,727.04	$24,249,268	5	0.841973167	358,197,068.14	5	0.841973167	20,417,232.88	5	0.841973167	13,517,640.96
133,947.90	468,817,639.02	1,272,505.02	$26,722,605	6	0.813500644	381,383,451.41	6	0.813500644	21,738,856.73	6	0.813500644	14,392,648.69
145,309.14	508,581,972.63	1,380,436.78	$28,989,172	7	0.785990961	399,740,833.25	7	0.785990961	22,785,227.50	7	0.785990961	15,085,419.57
155,851.26	545,479,417.67	1,480,586.99	$31,092,327	8	0.759411556	414,243,373.46	8	0.759411556	23,611,872.29	8	0.759411556	15,632,716.43
165,852.06	580,482,211.44	1,575,594.57	$33,087,486	9	0.733730972	425,917,777.34	9	0.733730972	24,277,313.31	9	0.733730972	16,073,285.08
175,293.54	613,527,372.71	1,665,288.58	$34,971,060	10	0.708918814	434,941,097.24	10	0.708918814	24,791,642.54	10	0.708918814	16,413,807.13
184,168.52	644,589,825.61	1,749,600.96	$36,741,620	11	0.684945714	441,509,038.17	11	0.684945714	25,166,015.18	11	0.684945714	16,661,668.08
192,511.01	673,788,532.20	1,828,854.59	$38,405,946	12	0.661783298	445,901,997.19	12	0.661783298	25,416,413.84	12	0.661783298	16,827,449.57
200,352.95	701,235,313.39	1,903,352.99	$39,970,413	13	0.639404153	448,372,771.57	13	0.639404153	25,557,247.98	13	0.639404153	16,920,691.65
207,724.37	727,035,286.91	1,973,381.49	$41,441,011	14	0.61778179	449,149,161.14	14	0.61778179	25,601,502.19	14	0.61778179	16,949,991.04
214,653.50	751,287,261.96	2,039,208.28	$42,823,374	15	0.596890619	448,436,318.56	15	0.596890619	25,560,870.16	15	0.596890619	16,923,089.79
221,166.89	774,084,118.16	2,101,085.46	$44,122,795	16	0.576705912	446,418,887.11	16	0.576705912	25,445,876.57	16	0.576705912	16,846,955.96
227,289.47	795,513,161.17	2,159,250.01	$45,344,250	17	0.557203779	443,262,939.99	17	0.557203779	25,265,987.58	17	0.557203779	16,727,856.83
233,044.70	815,656,461.53	2,213,924.68	$46,492,418	18	0.53836114	439,117,742.11	18	0.53836114	25,029,711.30	18	0.53836114	16,571,425.35
238,454.62	834,591,163.13	2,265,318.87	$47,571,696	19	0.52015569	434,117,342.65	19	0.52015569	24,744,688.53	19	0.52015569	16,382,720.28
243,539.94	852,389,782.20	2,313,629.41	$48,586,218	20	0.502565884	428,382,024.77	20	0.502565884	24,417,775.41	20	0.502565884	16,166,280.85
248,320.14	869,120,483.77	2,359,041.31	$49,539,868	21	0.485570903	422,019,617.98	21	0.485570903	24,055,118.22	21	0.485570903	15,926,176.34
203,945.53	713,809,351.20	1,937,482.52	$40,687,133	22	0.469150631	334,884,107.36	22	0.469150631	19,088,394.12	22	0.469150631	12,637,856.44
183,669.04	642,841,641.29	1,744,855.88	$36,641,974	23	0.453285634	291,390,880.66	23	0.453285634	16,609,280.20	23	0.453285634	10,996,509.05
168,923.14	591,230,986.84	1,604,769.82	$33,700,166	24	0.437957134	258,933,828.46	24	0.437957134	14,759,228.22	24	0.437957134	9,771,644.82
156,957.21	549,350,224.36	1,491,093.47	$31,312,963	25	0.423146989	232,455,893.49	25	0.423146989	13,249,985.93	25	0.423146989	8,772,420.51
146,697.80	513,442,295.26	1,393,629.09	$29,266,211	26	0.408837671	209,914,552.08	26	0.408837671	11,965,129.47	26	0.408837671	7,921,755.37
137,597.83	481,592,413.40	1,307,179.41	$27,450,768	27	0.395012242	190,234,899.10	27	0.395012242	10,843,389.25	27	0.395012242	7,179,084.62
129,336.45	452,677,564.06	1,228,696.25	$25,802,621	28	0.38165434	172,766,357.12	28	0.38165434	9,847,682.36	28	0.38165434	6,519,856.79
121,708.18	425,978,633.69	1,156,227.72	$24,280,782	29	0.368748155	157,078,835.23	29	0.368748155	8,953,493.61	29	0.368748155	5,927,841.08
114,446.41	400,562,443.68	1,087,240.92	$22,832,059	30	0.356278411	142,711,750.78	30	0.356278411	8,134,569.79	30	0.356278411	5,385,656.05
107,579.63	376,528,689.40	1,022,006.44	$21,462,135	31	0.344230348	129,612,601.94	31	0.344230348	7,387,918.31	31	0.344230348	4,891,320.37
101,124.85	353,936,959.17	960,686.03	$20,174,407	32	0.332589709	117,715,790.12	32	0.332589709	6,709,800.04	32	0.332589709	4,442,358.49
95,057.35	332,700,731.88	903,044.84	$18,963,942	33	0.321342714	106,910,956.01	33	0.321342714	6,093,924.49	33	0.321342714	4,034,605.66
89,353.91	312,738,681.29	848,862.13	$17,826,105	34	0.310476052	97,097,871.02	34	0.310476052	5,534,578.65	34	0.310476052	3,664,279.46
83,992.67	293,974,354.70	797,930.39	$16,756,538	35	0.299976862	88,185,504.33	35	0.299976862	5,026,573.75	35	0.299976862	3,327,944.56
78,953.11	276,335,888.06	750,054.55	$15,751,146	36	0.289832717	80,091,181.12	36	0.289832717	4,565,197.32	36	0.289832717	3,022,480.99
74,215.92	259,755,729.77	705,051.27	$14,806,077	37	0.28003161	72,739,815.27	37	0.28003161	4,146,169.47	37	0.28003161	2,745,055.15
69,762.97	244,170,383.26	662,748.18	$13,917,712	38	0.270561942	66,063,213.13	38	0.270561942	3,765,603.15	38	0.270561942	2,493,093.54
65,577.19	229,520,157.93	622,983.29	$13,082,649	39	0.261412505	59,999,439.34	39	0.261412505	3,419,968.04	39	0.261412505	2,264,258.84
61,642.56	215,748,946.55	585,604.28	$12,297,690	40	0.252572468	54,492,243.94	40	0.252572468	3,106,057.90	40	0.252572468	2,056,428.30
56,557.24	197,950,327.48	537,293.75	$11,283,169	41	0.24403137	48,306,089.65	41	0.24403137	2,753,447.11	41	0.24403137	1,822,975.21
51,777.04	181,219,625.90	491,881.84	$10,329,519	42	0.235779102	42,727,800.60	42	0.235779102	2,435,484.63	42	0.235779102	1,612,461.74
47,283.65	165,492,766.10	449,194.65	$9,433,088	43	0.227805895	37,700,227.75	43	0.227805895	2,148,912.98	43	0.227805895	1,422,731.19
43,059.86	150,709,518.79	409,068.69	$8,590,443	44	0.220102314	33,171,513.88	44	0.220102314	1,890,776.29	44	0.220102314	1,251,826.59
39,089.50	136,813,266.87	371,350.30	$7,798,356	45	0.212659241	29,094,605.48	45	0.212659241	1,658,392.51	45	0.212659241	1,097,972.22
35,357.37	123,750,790.08	335,895.00	$7,053,795	46	0.205467866	25,426,810.71	46	0.205467866	1,449,328.21	46	0.205467866	959,556.98
31,849.16	111,472,061.86	302,567.03	$6,353,908	47	0.198519677	22,129,397.71	47	0.198519677	1,261,375.67	47	0.198519677	835,119.21

Alternative E - 150 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
28,551.44	99,930,057.26	271,238.73	$5,696,013	48	0.191806451	19,167,229.64	48	0.191806451	1,092,532.09	48	0.191806451	723,332.91
25,451.59	89,080,572.99	241,790.13	$5,077,593	49	0.185320243	16,508,433.40	49	0.185320243	940,980.70	49	0.185320243	622,995.26
22,537.73	78,882,058.31	214,108.44	$4,496,277	50	0.179053375	14,124,098.73	50	0.179053375	805,073.63	50	0.179053375	533,015.24
19,798.70	69,295,454.56	188,087.66	$3,949,841	51	0.172998429	11,988,004.81	51	0.172998429	683,316.27	51	0.172998429	452,403.33
17,224.01	60,284,047.57	163,628.13	$3,436,191	52	0.167148241	10,076,372.52	52	0.167148241	574,353.23	52	0.167148241	380,262.15
14,803.81	51,813,324.89	140,636.17	$2,953,360	53	0.161495885	8,367,638.76	53	0.161495885	476,955.41	53	0.161495885	315,777.95
12,528.81	43,850,845.59	119,023.72	$2,499,498	54	0.156034672	6,842,252.29	54	0.156034672	390,008.38	54	0.156034672	258,212.92
10,390.32	36,366,114.99	98,708.03	$2,072,869	55	0.150758137	5,482,487.74	55	0.150758137	312,501.80	55	0.150758137	206,898.12
8,380.13	29,330,468.07	79,611.27	$1,671,837	56	0.145660036	4,272,277.02	56	0.145660036	243,519.79	56	0.145660036	161,227.19
6,490.56	22,716,959.66	61,660.32	$1,294,867	57	0.140734334	3,197,056.19	57	0.140734334	182,232.20	57	0.140734334	120,650.51
4,714.36	16,500,261.75	44,786.42	$940,515	58	0.135975202	2,243,626.42	58	0.135975202	127,886.71	58	0.135975202	84,669.97
3,044.73	10,656,565.25	28,924.96	$607,424	59	0.131377007	1,400,027.64	59	0.131377007	79,801.58	59	0.131377007	52,834.24
1,475.28	5,163,490.22	14,015.19	$294,319	60	0.126934306	655,424.05	60	0.126934306	37,359.17	60	0.126934306	24,734.39
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,302,040.66	$22,057,145,803	59,869,386.25	1,257,257,111.28			11,491,676,343			655,025,552			433,672,882

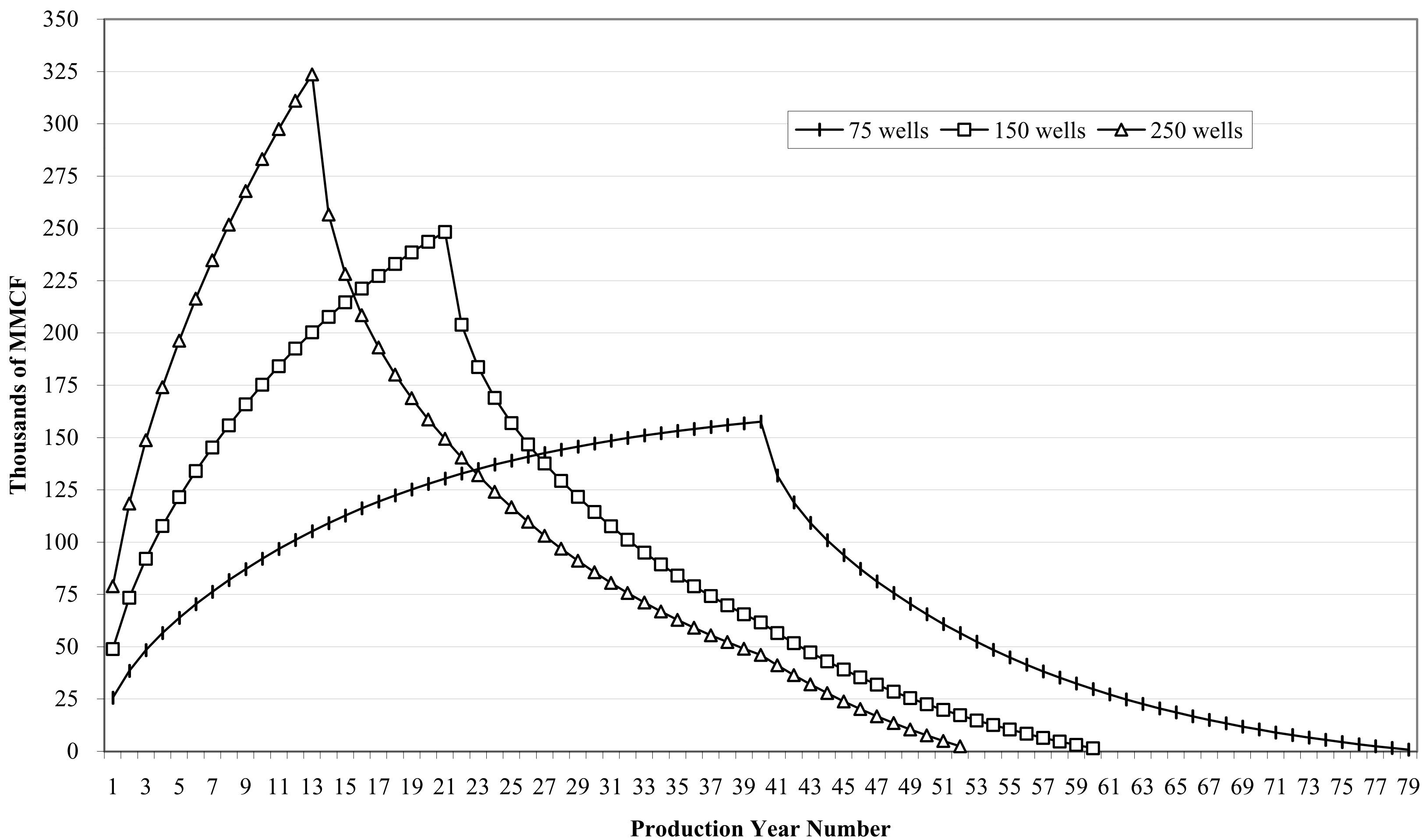
Alternative E - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
78,941.25	276,294,369.67	749,941.86	$15,748,779	1	0.966183575	266,951,081.81	1	0.966183575	15,216,211.66	1	0.966183575	10,074,199.93
118,518.93	414,816,263.82	1,125,929.86	$23,644,527	2	0.9335107	387,235,420.97	2	0.9335107	22,072,419.00	2	0.9335107	14,613,490.32
148,753.13	520,635,965.95	1,413,154.76	$29,676,250	3	0.901942706	469,583,811.80	3	0.901942706	26,766,277.27	3	0.901942706	17,721,153.89
174,111.76	609,391,145.13	1,654,061.68	$34,735,295	4	0.871442228	531,049,177.05	4	0.871442228	30,269,803.09	4	0.871442228	20,040,733.84
196,351.93	687,231,757.78	1,865,343.34	$39,172,210	5	0.841973167	578,630,699.46	5	0.841973167	32,981,949.87	5	0.841973167	21,836,365.34
216,379.12	757,326,908.89	2,055,601.61	$43,167,634	6	0.813500644	616,085,928.33	6	0.813500644	35,116,897.91	6	0.813500644	23,249,850.76
234,732.03	821,562,119.65	2,229,954.32	$46,829,041	7	0.785990961	645,740,399.68	7	0.785990961	36,807,202.78	7	0.785990961	24,368,951.20
251,761.76	881,166,165.39	2,391,736.73	$50,226,471	8	0.759411556	669,167,768.94	8	0.759411556	38,142,562.83	8	0.759411556	25,253,053.26
267,917.03	937,709,595.93	2,545,211.76	$53,449,447	9	0.733730972	688,026,573.45	9	0.733730972	39,217,514.69	9	0.733730972	25,964,746.83
283,168.76	991,090,671.54	2,690,103.25	$56,492,168	10	0.708918814	702,602,823.14	10	0.708918814	40,048,360.92	10	0.708918814	26,514,825.34
297,505.40	1,041,268,884.73	2,826,301.26	$59,352,326	11	0.684945714	713,212,659.44	11	0.684945714	40,653,121.59	11	0.684945714	26,915,219.34
310,981.83	1,088,436,406.53	2,954,327.39	$62,040,875	12	0.661783298	720,309,035.09	12	0.661783298	41,057,615.00	12	0.661783298	27,183,022.37
323,649.68	1,132,773,872.15	3,074,671.94	$64,568,111	13	0.639404153	724,300,318.19	13	0.639404153	41,285,118.14	13	0.639404153	27,333,645.41
256,616.21	898,156,718.89	2,437,853.95	$51,194,933	14	0.61778179	554,864,865.74	14	0.61778179	31,627,297.35	14	0.61778179	20,939,490.30
228,231.83	798,811,408.06	2,168,202.39	$45,532,250	15	0.596890619	476,803,035.52	15	0.596890619	27,177,773.02	15	0.596890619	17,993,592.95
208,519.34	729,817,693.69	1,980,933.74	$41,599,609	16	0.576705912	420,890,178.43	16	0.576705912	23,990,740.17	16	0.576705912	15,883,553.55
193,051.13	675,678,940.07	1,833,985.69	$38,513,700	17	0.557203779	376,490,859.09	17	0.557203779	21,459,978.97	17	0.557203779	14,208,012.04
180,107.93	630,377,767.34	1,711,025.37	$35,931,533	18	0.53836114	339,370,893.17	18	0.53836114	19,344,140.91	18	0.53836114	12,807,178.77
168,819.91	590,869,688.56	1,603,789.15	$33,679,572	19	0.52015569	307,344,230.78	19	0.52015569	17,518,621.15	19	0.52015569	11,598,556.58
158,681.81	555,386,325.08	1,507,477.17	$31,657,021	20	0.502565884	279,118,219.67	20	0.502565884	15,909,738.52	20	0.502565884	10,533,363.37
149,374.00	522,809,015.23	1,419,053.04	$29,800,114	21	0.485570903	253,860,845.54	21	0.485570903	14,470,068.20	21	0.485570903	9,580,200.59
140,477.35	491,670,716.94	1,334,534.80	$28,025,231	22	0.469150631	230,667,626.98	22	0.469150631	13,148,054.74	22	0.469150631	8,704,934.91
132,048.70	462,170,464.18	1,254,462.69	$26,343,716	23	0.453285634	209,495,231.68	23	0.453285634	11,941,228.21	23	0.453285634	7,905,931.05
124,125.78	434,440,223.58	1,179,194.89	$24,763,093	24	0.437957134	190,266,195.17	24	0.437957134	10,845,173.12	24	0.437957134	7,180,265.67
116,678.23	408,373,796.00	1,108,443.16	$23,277,306	25	0.423146989	172,802,142.27	25	0.423146989	9,849,722.11	25	0.423146989	6,521,207.25
109,677.53	383,871,359.00	1,041,936.55	$21,880,667	26	0.408837671	156,941,072.30	26	0.408837671	8,945,641.12	26	0.408837671	5,922,642.19
103,096.88	360,839,069.62	979,420.33	$20,567,827	27	0.395012242	142,535,850.00	27	0.395012242	8,124,543.45	27	0.395012242	5,379,017.91
96,911.06	339,188,717.60	920,655.09	$19,333,757	28	0.38165434	129,452,846.29	28	0.38165434	7,378,812.24	28	0.38165434	4,885,291.51
91,096.40	318,837,386.41	865,415.76	$18,173,731	29	0.368748155	117,570,697.98	29	0.368748155	6,701,529.78	29	0.368748155	4,436,883.00
85,630.61	299,707,137.95	813,490.80	$17,083,307	30	0.356278411	106,779,182.75	30	0.356278411	6,086,413.42	30	0.356278411	4,029,632.80
80,492.77	281,724,703.64	764,681.34	$16,058,308	31	0.344230348	96,978,192.89	31	0.344230348	5,527,756.99	31	0.344230348	3,659,763.04
75,663.20	264,821,216.76	718,800.45	$15,094,809	32	0.332589709	88,076,811.32	32	0.332589709	5,020,378.25	32	0.332589709	3,323,842.71
71,123.41	248,931,939.77	675,672.41	$14,189,121	33	0.321342714	79,992,465.04	33	0.321342714	4,559,570.51	33	0.321342714	3,018,755.65
66,856.01	233,996,020.04	635,132.05	$13,337,773	34	0.310476052	72,650,160.44	34	0.310476052	4,141,059.15	34	0.310476052	2,741,671.75
62,844.64	219,956,255.26	597,024.12	$12,537,507	35	0.299976862	65,981,787.15	35	0.299976862	3,760,961.87	35	0.299976862	2,490,020.68
59,073.97	206,758,878.29	561,202.67	$11,785,256	36	0.289832717	59,925,487.37	36	0.289832717	3,415,752.78	36	0.289832717	2,261,468.04
55,529.53	194,353,344.85	527,530.51	$11,078,141	37	0.28003161	54,425,080.11	37	0.28003161	3,102,229.57	37	0.28003161	2,053,893.67
52,197.76	182,692,144.19	495,878.68	$10,413,452	38	0.270561942	49,429,541.36	38	0.270561942	2,817,483.86	38	0.270561942	1,865,372.03
49,065.89	171,730,616.01	466,125.96	$9,788,645	39	0.261412505	44,892,530.45	39	0.261412505	2,558,874.24	39	0.261412505	1,694,154.31
46,121.94	161,426,778.92	438,158.40	$9,201,326	40	0.252572468	40,771,959.98	40	0.252572468	2,324,001.72	40	0.252572468	1,538,652.23
41,114.44	143,900,547.62	390,587.20	$8,202,331	41	0.24403137	35,116,247.81	41	0.24403137	2,001,626.13	41	0.24403137	1,325,216.96
36,407.40	127,425,891.04	345,870.28	$7,263,276	42	0.235779102	30,044,362.12	42	0.235779102	1,712,528.64	42	0.235779102	1,133,814.14
31,982.78	111,939,713.94	303,836.37	$6,380,564	43	0.227805895	25,500,526.76	43	0.227805895	1,453,530.03	43	0.227805895	962,338.88
27,823.63	97,382,708.33	264,324.49	$5,550,814	44	0.220102314	21,434,159.48	44	0.220102314	1,221,747.09	44	0.220102314	808,882.31
23,914.04	83,699,122.89	227,183.33	$4,770,850	45	0.212659241	17,799,391.94	45	0.212659241	1,014,565.34	45	0.212659241	671,713.45
20,239.02	70,836,552.59	192,270.64	$4,037,683	46	0.205467866	14,554,635.27	46	0.205467866	829,614.21	46	0.205467866	549,262.83
16,784.50	58,745,736.43	159,452.71	$3,348,507	47	0.198519677	11,662,184.62	47	0.198519677	664,744.52	47	0.198519677	440,107.52
13,537.25	47,380,368.97	128,603.86	$2,700,681	48	0.191806451	9,087,860.43	48	0.191806451	518,008.04	48	0.191806451	342,957.68

Alternative E - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	**NG Production**	**Discount Factor**	Natural Gas PV of LOP Production	**Condensate**	**Discount Factor**	Condensate PV of LOP Production	**Labor Earnings**	**Discount Factor**	Labor PV of LOP Labor
10,484.84	36,696,923.08	99,605.93	$2,091,725	49	0.185320243	6,800,682.69	49	0.185320243	387,638.91	49	0.185320243	256,644.16
7,615.57	26,654,483.94	72,347.88	$1,519,306	50	0.179053375	4,772,575.30	50	0.179053375	272,036.79	50	0.179053375	180,107.45
4,918.45	17,214,590.38	46,725.32	$981,232	51	0.172998429	2,978,097.10	51	0.172998429	169,751.53	51	0.172998429	112,387.43
2,383.17	8,341,089.93	22,640.10	$475,442	52	0.167148241	1,394,198.51	52	0.167148241	79,469.32	52	0.167148241	52,614.26
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
6,302,091.48	$22,057,323,682	59,869,869.07	1,257,267,250.39			13,012,418,609			741,707,861			491,062,653

LOF PRODUCTION CURVES
Alternative E



Alternative F - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
29,254.31	102,390,085.52	277,915.95	$5,836,235	1	0.966183575	98,927,618.86	1	0.966183575	5,638,874.27	1	0.966183575	3,733,330.48
43,921.14	153,723,989.30	417,250.83	$8,762,267	2	0.9335107	143,502,988.92	2	0.9335107	8,179,670.37	2	0.9335107	5,415,515.80
55,125.43	192,939,006.11	523,691.59	$10,997,523	3	0.901942706	174,019,929.20	3	0.901942706	9,919,135.96	3	0.901942706	6,567,164.09
64,522.91	225,830,195.30	612,967.67	$12,872,321	4	0.871442228	196,797,968.48	4	0.871442228	11,217,484.20	4	0.871442228	7,426,761.73
72,764.75	254,676,628.17	691,265.13	$14,516,568	5	0.841973167	214,430,887.15	5	0.841973167	12,222,560.57	5	0.841973167	8,092,192.82
80,186.49	280,652,722.16	761,771.67	$15,997,205	6	0.813500644	228,311,170.31	6	0.813500644	13,013,736.71	6	0.813500644	8,616,006.95
86,987.78	304,457,219.99	826,383.88	$17,354,062	7	0.785990961	239,300,622.83	7	0.785990961	13,640,135.50	7	0.785990961	9,030,726.90
93,298.71	326,545,485.30	886,337.75	$18,613,093	8	0.759411556	247,982,415.17	8	0.759411556	14,134,997.66	8	0.759411556	9,358,360.38
99,285.58	347,499,537.66	943,213.03	$19,807,474	9	0.733730972	254,971,173.60	9	0.733730972	14,533,356.90	9	0.733730972	9,622,102.15
104,937.62	367,281,674.02	996,907.40	$20,935,055	10	0.708918814	260,372,888.64	10	0.708918814	14,841,254.65	10	0.708918814	9,825,952.07
110,250.54	385,876,882.99	1,047,380.11	$21,994,982	11	0.684945714	264,304,717.03	11	0.684945714	15,065,368.87	11	0.684945714	9,974,331.41
115,244.68	403,356,379.93	1,094,824.46	$22,991,314	12	0.661783298	266,934,515.50	12	0.661783298	15,215,267.38	12	0.661783298	10,073,574.75
119,939.17	419,787,105.26	1,139,422.14	$23,927,865	13	0.639404153	268,413,618.45	13	0.639404153	15,299,576.25	13	0.639404153	10,129,393.13
124,352.00	435,231,986.59	1,181,343.96	$24,808,223	14	0.61778179	268,878,395.86	14	0.61778179	15,326,068.56	14	0.61778179	10,146,932.90
128,500.05	449,750,175.00	1,220,750.48	$25,635,760	15	0.596890619	268,451,660.18	15	0.596890619	15,301,744.63	15	0.596890619	10,130,828.75
132,399.22	463,397,271.90	1,257,792.60	$26,413,644	16	0.576705912	267,243,946.18	16	0.576705912	15,232,904.93	16	0.576705912	10,085,252.04
136,064.44	476,225,541.90	1,292,612.19	$27,144,856	17	0.557203779	265,354,671.81	17	0.557203779	15,125,216.29	17	0.557203779	10,013,954.60
139,509.75	488,284,115.66	1,325,342.60	$27,832,195	18	0.53836114	262,873,192.93	18	0.53836114	14,983,772.00	18	0.53836114	9,920,308.55
142,748.34	499,619,174.55	1,356,109.19	$28,478,293	19	0.52015569	259,879,756.67	19	0.52015569	14,813,146.13	19	0.52015569	9,807,342.26
145,792.61	510,274,129.65	1,385,029.78	$29,085,625	20	0.502565884	256,446,369.27	20	0.502565884	14,617,443.05	20	0.502565884	9,677,773.08
148,654.22	520,289,787.23	1,412,215.14	$29,656,518	21	0.485570903	252,637,581.72	21	0.485570903	14,400,342.16	21	0.485570903	9,534,037.06
151,344.14	529,704,505.55	1,437,769.37	$30,193,157	22	0.469150631	248,511,202.89	22	0.469150631	14,165,138.56	22	0.469150631	9,378,315.77
153,872.67	538,554,340.23	1,461,790.35	$30,697,597	23	0.453285634	244,118,945.33	23	0.453285634	13,914,779.88	23	0.453285634	9,212,560.76
156,249.48	546,873,184.50	1,484,370.07	$31,171,772	24	0.437957134	239,507,012.49	24	0.437957134	13,651,899.71	24	0.437957134	9,038,515.64
158,483.69	554,692,898.10	1,505,595.01	$31,617,495	25	0.423146989	234,716,629.80	25	0.423146989	13,378,847.90	25	0.423146989	8,857,736.18
160,583.84	562,043,428.91	1,525,546.45	$32,036,475	26	0.408837671	229,784,526.36	26	0.408837671	13,097,718.00	26	0.408837671	8,671,608.46
162,557.98	568,952,927.92	1,544,300.80	$32,430,317	27	0.395012242	224,743,371.83	27	0.395012242	12,810,372.19	27	0.395012242	8,481,365.37
164,413.67	575,447,856.95	1,561,929.90	$32,800,528	28	0.38165434	219,622,172.28	28	0.38165434	12,518,463.82	28	0.38165434	8,288,101.54
166,158.03	581,553,089.92	1,578,501.24	$33,148,526	29	0.368748155	214,446,628.93	29	0.368748155	12,223,457.85	29	0.368748155	8,092,786.88
167,797.72	587,292,008.88	1,594,078.31	$33,475,645	30	0.356278411	209,239,463.48	30	0.356278411	11,926,649.42	30	0.356278411	7,896,278.87
169,339.03	592,686,592.39	1,608,720.75	$33,783,136	31	0.344230348	204,020,712.19	31	0.344230348	11,629,180.60	31	0.344230348	7,699,333.64
170,787.86	597,757,500.94	1,622,484.65	$34,072,178	32	0.332589709	198,807,993.06	32	0.332589709	11,332,055.60	32	0.332589709	7,502,616.04
172,149.76	602,524,154.98	1,635,422.71	$34,343,877	33	0.321342714	193,616,746.99	33	0.321342714	11,036,154.58	33	0.321342714	7,306,708.80
173,429.95	607,004,809.81	1,647,584.48	$34,599,274	34	0.310476052	188,460,456.78	34	0.310476052	10,742,246.04	34	0.310476052	7,112,120.72
174,633.32	611,216,625.44	1,659,016.55	$34,839,348	35	0.299976862	183,350,845.09	35	0.299976862	10,450,998.17	35	0.299976862	6,919,294.19
175,764.49	615,175,732.32	1,669,762.70	$35,065,017	36	0.289832717	178,298,053.67	36	0.289832717	10,162,989.06	36	0.289832717	6,728,611.95
176,827.80	618,897,292.78	1,679,864.08	$35,277,146	37	0.28003161	173,310,805.46	37	0.28003161	9,878,715.91	37	0.28003161	6,540,403.18
177,827.30	622,395,559.90	1,689,359.38	$35,476,547	38	0.270561942	168,396,551.53	38	0.270561942	9,598,603.44	38	0.270561942	6,354,949.06
178,766.84	625,683,931.18	1,698,284.96	$35,663,984	39	0.261412505	163,561,603.53	39	0.261412505	9,323,011.40	39	0.261412505	6,172,487.79
179,650.00	628,775,000.00	1,706,675.00	$35,840,175	40	0.252572468	158,811,253.69	40	0.252572468	9,052,241.46	40	0.252572468	5,993,219.09
150,395.69	526,384,914.48	1,428,759.05	$30,003,940	41	0.24403137	128,454,431.95	41	0.24403137	7,321,902.62	41	0.24403137	4,847,613.35
135,728.86	475,051,010.70	1,289,424.17	$27,077,908	42	0.235779102	112,007,100.55	42	0.235779102	6,384,404.73	42	0.235779102	4,226,923.96
124,524.57	435,835,993.89	1,182,983.41	$24,842,652	43	0.227805895	99,286,008.81	43	0.227805895	5,659,302.50	43	0.227805895	3,746,855.40
115,127.09	402,944,804.70	1,093,707.33	$22,967,854	44	0.220102314	88,689,084.06	44	0.220102314	5,055,277.79	44	0.220102314	3,346,948.65
106,885.25	374,098,371.83	1,015,409.87	$21,323,607	45	0.212659241	79,555,475.78	45	0.212659241	4,534,662.12	45	0.212659241	3,002,264.54
99,463.51	348,122,277.84	944,903.33	$19,842,970	46	0.205467866	71,527,941.40	46	0.205467866	4,077,092.66	46	0.205467866	2,699,321.45
92,662.22	324,317,780.01	880,291.12	$18,486,113	47	0.198519677	64,383,460.91	47	0.198519677	3,669,857.27	47	0.198519677	2,429,703.05

Alternative F - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
86,351.29	302,229,514.70	820,337.25	$17,227,082	48	0.191806451	57,969,570.64	48	0.191806451	3,304,265.53	48	0.191806451	2,187,655.66
80,364.42	281,275,462.34	763,461.97	$16,032,701	49	0.185320243	52,126,036.93	49	0.185320243	2,971,184.10	49	0.185320243	1,967,132.38
74,712.38	261,493,325.98	709,767.60	$14,905,120	50	0.179053375	46,821,262.43	50	0.179053375	2,668,811.96	50	0.179053375	1,766,940.80
69,399.46	242,898,117.01	659,294.89	$13,845,193	51	0.172998429	42,020,992.77	51	0.172998429	2,395,196.59	51	0.172998429	1,585,788.23
64,405.32	225,418,620.07	611,850.54	$12,848,861	52	0.167148241	37,678,325.85	52	0.167148241	2,147,664.57	52	0.167148241	1,421,904.66
59,710.83	208,987,894.74	567,252.86	$11,912,310	53	0.161495885	33,750,685.03	53	0.161495885	1,923,789.05	53	0.161495885	1,273,683.35
55,298.00	193,543,013.41	525,331.04	$11,031,952	54	0.156034672	30,199,420.53	54	0.156034672	1,721,366.97	54	0.156034672	1,139,665.73
51,149.95	179,024,825.00	485,924.52	$10,204,415	55	0.150758137	26,989,449.06	55	0.150758137	1,538,398.60	55	0.150758137	1,018,527.83
47,250.78	165,377,728.10	448,882.40	$9,426,531	56	0.145660036	24,088,925.75	56	0.145660036	1,373,068.77	56	0.145660036	909,067.88
43,585.56	152,549,458.10	414,062.81	$8,695,319	57	0.140734334	21,468,946.37	57	0.140734334	1,223,729.94	57	0.140734334	810,195.10
40,140.25	140,490,884.34	381,332.40	$8,007,980	58	0.135975202	19,103,276.35	58	0.135975202	1,088,886.75	58	0.135975202	720,919.44
36,901.66	129,155,825.45	350,565.81	$7,361,882	59	0.131377007	16,968,105.73	59	0.131377007	967,182.03	59	0.131377007	640,342.37
33,857.39	118,500,870.35	321,645.22	$6,754,550	60	0.126934306	15,041,825.72	60	0.126934306	857,384.07	60	0.126934306	567,648.42
30,995.78	108,485,212.77	294,459.86	$6,183,657	61	0.122641841	13,304,826.26	61	0.122641841	758,375.10	61	0.122641841	502,097.53
28,305.86	99,070,494.45	268,905.63	$5,647,018	62	0.118494533	11,739,311.95	62	0.118494533	669,140.78	62	0.118494533	443,018.15
25,777.33	90,220,659.77	244,884.65	$5,142,578	63	0.114487471	10,329,135.19	63	0.114487471	588,760.71	63	0.114487471	389,800.90
23,400.52	81,901,815.50	222,304.93	$4,668,403	64	0.110615914	9,059,644.20	64	0.110615914	516,399.72	64	0.110615914	341,892.85
21,166.31	74,082,101.90	201,079.99	$4,222,680	65	0.106875279	7,917,545.35	65	0.106875279	451,300.08	65	0.106875279	298,792.33
19,066.16	66,731,571.09	181,128.55	$3,803,700	66	0.10326114	6,890,778.08	66	0.10326114	392,774.35	66	0.10326114	260,044.18
17,092.02	59,822,072.08	162,374.20	$3,409,858	67	0.099769217	5,968,401.29	67	0.099769217	340,198.87	67	0.099769217	225,235.53
15,236.33	53,327,143.05	144,745.10	$3,039,647	68	0.096395379	5,140,490.15	68	0.096395379	293,007.94	68	0.096395379	193,991.82
13,491.97	47,221,910.08	128,173.76	$2,691,649	69	0.093135632	4,398,042.42	69	0.093135632	250,688.42	69	0.093135632	165,973.32
11,852.28	41,482,991.12	112,596.69	$2,364,530	70	0.089986118	3,732,893.31	70	0.089986118	212,774.92	70	0.089986118	140,871.93
10,310.97	36,088,407.61	97,954.25	$2,057,039	71	0.086943109	3,137,638.35	71	0.086943109	178,845.39	71	0.086943109	118,408.20
8,862.14	31,017,499.06	84,190.35	$1,767,997	72	0.084003004	2,605,563.08	72	0.084003004	148,517.10	72	0.084003004	98,328.74
7,500.24	26,250,845.02	71,252.29	$1,496,298	73	0.081162322	2,130,579.54	73	0.081162322	121,443.03	73	0.081162322	80,403.81
6,220.05	21,770,190.19	59,090.52	$1,240,901	74	0.078417703	1,707,168.30	74	0.078417703	97,308.59	74	0.078417703	64,425.12
5,016.68	17,558,374.56	47,658.45	$1,000,827	75	0.075765896	1,330,325.99	75	0.075765896	75,828.58	75	0.075765896	50,203.84
3,885.51	13,599,267.68	36,912.30	$775,158	76	0.073203765	995,517.59	76	0.073203765	56,744.50	76	0.073203765	37,568.84
2,822.20	9,877,707.22	26,810.92	$563,029	77	0.070728275	698,633.19	77	0.070728275	39,822.09	77	0.070728275	26,365.02
1,822.70	6,379,440.10	17,315.62	$363,628	78	0.068336498	435,948.59	78	0.068336498	24,849.07	78	0.068336498	16,451.83
883.16	3,091,068.82	8,390.04	$176,191	79	0.066025601	204,089.68	79	0.066025601	11,633.11	79	0.066025601	7,701.94
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,186,000.00	$25,151,003,500	68,267,000.00	1,433,607,000.00			9,995,217,923			569,727,422			377,199,534

Alternative F - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
55,722.86	195,029,992.57	529,367.12	$11,116,710	1	0.966183575	188,434,775.43	1	0.966183575	10,740,782.20	1	0.966183575	7,111,151.56
83,659.85	292,809,487.75	794,768.61	$16,690,141	2	0.9335107	273,340,789.98	2	0.9335107	15,580,425.03	2	0.9335107	10,315,334.73
105,001.50	367,505,239.76	997,514.22	$20,947,799	3	0.901942706	331,468,670.30	3	0.901942706	18,893,714.21	3	0.901942706	12,508,964.68
122,901.58	430,155,528.14	1,167,565.00	$24,518,865	4	0.871442228	374,855,691.70	4	0.871442228	21,366,774.43	4	0.871442228	14,146,304.09
138,600.42	485,101,469.04	1,316,703.99	$27,650,784	5	0.841973167	408,442,420.13	5	0.841973167	23,281,217.95	5	0.841973167	15,413,800.05
152,737.16	534,580,062.52	1,451,003.03	$30,471,064	6	0.813500644	434,881,225.30	6	0.813500644	24,788,229.84	6	0.813500644	16,411,547.68
165,692.07	579,922,255.68	1,574,074.69	$33,055,569	7	0.785990961	455,813,650.86	7	0.785990961	25,981,378.10	7	0.785990961	17,201,495.56
177,712.98	621,995,413.42	1,688,273.26	$35,453,739	8	0.759411556	472,350,504.86	8	0.759411556	26,923,978.78	8	0.759411556	17,825,563.35
189,116.61	661,908,151.60	1,796,607.84	$37,728,765	9	0.733730972	485,662,511.58	9	0.733730972	27,682,763.16	9	0.733730972	18,327,931.86
199,882.47	699,588,654.44	1,898,883.49	$39,876,553	10	0.708918814	495,951,558.99	10	0.708918814	28,269,238.86	10	0.708918814	18,716,219.93
210,002.38	735,008,328.60	1,995,022.61	$41,895,475	11	0.684945714	503,440,804.23	11	0.684945714	28,696,125.84	11	0.684945714	18,998,849.07
219,515.09	768,302,823.29	2,085,393.38	$43,793,261	12	0.661783298	508,449,976.48	12	0.661783298	28,981,648.66	12	0.661783298	19,187,885.21
228,457.04	799,599,644.88	2,170,341.89	$45,577,180	13	0.639404153	511,267,333.62	13	0.639404153	29,142,238.02	13	0.639404153	19,294,206.64
236,862.47	829,018,656.26	2,250,193.50	$47,254,063	14	0.61778179	512,152,629.64	14	0.61778179	29,192,699.89	14	0.61778179	19,327,615.94
244,763.58	856,672,526.89	2,325,254.00	$48,830,334	15	0.596890619	511,339,794.53	15	0.596890619	29,146,368.29	15	0.596890619	19,296,941.17
252,190.62	882,667,164.88	2,395,810.88	$50,312,028	16	0.576705912	509,039,372.06	16	0.576705912	29,015,244.21	16	0.576705912	19,210,127.82
259,172.04	907,102,122.53	2,462,134.33	$51,704,821	17	0.557203779	505,440,731.00	17	0.557203779	28,810,121.67	17	0.557203779	19,074,322.31
265,734.57	930,070,982.63	2,524,478.38	$53,014,046	18	0.53836114	500,714,074.07	18	0.53836114	28,540,702.22	18	0.53836114	18,895,947.73
271,903.35	951,661,710.29	2,583,081.79	$54,244,717	19	0.52015569	495,012,253.93	19	0.52015569	28,215,698.47	19	0.52015569	18,680,772.44
277,702.00	971,956,993.79	2,638,168.98	$55,401,549	20	0.502565884	488,472,426.21	20	0.502565884	27,842,928.29	20	0.502565884	18,433,972.42
283,152.73	991,034,559.89	2,689,950.95	$56,488,970	21	0.485570903	481,217,545.98	21	0.485570903	27,429,400.12	21	0.485570903	18,160,187.75
232,553.57	813,937,479.81	2,209,258.87	$46,394,436	22	0.469150631	381,859,282.05	22	0.469150631	21,765,979.08	22	0.469150631	14,410,605.59
209,432.83	733,014,921.34	1,989,611.93	$41,781,851	23	0.453285634	332,265,133.04	23	0.453285634	18,939,112.58	23	0.453285634	12,539,021.59
192,618.48	674,164,689.21	1,829,875.58	$38,427,387	24	0.437957134	295,255,235.06	24	0.437957134	16,829,548.40	24	0.437957134	11,142,342.06
178,974.05	626,409,189.51	1,700,253.51	$35,705,324	25	0.423146989	265,063,162.59	25	0.423146989	15,108,600.27	25	0.423146989	10,002,953.63
167,275.53	585,464,350.01	1,589,117.52	$33,371,468	26	0.408837671	239,359,881.19	26	0.408837671	13,643,513.23	26	0.408837671	9,032,963.20
156,899.08	549,146,791.92	1,490,541.29	$31,301,367	27	0.395012242	216,919,705.63	27	0.395012242	12,364,423.22	27	0.395012242	8,186,115.85
147,478.85	516,175,971.96	1,401,049.07	$29,422,030	28	0.38165434	197,000,800.11	28	0.38165434	11,229,045.61	28	0.38165434	7,434,416.19
138,780.54	485,731,904.43	1,318,415.17	$27,686,719	29	0.368748155	179,112,743.57	29	0.368748155	10,209,426.38	29	0.368748155	6,759,356.72
130,500.15	456,750,510.99	1,239,751.39	$26,034,779	30	0.356278411	162,730,346.10	30	0.356278411	9,275,629.73	30	0.356278411	6,141,117.80
122,670.13	429,345,471.60	1,165,366.28	$24,472,692	31	0.344230348	147,793,741.28	31	0.344230348	8,424,243.25	31	0.344230348	5,577,440.21
115,309.92	403,584,733.20	1,095,444.28	$23,004,330	32	0.332589709	134,228,128.81	32	0.332589709	7,651,003.34	32	0.332589709	5,065,501.13
108,391.33	379,369,638.10	1,029,717.59	$21,624,069	33	0.321342714	121,907,668.98	33	0.321342714	6,948,737.13	33	0.321342714	4,600,551.61
101,887.84	356,607,452.20	967,934.51	$20,326,625	34	0.310476052	110,718,073.81	34	0.310476052	6,310,930.21	34	0.310476052	4,178,278.67
95,774.57	335,210,998.55	909,858.42	$19,107,027	35	0.299976862	100,555,543.34	35	0.299976862	5,731,665.97	35	0.299976862	3,794,765.09
90,028.10	315,098,332.53	855,266.90	$17,960,605	36	0.289832717	91,325,805.71	36	0.289832717	5,205,570.93	36	0.289832717	3,446,453.26
84,626.41	296,192,426.87	803,950.87	$16,882,968	37	0.28003161	82,943,242.23	37	0.28003161	4,727,764.81	37	0.28003161	3,130,112.08
79,548.82	278,420,878.15	755,713.81	$15,869,990	38	0.270561942	75,330,093.55	38	0.270561942	4,293,815.33	38	0.270561942	2,842,807.07
74,775.89	261,715,622.80	710,370.98	$14,917,790	39	0.261412505	68,415,736.44	39	0.261412505	3,899,696.98	39	0.261412505	2,581,873.06
70,289.34	246,012,683.26	667,748.71	$14,022,723	40	0.252572468	62,136,030.62	40	0.252572468	3,541,753.75	40	0.252572468	2,344,889.52
64,490.69	225,717,399.76	612,661.51	$12,865,892	41	0.24403137	55,082,126.35	41	0.24403137	3,139,681.20	41	0.24403137	2,078,689.28
59,039.95	206,639,833.66	560,879.55	$11,778,471	42	0.235779102	48,721,354.35	42	0.235779102	2,777,117.20	42	0.235779102	1,838,646.47
53,916.26	188,706,921.17	512,204.50	$10,756,295	43	0.227805895	42,988,549.13	43	0.227805895	2,450,347.30	43	0.227805895	1,622,301.87
49,100.00	171,849,984.46	466,449.96	$9,795,449	44	0.220102314	37,824,579.30	44	0.220102314	2,156,001.02	44	0.220102314	1,427,423.97
44,572.70	156,004,464.58	423,440.69	$8,892,254	45	0.212659241	33,175,791.01	45	0.212659241	1,891,020.09	45	0.212659241	1,251,988.00
40,317.05	141,109,675.90	383,011.98	$8,043,252	46	0.205467866	28,993,503.92	46	0.205467866	1,652,629.72	46	0.205467866	1,094,156.85
36,316.74	127,108,574.50	345,008.99	$7,245,189	47	0.198519677	25,233,553.14	47	0.198519677	1,438,312.53	47	0.198519677	952,263.83

Alternative F - 150 Wells/Year Development Rate

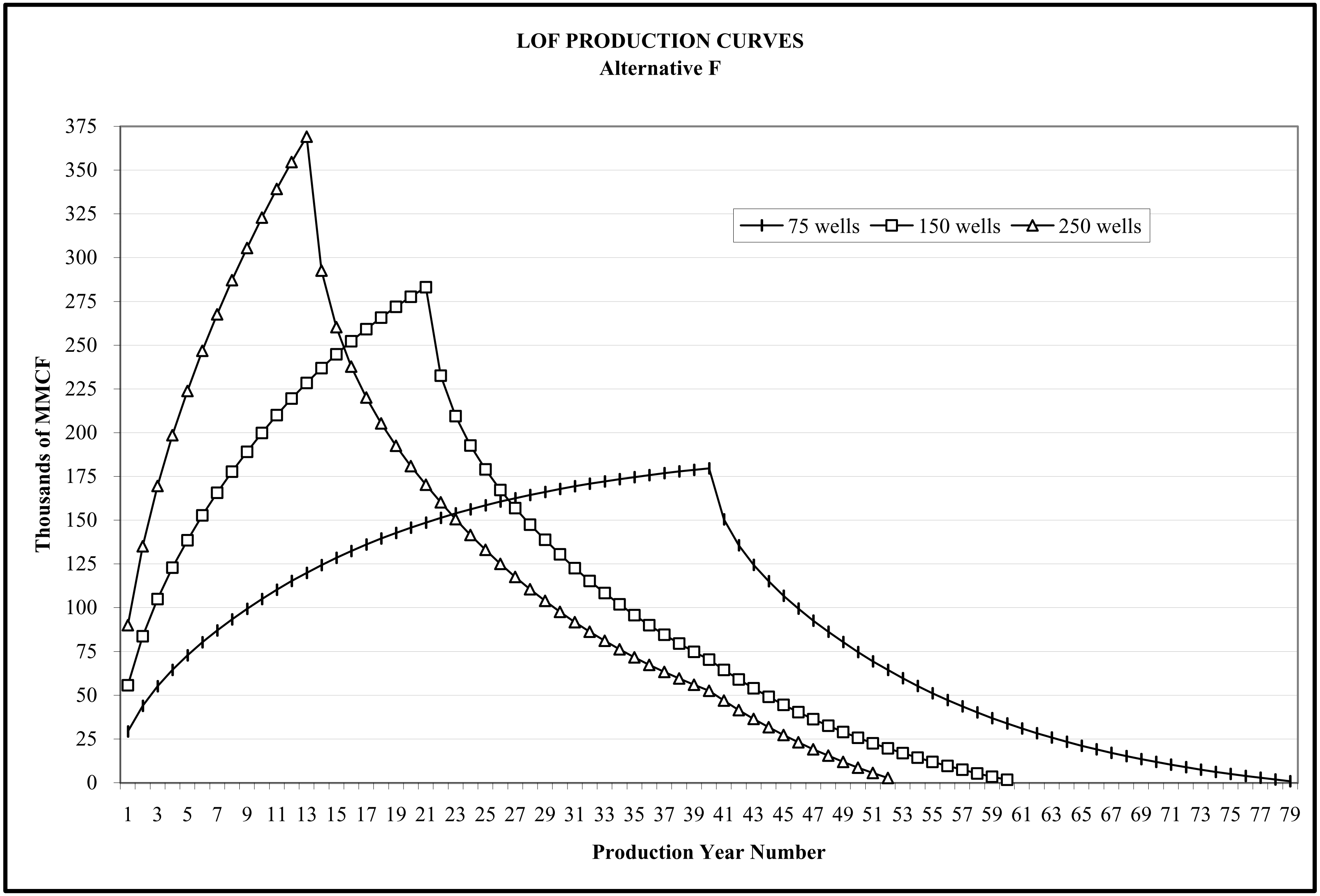
MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
32,556.44	113,947,539.11	309,286.18	$6,495,010	48	0.191806451	21,855,873.09	48	0.191806451	1,245,784.77	48	0.191806451	824,796.94
29,021.76	101,576,165.91	275,706.74	$5,789,841	49	0.185320243	18,824,119.71	49	0.185320243	1,072,974.82	49	0.185320243	710,384.63
25,699.16	89,947,075.70	244,142.06	$5,126,983	50	0.179053375	16,105,327.43	50	0.179053375	918,003.66	50	0.179053375	607,782.85
22,575.92	79,015,730.96	214,471.27	$4,503,897	51	0.172998429	13,669,597.36	51	0.172998429	779,167.05	51	0.172998429	515,863.27
19,640.08	68,740,267.51	186,580.73	$3,918,195	52	0.167148241	11,489,814.80	52	0.167148241	654,919.44	52	0.167148241	433,602.63
16,880.38	59,081,331.75	160,363.61	$3,367,636	53	0.161495885	9,541,391.96	53	0.161495885	543,859.34	53	0.161495885	360,073.05
14,286.27	50,001,932.15	135,719.53	$2,850,110	54	0.156034672	7,802,035.06	54	0.156034672	444,716.00	54	0.156034672	294,433.20
11,847.80	41,467,296.47	112,554.09	$2,363,636	55	0.150758137	6,251,532.35	55	0.150758137	356,337.34	55	0.150758137	235,920.33
9,555.64	33,444,738.74	90,778.58	$1,906,350	56	0.145660036	4,871,561.83	56	0.145660036	277,679.02	56	0.145660036	183,843.00
7,401.01	25,903,534.14	70,309.59	$1,476,501	57	0.140734334	3,645,516.62	57	0.140734334	207,794.45	57	0.140734334	137,574.51
5,375.66	18,814,801.80	51,068.75	$1,072,444	58	0.135975202	2,558,346.47	58	0.135975202	145,825.75	58	0.135975202	96,546.88
3,471.83	12,151,392.87	32,982.35	$692,629	59	0.131377007	1,596,413.62	59	0.131377007	90,995.58	59	0.131377007	60,245.46
1,682.23	5,887,788.12	15,981.14	$335,604	60	0.126934306	747,362.30	60	0.126934306	42,599.65	60	0.126934306	28,203.96
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,186,046.36	$25,151,165,765	68,267,440.43	1,433,616,249.08			13,103,647,445			746,907,904			494,505,447

Alternative F - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
90,014.19	315,049,669.07	855,134.82	$17,957,831	1	0.966183575	304,395,815.53	1	0.966183575	17,350,561.49	1	0.966183575	11,487,289.29
135,143.36	473,001,772.71	1,283,861.95	$26,961,101	2	0.9335107	441,552,216.11	2	0.9335107	25,168,476.32	2	0.9335107	16,663,297.53
169,618.46	593,664,608.42	1,611,375.37	$33,838,883	3	0.901942706	535,451,463.18	3	0.901942706	30,520,733.40	3	0.901942706	20,206,867.32
198,534.09	694,869,312.17	1,886,073.85	$39,607,551	4	0.871442228	605,538,461.36	4	0.871442228	34,515,692.30	4	0.871442228	22,851,810.45
223,893.85	783,628,483.35	2,126,991.60	$44,666,824	5	0.841973167	659,794,155.77	5	0.841973167	37,608,266.88	5	0.841973167	24,899,311.85
246,730.21	863,555,751.46	2,343,937.04	$49,222,678	6	0.813500644	702,503,160.20	6	0.813500644	40,042,680.13	6	0.813500644	26,511,064.26
267,657.46	936,801,116.24	2,542,745.89	$53,397,664	7	0.785990961	736,317,209.32	7	0.785990961	41,970,080.93	7	0.785990961	27,787,138.85
287,075.92	1,004,765,711.05	2,727,221.22	$57,271,646	8	0.759411556	763,030,692.26	8	0.759411556	43,492,749.46	8	0.759411556	28,795,252.26
305,497.25	1,069,240,383.85	2,902,223.90	$60,946,702	9	0.733730972	784,534,786.35	9	0.733730972	44,718,482.82	9	0.733730972	29,606,773.77
322,888.32	1,130,109,124.05	3,067,439.05	$64,416,220	10	0.708918814	801,155,619.58	10	0.708918814	45,665,870.32	10	0.708918814	30,234,010.77
339,235.93	1,187,325,742.25	3,222,741.30	$67,677,567	11	0.684945714	813,253,677.96	11	0.684945714	46,355,459.64	11	0.684945714	30,690,567.30
354,602.68	1,241,109,364.95	3,368,725.42	$70,743,234	12	0.661783298	821,345,449.07	12	0.661783298	46,816,690.60	12	0.661783298	30,995,934.56
369,047.42	1,291,665,964.75	3,505,950.48	$73,624,960	13	0.639404153	825,896,582.06	13	0.639404153	47,076,105.18	13	0.639404153	31,167,685.21
292,611.29	1,024,139,498.02	2,779,807.21	$58,375,951	14	0.61778179	632,694,732.58	14	0.61778179	36,063,599.76	14	0.61778179	23,876,633.82
260,245.49	910,859,204.47	2,472,332.13	$51,918,975	15	0.596890619	543,683,314.04	15	0.596890619	30,989,948.90	15	0.596890619	20,517,520.91
237,767.96	832,187,869.61	2,258,795.65	$47,434,709	16	0.576705912	479,927,664.06	16	0.576705912	27,355,876.85	16	0.576705912	18,111,510.19
220,130.05	770,455,173.31	2,091,235.47	$43,915,945	17	0.557203779	429,300,534.45	17	0.557203779	24,470,130.46	17	0.557203779	16,200,943.57
205,371.34	718,799,689.00	1,951,027.73	$40,971,582	18	0.53836114	386,973,819.68	18	0.53836114	22,057,507.72	18	0.53836114	14,603,618.01
192,499.97	673,749,885.19	1,828,749.69	$38,403,743	19	0.52015569	350,454,836.68	19	0.52015569	19,975,925.69	19	0.52015569	13,225,464.63
180,939.81	633,289,336.05	1,718,928.20	$36,097,492	20	0.502565884	318,269,615.27	20	0.502565884	18,141,368.07	20	0.502565884	12,010,858.74
170,326.42	596,142,467.30	1,618,100.98	$33,980,121	21	0.485570903	289,469,436.06	21	0.485570903	16,499,757.86	21	0.485570903	10,923,997.58
160,181.85	560,636,457.59	1,521,727.53	$31,956,278	22	0.469150631	263,022,947.70	22	0.469150631	14,992,308.02	22	0.469150631	9,925,960.00
150,570.93	526,998,259.03	1,430,423.85	$30,038,901	23	0.453285634	238,880,739.74	23	0.453285634	13,616,202.17	23	0.453285634	9,014,881.36
141,536.67	495,378,348.94	1,344,598.38	$28,236,566	24	0.437957134	216,954,481.90	24	0.437957134	12,366,405.47	24	0.437957134	8,187,428.24
133,044.47	465,655,631.86	1,263,922.43	$26,542,371	25	0.423146989	197,040,778.66	25	0.423146989	11,231,324.38	25	0.423146989	7,435,924.90
125,061.80	437,716,283.41	1,188,087.05	$24,949,828	26	0.408837671	178,954,905.78	26	0.408837671	10,200,429.63	26	0.408837671	6,753,400.23
117,558.08	411,453,297.46	1,116,801.81	$23,452,838	27	0.395012242	162,529,089.64	27	0.395012242	9,264,158.11	27	0.395012242	6,133,522.78
110,504.60	386,766,090.67	1,049,793.67	$22,045,667	28	0.38165434	147,610,957.22	28	0.38165434	8,413,824.56	28	0.38165434	5,570,542.30
103,874.32	363,560,115.96	986,806.03	$20,722,927	29	0.368748155	134,062,121.98	29	0.368748155	7,641,540.95	29	0.368748155	5,059,236.36
97,641.86	341,746,502.98	927,597.65	$19,479,551	30	0.356278411	121,756,900.91	30	0.356278411	6,940,143.35	30	0.356278411	4,594,861.93
91,783.34	321,241,705.93	871,941.77	$18,310,777	31	0.344230348	110,581,144.36	31	0.344230348	6,303,125.23	31	0.344230348	4,173,111.23
86,276.34	301,967,198.26	819,625.25	$17,212,130	32	0.332589709	100,431,182.48	32	0.332589709	5,724,577.40	32	0.332589709	3,790,071.96
81,099.76	283,849,161.82	770,447.72	$16,179,402	33	0.321342714	91,212,859.92	33	0.321342714	5,199,133.02	33	0.321342714	3,442,190.91
76,233.77	266,818,208.30	724,220.85	$15,208,638	34	0.310476052	82,840,663.87	34	0.310476052	4,721,917.84	34	0.310476052	3,126,240.97
71,659.75	250,809,111.71	680,767.59	$14,296,119	35	0.299976862	75,236,930.21	35	0.299976862	4,288,505.02	35	0.299976862	2,839,291.27
67,360.16	235,760,563.13	639,921.53	$13,438,352	36	0.289832717	68,331,124.47	36	0.289832717	3,894,874.10	36	0.289832717	2,578,679.98
63,318.55	221,614,928.49	601,526.23	$12,632,051	37	0.28003161	62,059,185.27	37	0.28003161	3,537,373.56	37	0.28003161	2,341,989.53
59,519.44	208,318,032.82	565,434.66	$11,874,128	38	0.270561942	56,362,931.56	38	0.270561942	3,212,687.10	38	0.270561942	2,127,024.31
55,948.27	195,818,951.39	531,508.58	$11,161,680	39	0.261412505	51,189,522.53	39	0.261412505	2,917,802.78	39	0.261412505	1,931,790.20
52,591.38	184,069,814.15	499,618.07	$10,491,979	40	0.252572468	46,490,967.28	40	0.252572468	2,649,985.14	40	0.252572468	1,754,476.12
46,881.49	164,085,210.85	445,374.14	$9,352,857	41	0.24403137	40,041,938.84	41	0.24403137	2,282,390.51	41	0.24403137	1,511,102.69
41,514.20	145,299,684.72	394,384.86	$8,282,082	42	0.235779102	34,258,629.14	42	0.235779102	1,952,741.86	42	0.235779102	1,292,852.15
36,468.94	127,641,290.25	346,454.93	$7,275,554	43	0.227805895	29,077,438.41	43	0.227805895	1,657,413.99	43	0.227805895	1,097,324.37
31,726.40	111,042,400.43	301,400.80	$6,329,417	44	0.220102314	24,440,689.32	44	0.220102314	1,393,119.29	44	0.220102314	922,342.73
27,268.41	95,439,443.80	259,049.92	$5,440,048	45	0.212659241	20,296,079.67	45	0.212659241	1,156,876.54	45	0.212659241	765,933.45
23,077.90	80,772,664.60	219,240.09	$4,604,042	46	0.205467866	16,596,187.00	46	0.205467866	945,982.66	46	0.205467866	626,306.90
19,138.83	66,985,892.06	181,818.85	$3,818,196	47	0.198519677	13,298,017.65	47	0.198519677	757,987.01	47	0.198519677	501,840.59
15,436.09	54,026,325.55	146,642.88	$3,079,501	48	0.191806451	10,362,597.77	48	0.191806451	590,668.07	48	0.191806451	391,063.71

Alternative F - 250 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
11,955.52	41,844,332.50	113,577.47	$2,385,127	49	0.185320243	7,754,601.85	49	0.185320243	442,012.31	49	0.185320243	292,643.16
8,683.79	30,393,259.02	82,495.99	$1,732,416	50	0.179053375	5,442,015.59	50	0.179053375	310,194.89	50	0.179053375	205,370.78
5,608.36	19,629,249.08	53,279.39	$1,118,867	51	0.172998429	3,395,829.26	51	0.172998429	193,562.27	51	0.172998429	128,151.80
2,717.45	9,511,079.16	25,815.79	$542,132	52	0.167148241	1,589,760.15	52	0.167148241	90,616.33	52	0.167148241	59,994.37
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,186,074.18	$25,151,263,123	68,267,704.69	1,433,621,798.52			14,837,646,462			845,745,848			559,943,102


LOF PRODUCTION CURVES
Alternative F
75 wells
150 wells
250 wells
Thousands of MMCF
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79
Production Year Number

Alternative G - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
32,063.31	112,221,585.52	304,601.45	$6,396,630	1	0.966183575	108,426,652.68	1	0.966183575	6,180,319.20	1	0.966183575	4,091,805.02
48,138.45	168,484,572.74	457,315.27	$9,603,621	2	0.9335107	157,282,151.50	2	0.9335107	8,965,082.64	2	0.9335107	5,935,513.83
60,418.58	211,465,016.99	573,976.47	$12,053,506	3	0.901942706	190,729,329.58	3	0.901942706	10,871,571.79	3	0.901942706	7,197,743.44
70,718.41	247,514,419.46	671,824.85	$14,108,322	4	0.871442228	215,694,517.08	4	0.871442228	12,294,587.47	4	0.871442228	8,139,879.69
79,751.63	279,130,687.93	757,640.44	$15,910,449	5	0.841973167	235,020,549.28	5	0.841973167	13,396,171.31	5	0.841973167	8,869,205.49
87,886.00	307,601,007.48	834,917.02	$17,533,257	6	0.813500644	250,233,617.77	6	0.813500644	14,263,316.21	6	0.813500644	9,443,316.27
95,340.35	333,691,214.12	905,733.30	$19,020,399	7	0.785990961	262,278,277.96	7	0.785990961	14,949,861.84	7	0.785990961	9,897,857.65
102,257.26	357,900,395.52	971,443.93	$20,400,323	8	0.759411556	271,793,696.33	8	0.759411556	15,492,240.69	8	0.759411556	10,256,950.51
108,818.99	380,866,456.81	1,033,780.38	$21,709,388	9	0.733730972	279,453,515.63	9	0.733730972	15,928,850.39	9	0.733730972	10,546,016.77
115,013.74	402,548,074.67	1,092,630.49	$22,945,240	10	0.708918814	285,373,903.56	10	0.708918814	16,266,312.50	10	0.708918814	10,769,440.37
120,836.80	422,928,796.33	1,147,949.59	$24,106,941	11	0.684945714	289,683,266.26	11	0.684945714	16,511,946.18	11	0.684945714	10,932,067.10
126,310.48	442,086,675.25	1,199,949.55	$25,198,940	12	0.661783298	292,565,578.08	12	0.661783298	16,676,237.95	12	0.661783298	11,040,839.79
131,455.74	460,095,079.46	1,248,829.50	$26,225,420	13	0.639404153	294,186,704.55	13	0.639404153	16,768,642.16	13	0.639404153	11,102,017.86
136,292.28	477,022,978.90	1,294,776.66	$27,190,310	14	0.61778179	294,696,109.91	14	0.61778179	16,797,678.26	14	0.61778179	11,121,241.80
140,838.63	492,935,204.33	1,337,966.98	$28,097,307	15	0.596890619	294,228,399.05	15	0.596890619	16,771,018.75	15	0.596890619	11,103,591.32
145,112.20	507,892,696.01	1,378,565.89	$28,949,884	16	0.576705912	292,904,720.30	16	0.576705912	16,695,569.06	16	0.576705912	11,053,638.33
149,129.35	521,952,736.99	1,416,728.86	$29,751,306	17	0.557203779	290,834,037.74	17	0.557203779	16,577,540.15	17	0.557203779	10,975,494.92
152,905.48	535,169,175.47	1,452,602.05	$30,504,643	18	0.53836114	288,114,287.16	18	0.53836114	16,422,514.37	18	0.53836114	10,872,856.97
156,455.04	547,592,627.16	1,486,322.85	$31,212,780	19	0.52015569	284,833,421.03	19	0.52015569	16,235,505.00	19	0.52015569	10,749,043.64
159,791.62	559,270,671.46	1,518,020.39	$31,878,428	20	0.502565884	281,070,359.64	20	0.502565884	16,021,010.50	20	0.502565884	10,607,033.23
162,928.01	570,248,032.88	1,547,816.09	$32,504,138	21	0.485570903	276,895,852.16	21	0.485570903	15,783,063.57	21	0.485570903	10,449,495.67
165,876.22	580,566,752.81	1,575,824.04	$33,092,305	22	0.469150631	272,373,258.28	22	0.469150631	15,525,275.72	22	0.469150631	10,278,822.02
168,647.53	590,266,348.96	1,602,151.52	$33,645,182	23	0.453285634	267,559,255.97	23	0.453285634	15,250,877.59	23	0.453285634	10,097,151.20
171,252.56	599,383,968.98	1,626,899.34	$34,164,886	24	0.437957134	262,504,485.16	24	0.437957134	14,962,755.65	24	0.437957134	9,906,394.26
173,701.29	607,954,531.79	1,650,162.30	$34,653,408	25	0.423146989	257,254,129.74	25	0.423146989	14,663,485.40	25	0.423146989	9,708,256.35
176,003.10	616,010,860.86	1,672,029.48	$35,112,619	26	0.408837671	251,848,445.54	26	0.408837671	14,355,361.40	26	0.408837671	9,504,256.64
178,166.80	623,583,810.23	1,692,584.63	$35,544,277	27	0.395012242	246,323,239.15	27	0.395012242	14,040,424.63	27	0.395012242	9,295,746.40
180,200.68	630,702,382.59	1,711,906.47	$35,950,036	28	0.38165434	240,710,301.82	28	0.38165434	13,720,487.20	28	0.38165434	9,083,925.37
182,112.53	637,393,840.27	1,730,069.00	$36,331,449	29	0.368748155	235,037,802.59	29	0.368748155	13,397,154.75	29	0.368748155	8,869,856.59
183,909.66	643,683,810.46	1,747,141.77	$36,689,977	30	0.356278411	229,330,644.92	30	0.356278411	13,071,846.76	30	0.356278411	8,654,479.88
185,598.97	649,596,382.08	1,763,190.18	$37,026,994	31	0.344230348	223,610,788.93	31	0.344230348	12,745,814.97	31	0.344230348	8,438,623.95
187,186.91	655,154,199.48	1,778,275.68	$37,343,789	32	0.332589709	217,897,544.30	32	0.332589709	12,420,160.02	32	0.332589709	8,223,017.53
188,679.59	660,378,547.82	1,792,456.06	$37,641,577	33	0.321342714	212,207,834.58	33	0.321342714	12,095,846.57	33	0.321342714	8,008,299.26
190,082.70	665,289,435.30	1,805,785.61	$37,921,498	34	0.310476052	206,556,437.19	34	0.310476052	11,773,716.92	34	0.310476052	7,795,026.83
191,401.62	669,905,669.63	1,818,315.39	$38,184,623	35	0.299976862	200,956,200.38	35	0.299976862	11,454,503.42	35	0.299976862	7,583,685.09
192,641.41	674,244,930.10	1,830,093.38	$38,431,961	36	0.289832717	195,418,239.73	36	0.289832717	11,138,839.66	36	0.289832717	7,374,693.53
193,806.81	678,323,834.95	1,841,164.69	$38,664,459	37	0.28003161	189,952,115.75	37	0.28003161	10,827,270.60	37	0.28003161	7,168,412.94
194,902.29	682,158,005.81	1,851,571.73	$38,883,006	38	0.270561942	184,565,994.97	38	0.270561942	10,520,261.71	38	0.270561942	6,965,151.52
195,932.04	685,762,126.63	1,861,354.34	$39,088,441	39	0.261412505	179,266,795.07	39	0.261412505	10,218,207.32	39	0.261412505	6,765,170.31
196,900.00	689,150,000.00	1,870,550.00	$39,281,550	40	0.252572468	174,060,316.46	40	0.252572468	9,921,438.04	40	0.252572468	6,568,688.22
164,836.69	576,928,414.48	1,565,948.55	$32,884,920	41	0.24403137	140,788,631.51	41	0.24403137	8,024,952.00	41	0.24403137	5,313,081.38
148,761.55	520,665,427.26	1,413,234.73	$29,677,929	42	0.235779102	122,762,026.71	42	0.235779102	6,997,435.52	42	0.235779102	4,632,793.36
136,481.42	477,684,983.01	1,296,573.53	$27,228,044	43	0.227805895	108,819,455.24	43	0.227805895	6,202,708.95	43	0.227805895	4,106,628.60
126,181.59	441,635,580.54	1,198,725.15	$25,173,228	44	0.220102314	97,205,013.37	44	0.220102314	5,540,685.76	44	0.220102314	3,668,322.79
117,148.37	410,019,312.07	1,112,909.56	$23,371,101	45	0.212659241	87,194,395.66	45	0.212659241	4,970,080.55	45	0.212659241	3,290,542.10
109,014.00	381,548,992.52	1,035,632.98	$21,748,293	46	0.205467866	78,396,057.12	46	0.205467866	4,468,575.26	46	0.205467866	2,958,510.40
101,559.65	355,458,785.88	964,816.70	$20,261,151	47	0.198519677	70,565,563.33	47	0.198519677	4,022,237.11	47	0.198519677	2,663,003.23

Alternative G - 75 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
94,642.74	331,249,604.48	899,106.07	$18,881,227	48	0.191806451	63,535,811.07	48	0.191806451	3,621,541.23	48	0.191806451	2,397,714.44
88,081.01	308,283,543.19	836,769.62	$17,572,162	49	0.185320243	57,131,181.03	49	0.185320243	3,256,477.32	49	0.185320243	2,156,016.51
81,886.26	286,601,925.33	777,919.51	$16,336,310	50	0.179053375	51,317,041.88	50	0.179053375	2,925,071.39	50	0.179053375	1,936,602.53
76,063.20	266,221,203.67	722,600.41	$15,174,609	51	0.172998429	46,055,850.13	51	0.172998429	2,625,183.46	51	0.172998429	1,738,055.67
70,589.52	247,063,324.75	670,600.45	$14,082,610	52	0.167148241	41,296,200.16	52	0.167148241	2,353,883.41	52	0.167148241	1,558,436.00
65,444.26	229,054,920.54	621,720.50	$13,056,130	53	0.161495885	36,991,427.12	53	0.161495885	2,108,511.35	53	0.161495885	1,395,982.48
60,607.72	212,127,021.10	575,773.34	$12,091,240	54	0.156034672	33,099,170.07	54	0.156034672	1,886,652.69	54	0.156034672	1,249,096.48
56,061.37	196,214,795.67	532,583.02	$11,184,243	55	0.150758137	29,580,977.01	55	0.150758137	1,686,115.69	55	0.150758137	1,116,326.91
51,787.80	181,257,303.99	491,984.11	$10,331,666	56	0.145660036	26,401,945.34	56	0.145660036	1,504,910.88	56	0.145660036	996,356.61
47,770.65	167,197,263.01	453,821.14	$9,530,244	57	0.140734334	23,530,395.43	57	0.140734334	1,341,232.54	57	0.140734334	887,990.06
43,994.52	153,980,824.53	417,947.95	$8,776,907	58	0.135975202	20,937,573.69	58	0.135975202	1,193,441.70	58	0.135975202	790,142.16
40,444.96	141,557,372.84	384,227.15	$8,068,770	59	0.131377007	18,597,383.90	59	0.131377007	1,060,050.88	59	0.131377007	701,828.07
37,108.38	129,879,328.54	352,529.61	$7,403,122	60	0.126934306	16,486,142.41	60	0.126934306	939,710.12	60	0.126934306	622,154.04
33,971.99	118,901,967.12	322,733.91	$6,777,412	61	0.122641841	14,582,356.20	61	0.122641841	831,194.30	61	0.122641841	550,308.96
31,023.78	108,583,247.19	294,725.96	$6,189,245	62	0.118494533	12,866,521.14	62	0.118494533	733,391.71	62	0.118494533	485,556.77
28,252.47	98,883,651.04	268,398.48	$5,636,368	63	0.114487471	11,320,939.16	63	0.114487471	645,293.53	63	0.114487471	427,229.60
25,647.44	89,766,031.02	243,650.66	$5,116,664	64	0.110615914	9,929,551.59	64	0.110615914	565,984.44	64	0.110615914	374,721.42
23,198.71	81,195,468.21	220,387.70	$4,628,142	65	0.106875279	8,677,788.36	65	0.106875279	494,633.94	65	0.106875279	327,482.38
20,896.90	73,139,139.14	198,520.52	$4,168,931	66	0.10326114	7,552,430.86	66	0.10326114	430,488.56	66	0.10326114	285,013.64
18,733.20	65,566,189.77	177,965.37	$3,737,273	67	0.099769217	6,541,487.42	67	0.099769217	372,864.78	67	0.099769217	246,862.65
16,699.32	58,447,617.41	158,643.53	$3,331,514	68	0.096395379	5,634,080.22	68	0.096395379	321,142.57	68	0.096395379	212,618.92
14,787.47	51,756,159.73	140,481.00	$2,950,101	69	0.093135632	4,820,342.63	69	0.093135632	274,759.53	69	0.093135632	181,910.09
12,990.34	45,466,189.54	123,408.23	$2,591,573	70	0.089986118	4,091,325.88	70	0.089986118	233,205.57	70	0.089986118	154,398.46
11,301.03	39,553,617.92	107,359.82	$2,254,556	71	0.086943109	3,438,914.50	71	0.086943109	196,018.13	71	0.086943109	129,777.76
9,713.09	33,995,800.52	92,274.32	$1,937,761	72	0.084003004	2,855,749.35	72	0.084003004	162,777.71	72	0.084003004	107,770.27
8,220.41	28,771,452.18	78,093.94	$1,639,973	73	0.081162322	2,335,157.88	73	0.081162322	133,104.00	73	0.081162322	88,124.19
6,817.30	23,860,564.70	64,764.39	$1,360,052	74	0.078417703	1,871,090.67	74	0.078417703	106,652.17	74	0.078417703	70,611.22
5,498.38	19,244,330.37	52,234.61	$1,096,927	75	0.075765896	1,458,063.94	75	0.075765896	83,109.64	75	0.075765896	55,024.42
4,258.59	14,905,069.90	40,456.62	$849,589	76	0.073203765	1,091,107.23	76	0.073203765	62,193.11	76	0.073203765	41,176.20
3,093.19	10,826,165.05	29,385.31	$617,091	77	0.070728275	765,715.98	77	0.070728275	43,645.81	77	0.070728275	28,896.59
1,997.71	6,991,994.19	18,978.27	$398,544	78	0.068336498	477,808.39	78	0.068336498	27,235.08	78	0.068336498	18,031.53
967.96	3,387,873.37	9,195.66	$193,109	79	0.066025601	223,686.38	79	0.066025601	12,750.12	79	0.066025601	8,441.48
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,876,000.00	$27,566,003,500	74,822,000.00	1,571,262,000.00			10,954,959,138			624,432,671			413,418,248

Alternative G - 150 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
61,073.37	213,756,780.06	580,196.97	$12,184,136	1	0.966183575	206,528,289.91	1	0.966183575	11,772,112.52	1	0.966183575	7,793,964.60
91,692.88	320,925,066.17	871,082.32	$18,292,729	2	0.9335107	299,586,983.29	2	0.9335107	17,076,458.05	2	0.9335107	11,305,813.58
115,083.74	402,793,107.21	1,093,295.58	$22,959,207	3	0.901942706	363,296,304.94	3	0.901942706	20,707,889.38	3	0.901942706	13,710,075.96
134,702.59	471,459,078.71	1,279,674.64	$26,873,167	4	0.871442228	410,849,349.82	4	0.871442228	23,418,412.94	4	0.871442228	15,504,632.76
151,908.84	531,680,931.00	1,443,133.96	$30,305,813	5	0.841973167	447,661,077.23	5	0.841973167	25,516,681.40	5	0.841973167	16,893,833.73
167,402.99	585,910,460.96	1,590,328.39	$33,396,896	6	0.813500644	476,638,537.50	6	0.813500644	27,168,396.64	6	0.813500644	17,987,385.13
181,601.83	635,606,413.27	1,725,217.41	$36,229,566	7	0.785990961	499,580,895.38	7	0.785990961	28,476,111.04	7	0.785990961	18,853,183.83
194,776.98	681,719,437.25	1,850,381.33	$38,858,008	8	0.759411556	517,705,618.75	8	0.759411556	29,509,220.27	8	0.759411556	19,537,174.64
207,275.60	725,464,598.11	1,969,118.19	$41,351,482	9	0.733730972	532,295,844.86	9	0.733730972	30,340,863.16	9	0.733730972	20,087,780.59
219,075.20	766,763,184.30	2,081,214.36	$43,705,502	10	0.708918814	543,572,847.01	10	0.708918814	30,983,652.28	10	0.708918814	20,513,352.10
230,166.82	805,583,856.95	2,186,584.75	$45,918,280	11	0.684945714	551,781,209.87	11	0.684945714	31,451,528.96	11	0.684945714	20,823,119.30
240,592.94	842,075,290.32	2,285,632.93	$47,998,292	12	0.661783298	557,271,363.04	12	0.661783298	31,764,467.69	12	0.661783298	21,030,306.70
250,393.50	876,377,233.93	2,378,738.21	$49,953,502	13	0.639404153	560,359,242.92	13	0.639404153	31,940,476.85	13	0.639404153	21,146,837.11
259,606.02	908,621,059.94	2,466,257.16	$51,791,400	14	0.61778179	561,329,545.09	14	0.61778179	31,995,784.07	14	0.61778179	21,183,454.37
268,265.79	938,930,256.30	2,548,524.98	$53,519,025	15	0.596890619	560,438,661.53	15	0.596890619	31,945,003.71	15	0.596890619	21,149,834.21
276,405.97	967,420,900.45	2,625,856.73	$55,142,991	16	0.576705912	557,917,352.40	16	0.576705912	31,801,289.09	16	0.576705912	21,054,685.05
284,057.74	994,202,103.68	2,698,548.57	$56,669,520	17	0.557203779	553,973,169.69	17	0.557203779	31,576,470.67	17	0.557203779	20,905,839.48
291,250.41	1,019,376,434.62	2,766,878.89	$58,104,457	18	0.53836114	548,792,658.98	18	0.53836114	31,281,181.56	18	0.53836114	20,710,337.36
298,011.52	1,043,040,304.79	2,831,109.40	$59,453,297	19	0.52015569	542,543,349.84	19	0.52015569	30,924,970.94	19	0.52015569	20,474,500.94
304,366.95	1,065,284,342.20	2,891,486.07	$60,721,208	20	0.502565884	535,375,567.61	20	0.502565884	30,516,407.35	20	0.502565884	20,204,003.17
310,341.07	1,086,193,736.94	2,948,240.14	$61,913,043	21	0.485570903	527,424,073.50	21	0.485570903	30,063,172.19	21	0.485570903	19,903,929.69
254,883.37	892,091,788.33	2,421,392.00	$50,849,232	22	0.469150631	418,525,425.19	22	0.469150631	23,855,949.24	22	0.469150631	15,794,312.50
229,542.58	803,399,042.65	2,180,654.54	$45,793,745	23	0.453285634	364,169,244.07	23	0.453285634	20,757,646.91	23	0.453285634	13,743,018.93
211,113.72	738,898,008.94	2,005,580.31	$42,117,187	24	0.437957134	323,605,654.23	24	0.437957134	18,445,522.29	24	0.437957134	12,212,230.18
196,159.15	686,557,024.29	1,863,511.92	$39,133,750	25	0.423146989	290,514,537.79	25	0.423146989	16,559,328.65	25	0.423146989	10,963,437.63
183,337.33	641,680,659.71	1,741,704.65	$36,575,798	26	0.408837671	262,343,226.31	26	0.408837671	14,953,563.90	26	0.408837671	9,900,308.67
171,964.54	601,875,888.28	1,633,663.13	$34,306,926	27	0.395012242	237,748,344.22	27	0.395012242	13,551,655.62	27	0.395012242	8,972,147.01
161,639.77	565,739,208.90	1,535,577.85	$32,247,135	28	0.38165434	215,916,824.61	28	0.38165434	12,307,259.00	28	0.38165434	8,148,269.13
152,106.26	532,371,900.82	1,445,009.45	$30,345,198	29	0.368748155	196,311,156.19	29	0.368748155	11,189,735.90	29	0.368748155	7,408,390.41
143,030.78	500,607,712.85	1,358,792.36	$28,534,640	30	0.356278411	178,355,720.27	30	0.356278411	10,166,276.06	30	0.356278411	6,730,788.17
134,448.93	470,571,240.52	1,277,264.80	$26,822,561	31	0.344230348	161,984,902.07	31	0.344230348	9,233,139.42	31	0.344230348	6,112,986.23
126,381.99	442,336,955.00	1,200,628.88	$25,213,206	32	0.332589709	147,116,718.97	32	0.332589709	8,385,652.98	32	0.332589709	5,551,890.74
118,799.06	415,796,725.54	1,128,591.11	$23,700,413	33	0.321342714	133,613,248.10	33	0.321342714	7,615,955.14	33	0.321342714	5,042,296.76
111,671.12	390,848,913.66	1,060,875.62	$22,278,388	34	0.310476052	121,349,227.57	34	0.310476052	6,916,905.97	34	0.310476052	4,579,477.15
104,970.85	367,397,971.69	997,223.07	$20,941,684	35	0.299976862	110,210,890.53	35	0.299976862	6,282,020.76	35	0.299976862	4,159,138.59
98,672.60	345,354,086.69	937,389.66	$19,685,183	36	0.289832717	100,094,913.13	36	0.289832717	5,705,410.05	36	0.289832717	3,777,381.83
92,752.24	324,632,835.23	881,146.27	$18,504,072	37	0.28003161	90,907,455.58	37	0.28003161	5,181,724.97	37	0.28003161	3,430,665.56
87,187.10	305,154,861.72	828,277.48	$17,393,827	38	0.270561942	82,563,292.07	38	0.270561942	4,706,107.65	38	0.270561942	3,115,773.52
81,955.88	286,845,567.10	778,580.82	$16,350,197	39	0.261412505	74,985,018.12	39	0.261412505	4,274,146.03	39	0.261412505	2,829,784.61
77,038.52	269,634,830.69	731,865.97	$15,369,185	40	0.252572468	68,102,334.70	40	0.252572468	3,881,833.08	40	0.252572468	2,570,045.91
70,683.08	247,390,793.28	671,489.30	$14,101,275	41	0.24403137	60,371,114.27	41	0.24403137	3,441,153.51	41	0.24403137	2,278,285.11
64,708.97	226,481,398.54	614,735.22	$12,909,440	42	0.235779102	53,399,580.69	42	0.235779102	3,043,776.10	42	0.235779102	2,015,193.38
59,093.30	206,826,567.09	561,386.40	$11,789,114	43	0.227805895	47,116,311.30	43	0.227805895	2,685,629.74	43	0.227805895	1,778,075.36
53,814.58	188,351,026.66	511,238.50	$10,736,009	44	0.220102314	41,456,496.88	44	0.220102314	2,363,020.32	44	0.220102314	1,564,485.28
48,852.58	170,984,019.34	464,099.48	$9,746,089	45	0.212659241	36,361,331.76	45	0.212659241	2,072,595.91	45	0.212659241	1,372,203.94
44,188.29	154,659,032.48	419,788.80	$8,815,565	46	0.205467866	31,777,461.30	46	0.205467866	1,811,315.29	46	0.205467866	1,199,217.83
39,803.87	139,313,544.78	378,136.76	$7,940,872	47	0.198519677	27,656,479.90	47	0.198519677	1,576,419.35	47	0.198519677	1,043,700.24
35,682.51	124,888,786.25	338,983.85	$7,118,661	48	0.191806451	23,954,474.88	48	0.191806451	1,365,405.07	48	0.191806451	903,993.97

Alternative G - 150 Wells/Year Development Rate

MMCF Natural Gas	Price / MMCF	Condensate Production	Value/bbl			Natural Gas			Condensate			Labor
Total Production for Year	$3,500		$21	**NG Production**	**Discount Factor**	PV of LOP Production	**Condensate**	**Discount Factor**	PV of LOP Production	**Labor Earnings**	**Discount Factor**	PV of LOP Labor
31,808.43	111,329,513.31	302,180.11	$6,345,782	49	0.185320243	20,631,612.42	49	0.185320243	1,176,001.91	49	0.185320243	778,595.79
28,166.80	98,583,797.41	267,584.59	$5,619,276	50	0.179053375	17,651,761.60	50	0.179053375	1,006,150.41	50	0.179053375	666,142.18
24,743.66	86,602,824.52	235,064.81	$4,936,361	51	0.172998429	14,982,152.63	51	0.172998429	853,982.70	51	0.172998429	565,396.48
21,525.92	75,340,710.67	204,496.21	$4,294,421	52	0.167148241	12,593,067.27	52	0.167148241	717,804.83	52	0.167148241	475,237.17
18,501.24	64,754,323.53	175,761.74	$3,690,996	53	0.161495885	10,457,556.79	53	0.161495885	596,080.74	53	0.161495885	394,647.28
15,658.03	54,803,119.62	148,751.32	$3,123,778	54	0.156034672	8,551,186.77	54	0.156034672	487,417.65	54	0.156034672	322,704.69
12,985.43	45,448,987.89	123,361.54	$2,590,592	55	0.150758137	6,851,804.73	55	0.150758137	390,552.87	55	0.150758137	258,573.41
10,473.17	36,656,103.85	99,495.14	$2,089,398	56	0.145660036	5,339,329.39	56	0.145660036	304,341.78	56	0.145660036	201,495.61
8,111.65	28,390,792.49	77,060.72	$1,618,275	57	0.140734334	3,995,559.27	57	0.140734334	227,746.88	57	0.140734334	150,784.42
5,891.83	20,621,399.80	55,972.37	$1,175,420	58	0.135975202	2,803,999.00	58	0.135975202	159,827.94	58	0.135975202	105,817.31
3,805.19	13,318,170.09	36,149.32	$759,136	59	0.131377007	1,749,701.32	59	0.131377007	99,732.98	59	0.131377007	66,030.23
1,843.75	6,453,133.76	17,515.65	$367,829	60	0.126934306	819,124.05	60	0.126934306	46,690.07	60	0.126934306	30,912.10
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,876,050.81	$27,566,181,345	74,822,482.72	1,571,272,137.17			14,361,860,183			818,626,030			541,987,880

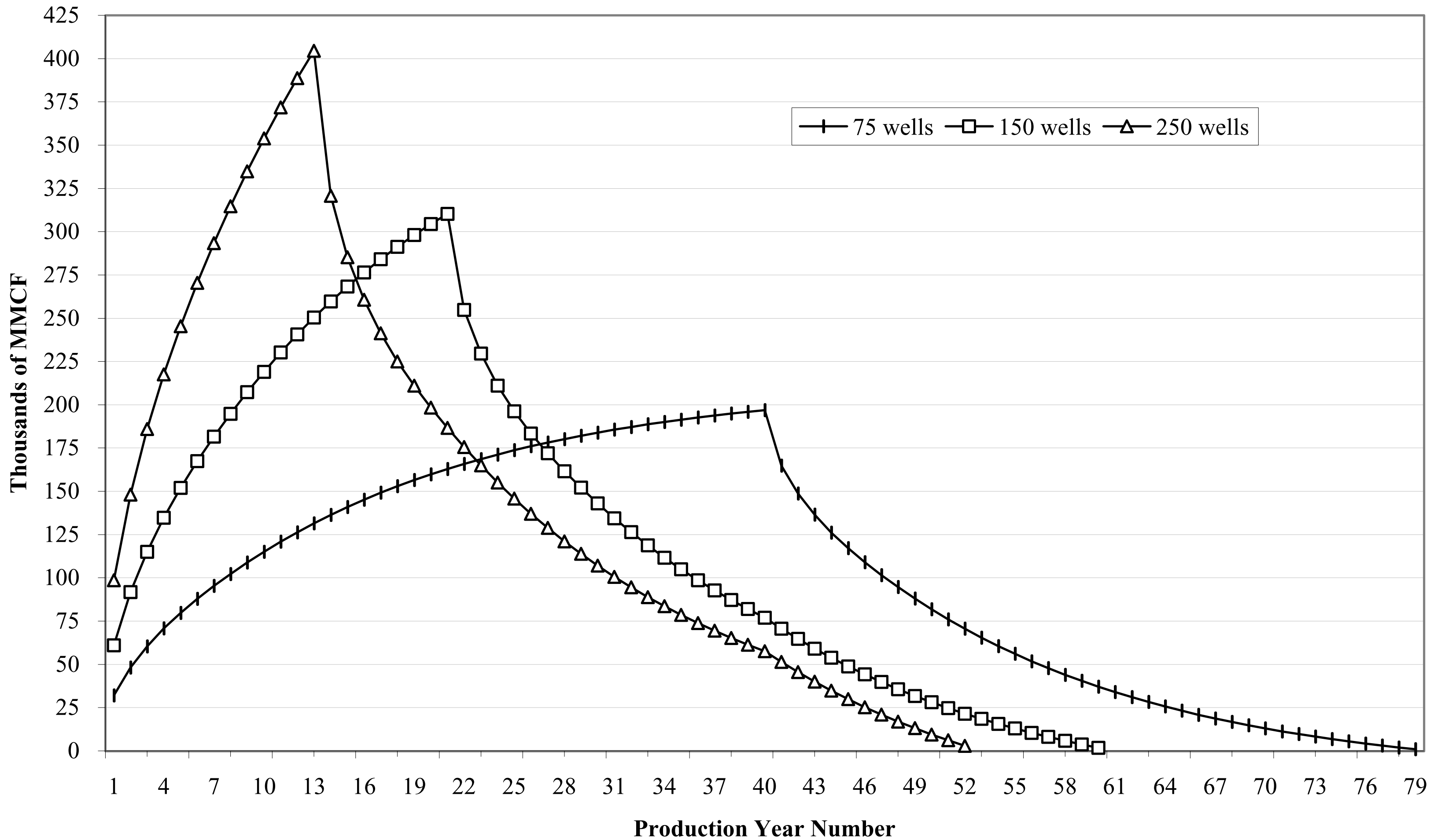
Alternative G and Preferred Action - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
98,657.36	345,300,750.58	937,244.89	$19,682,143	1	0.966183575	333,623,913.60	1	0.966183575	19,016,563.08	1	0.966183575	12,590,299.25
148,119.83	518,419,421.35	1,407,138.43	$29,549,907	2	0.9335107	483,950,077.11	2	0.9335107	27,585,154.40	2	0.9335107	18,263,308.01
185,905.23	650,668,307.25	1,766,099.69	$37,088,094	3	0.901942706	586,865,533.54	3	0.901942706	33,451,335.41	3	0.901942706	22,147,131.50
217,597.34	761,590,690.60	2,067,174.73	$43,410,669	4	0.871442228	663,682,288.01	4	0.871442228	37,829,890.42	4	0.871442228	25,046,042.18
245,392.15	858,872,520.86	2,331,225.41	$48,955,734	5	0.841973167	723,147,616.32	5	0.841973167	41,219,414.13	5	0.841973167	27,290,144.74
270,421.26	946,474,408.36	2,569,001.97	$53,949,041	6	0.813500644	769,957,541.02	6	0.813500644	43,887,579.84	6	0.813500644	29,056,657.68
293,357.94	1,026,752,795.92	2,786,900.45	$58,524,909	7	0.785990961	807,018,416.45	7	0.785990961	46,000,049.74	7	0.785990961	30,455,261.00
314,640.96	1,101,243,353.78	2,989,089.10	$62,770,871	8	0.759411556	836,296,929.07	8	0.759411556	47,668,924.96	8	0.759411556	31,560,173.51
334,831.11	1,171,908,887.17	3,180,895.55	$66,798,807	9	0.733730972	859,865,847.10	9	0.733730972	49,012,353.28	9	0.733730972	32,449,617.34
353,892.07	1,238,622,246.17	3,361,974.67	$70,601,468	10	0.708918814	878,082,613.39	10	0.708918814	50,050,708.96	10	0.708918814	33,137,081.66
371,809.37	1,301,332,806.29	3,532,189.05	$74,175,970	11	0.684945714	891,342,327.80	11	0.684945714	50,806,512.68	11	0.684945714	33,637,476.77
388,651.64	1,360,280,734.53	3,692,190.57	$77,536,002	12	0.661783298	900,211,071.10	12	0.661783298	51,312,031.05	12	0.661783298	33,972,165.40
404,483.37	1,415,691,781.01	3,842,591.98	$80,694,432	13	0.639404153	905,199,204.06	13	0.639404153	51,596,354.63	13	0.639404153	34,160,407.56
320,707.83	1,122,477,412.52	3,046,724.41	$63,981,213	14	0.61778179	693,446,105.45	14	0.61778179	39,526,428.01	14	0.61778179	26,169,269.13
285,234.27	998,319,940.78	2,709,725.55	$56,904,237	15	0.596890619	595,887,807.04	15	0.596890619	33,965,605.00	15	0.596890619	22,487,614.06
260,598.45	912,094,581.27	2,475,685.29	$51,989,391	16	0.576705912	526,010,337.06	16	0.576705912	29,982,589.21	16	0.576705912	19,850,578.10
241,266.95	844,434,309.07	2,292,035.98	$48,132,756	17	0.557203779	470,521,988.50	17	0.557203779	26,819,753.34	17	0.557203779	17,756,558.80
225,091.10	787,818,863.14	2,138,365.49	$44,905,675	18	0.53836114	424,131,060.92	18	0.53836114	24,175,470.47	18	0.53836114	16,005,857.98
210,983.82	738,443,375.42	2,004,346.30	$42,091,272	19	0.52015569	384,105,523.75	19	0.52015569	21,894,014.85	19	0.52015569	14,495,374.26
198,313.66	694,097,802.78	1,883,979.75	$39,563,575	20	0.502565884	348,829,876.13	20	0.502565884	19,883,302.94	20	0.502565884	13,164,141.87
186,681.17	653,384,090.24	1,773,471.10	$37,242,893	21	0.485570903	317,264,302.59	21	0.485570903	18,084,065.25	21	0.485570903	11,972,920.25
175,562.51	614,468,792.09	1,667,843.86	$35,024,721	22	0.469150631	288,278,421.39	22	0.469150631	16,431,870.02	22	0.469150631	10,879,051.07
165,028.76	577,600,652.40	1,567,773.20	$32,923,237	23	0.453285634	261,818,077.68	23	0.453285634	14,923,630.43	23	0.453285634	9,880,490.62
155,127.03	542,944,597.31	1,473,706.76	$30,947,842	24	0.437957134	237,786,459.70	24	0.437957134	13,553,828.20	24	0.437957134	8,973,585.42
145,819.40	510,367,903.77	1,385,284.31	$29,090,971	25	0.423146989	215,960,641.90	25	0.423146989	12,309,756.59	25	0.423146989	8,149,922.70
137,070.23	479,745,818.00	1,302,167.22	$27,345,512	26	0.408837671	196,138,162.80	26	0.408837671	11,179,875.28	26	0.408837671	7,401,861.99
128,846.02	450,961,059.12	1,224,037.16	$25,704,780	27	0.395012242	178,135,139.16	27	0.395012242	10,153,702.93	27	0.395012242	6,722,463.88
121,115.25	423,903,385.77	1,150,594.90	$24,162,493	28	0.38165434	161,784,567.09	28	0.38165434	9,221,720.32	28	0.38165434	6,105,425.99
113,848.33	398,469,172.46	1,081,559.18	$22,712,743	29	0.368748155	146,934,772.16	29	0.368748155	8,375,282.01	29	0.368748155	5,545,024.43
107,017.43	374,561,015.51	1,016,665.61	$21,349,978	30	0.356278411	133,448,003.28	30	0.356278411	7,606,536.19	30	0.356278411	5,036,060.75
100,596.38	352,087,347.05	955,665.66	$20,068,979	31	0.344230348	121,199,150.15	31	0.344230348	6,908,351.56	31	0.344230348	4,573,813.53
94,560.60	330,962,100.40	898,325.70	$18,864,840	32	0.332589709	110,074,588.53	32	0.332589709	6,274,251.55	32	0.332589709	4,153,994.82
88,886.96	311,104,369.40	844,426.15	$17,732,949	33	0.321342714	99,971,122.28	33	0.321342714	5,698,353.97	33	0.321342714	3,772,710.21
83,553.74	292,438,103.06	793,760.57	$16,668,972	34	0.310476052	90,795,027.64	34	0.310476052	5,175,316.58	34	0.310476052	3,426,422.75
78,540.52	274,891,812.39	746,134.92	$15,668,833	35	0.299976862	82,461,183.18	35	0.299976862	4,700,287.44	35	0.299976862	3,111,920.13
73,828.09	258,398,301.59	701,366.82	$14,728,703	36	0.289832717	74,892,281.71	36	0.289832717	4,268,860.06	36	0.289832717	2,826,284.93
69,398.40	242,894,402.56	659,284.81	$13,844,981	37	0.28003161	68,018,110.66	37	0.28003161	3,877,032.31	37	0.28003161	2,566,867.46
65,234.50	228,320,738.45	619,727.72	$13,014,282	38	0.270561942	61,774,902.45	38	0.270561942	3,521,169.44	38	0.270561942	2,331,261.27
61,320.43	214,621,494.73	582,544.06	$12,233,425	39	0.261412505	56,104,742.48	39	0.261412505	3,197,970.32	39	0.261412505	2,117,280.77
57,641.20	201,744,204.88	547,591.41	$11,499,420	40	0.252572468	50,955,031.77	40	0.252572468	2,904,436.81	40	0.252572468	1,922,940.99
51,383.05	179,840,679.19	488,138.99	$10,250,919	41	0.24403137	43,886,767.37	41	0.24403137	2,501,545.74	41	0.24403137	1,656,198.83
45,500.39	159,251,366.11	432,253.71	$9,077,328	42	0.235779102	37,548,144.04	42	0.235779102	2,140,244.21	42	0.235779102	1,416,991.86
39,970.69	139,897,411.91	379,721.55	$7,974,152	43	0.227805895	31,869,455.18	43	0.227805895	1,816,558.95	43	0.227805895	1,202,689.50
34,772.77	121,704,696.04	330,341.32	$6,937,168	44	0.220102314	26,787,485.27	44	0.220102314	1,526,886.66	44	0.220102314	1,010,906.12
29,886.73	104,603,542.92	283,923.90	$5,962,402	45	0.212659241	22,244,910.03	45	0.212659241	1,267,959.87	45	0.212659241	839,478.41
25,293.85	88,528,459.00	240,291.53	$5,046,122	46	0.205467866	18,189,753.52	46	0.205467866	1,036,815.95	46	0.205467866	686,444.92
20,976.54	73,417,880.02	199,277.10	$4,184,819	47	0.198519677	14,574,893.82	47	0.198519677	830,768.95	47	0.198519677	550,027.34

Alternative G and Preferred Action - 250 Wells/Year Development Rate

MMCF Natural Gas Total Production for Year	Price / MMCF $3,500	Condensate Production	Value/bbl $21	NG Production	Discount Factor	Natural Gas PV of LOP Production	Condensate	Discount Factor	Condensate PV of LOP Production	Labor Earnings	Discount Factor	Labor PV of LOP Labor
16,918.27	59,213,935.44	160,723.54	$3,375,194	48	0.191806451	11,357,614.81	48	0.191806451	647,384.04	48	0.191806451	428,613.67
13,103.49	45,862,226.94	124,483.19	$2,614,147	49	0.185320243	8,499,199.02	49	0.185320243	484,454.34	49	0.185320243	320,742.77
9,517.61	33,311,620.94	90,417.26	$1,898,762	50	0.179053375	5,964,558.14	50	0.179053375	339,979.81	50	0.179053375	225,090.50
6,146.87	21,514,050.35	58,395.28	$1,226,301	51	0.172998429	3,721,896.92	51	0.172998429	212,148.12	51	0.172998429	140,456.95
2,978.38	10,424,333.35	28,294.62	$594,187	52	0.167148241	1,742,408.98	52	0.167148241	99,317.31	52	0.167148241	65,755.03
-	-	-	$0	53	0.161495885	-	53	0.161495885	-	53	0.161495885	-
-	-	-	$0	54	0.156034672	-	54	0.156034672	-	54	0.156034672	-
-	-	-	$0	55	0.150758137	-	55	0.150758137	-	55	0.150758137	-
-	-	-	$0	56	0.145660036	-	56	0.145660036	-	56	0.145660036	-
-	-	-	$0	57	0.140734334	-	57	0.140734334	-	57	0.140734334	-
-	-	-	$0	58	0.135975202	-	58	0.135975202	-	58	0.135975202	-
-	-	-	$0	59	0.131377007	-	59	0.131377007	-	59	0.131377007	-
-	-	-	$0	60	0.126934306	-	60	0.126934306	-	60	0.126934306	-
-	-	-	$0	61	0.122641841	-	61	0.122641841	-	61	0.122641841	-
-	-	-	$0	62	0.118494533	-	62	0.118494533	-	62	0.118494533	-
-	-	-	$0	63	0.114487471	-	63	0.114487471	-	63	0.114487471	-
-	-	-	$0	64	0.110615914	-	64	0.110615914	-	64	0.110615914	-
-	-	-	$0	65	0.106875279	-	65	0.106875279	-	65	0.106875279	-
-	-	-	$0	66	0.10326114	-	66	0.10326114	-	66	0.10326114	-
-	-	-	$0	67	0.099769217	-	67	0.099769217	-	67	0.099769217	-
-	-	-	$0	68	0.096395379	-	68	0.096395379	-	68	0.096395379	-
-	-	-	$0	69	0.093135632	-	69	0.093135632	-	69	0.093135632	-
-	-	-	$0	70	0.089986118	-	70	0.089986118	-	70	0.089986118	-
-	-	-	$0	71	0.086943109	-	71	0.086943109	-	71	0.086943109	-
-	-	-	$0	72	0.084003004	-	72	0.084003004	-	72	0.084003004	-
-	-	-	$0	73	0.081162322	-	73	0.081162322	-	73	0.081162322	-
-	-	-	$0	74	0.078417703	-	74	0.078417703	-	74	0.078417703	-
-	-	-	$0	75	0.075765896	-	75	0.075765896	-	75	0.075765896	-
-	-	-	$0	76	0.073203765	-	76	0.073203765	-	76	0.073203765	-
-	-	-	$0	77	0.070728275	-	77	0.070728275	-	77	0.070728275	-
-	-	-	$0	78	0.068336498	-	78	0.068336498	-	78	0.068336498	-
-	-	-	$0	79	0.066025601	-	79	0.066025601	-	79	0.066025601	-
-	-	-	$0	80	0.063792852	-	80	0.063792852	-	80	0.063792852	-
-	-	-	$0	81	0.061635605	-	81	0.061635605	-	81	0.061635605	-
7,876,081.30	$27,566,288,052	74,822,772.36	1,571,278,219.48			16,262,357,853			926,954,398			613,708,861

LOF PRODUCTION CURVES
Alternative G and Preferred Action--3,100 New Wells on 2,553 New Well Pads Scenario
(Preferred Action Would be for the 250 Wells/Year Development Rate Only)



This page intentionally left blank.