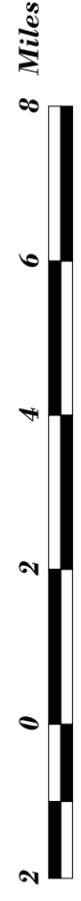
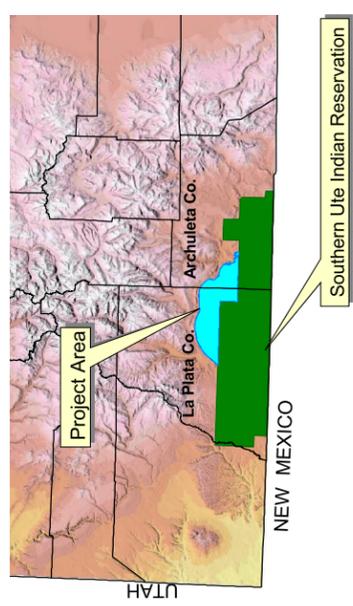


Legend

- Project Area Boundary
- Existing Compressor
- Existing Non-Fruitland Well
- Existing Fruitland Well
- Existing Disposal Well
- County Line
- U.S. Highway
- Primary Road
- Secondary Road
- Trail
- Lake/Reservoir
- Stream/River
- Fruitland Formation Outcrop
- Municipal Area



Southern Ute Indian Reservation

La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data.

Existing wells extracted from COGCC well database and edited by the BLM & USFS.

*Transverse Mercator Projection
1927 North American Datum
Zone 13*

LA PLATA COUNTY IMPACT REPORT	
FIGURE 3-9 EXISTING WELLS & CBM FACILITIES	
ANALYSIS AREA:	LA PLATA & ARCHULETA COUNTIES, COLORADO
Date:	06/15/02
ArcView File:	C:\994-sanjuan\CIFR.apr
Prepared By:	JG

Urban: Commercial, Institutional and Industrial

Commercial and public uses represents the urban land use category identified on **Figure 3-6**. Urban land uses within the study area include the urban growth area located southeast of the City of Durango and the urban growth areas adjacent to and within the incorporated area of the Town of Bayfield. Specifically, commercial land use occurs in the Animas Valley and the Grand View area at the intersection of U.S. 160 and 172. There is commercial land use in the Town of Bayfield within the central part of the study area and at unincorporated Gem Village in the U.S. 160 corridor.

Institutional land uses primarily include schools in the study area. The Florida Mesa Elementary School is located at Elmore's Store. Additional schools are located within the Town of Bayfield.

The study area also contains two fire stations, one on the Florida Mesa and one in the Town of Bayfield. The study area also contains the town hall, a library, country shops, several churches, and a grange hall.

The primary industrial uses in the region include two gas production facilities located in an industrial area west of the La Plata County Airport, as well as the BP Amoco Durango Operations Center. However, these industrial uses are located in areas that are not part of the study area. Within the study area, most of the light industrial and heavy commercial uses occur in the Grandview area located south and east of Durango.

Undeveloped

Undeveloped areas within the study area consist primarily of public lands that are available for grazing allotments and recreation. The federal lands are also open for dispersed recreation. There are no developed recreation facilities on BLM or FS administered lands within the study area.

Existing Oil and Gas Developments

Figure 3-9 identifies existing well locations and facilities within the study area. Although no specific land use category for oil and gas developments was included on the county parcel maps, as of the end of 2001 there were approximately 285 gas-related wells, including 266 existing CBM wells, 13 existing conventional gas wells, six disposal (injection) wells, and five compressor stations coexisting with the existing land uses within the study area. The wells were identified by using COGCC information (includes wells with status of "Drilling," "Producing," "Temporarily Abandoned," "Shut In," and "Injection") since these wells may have existing impacts to land use, visual, traffic, noise and socioeconomics. Wells were further delineated by type, such as CBM (drilled in the Fruitland Formation) and non-CBM (drilled in non-Fruitland Formations). The oil and gas facilities consist of well pads, natural gas gathering and transmission pipelines, dewatering facilities, and compression facilities. The existing oil and gas facilities in the study area are summarized in **Table 3-1**.

Public lands administered by the BLM and FS are generally available for oil and gas leasing, exploration, and development. Numerous existing oil and gas fields are scattered throughout the study area.

3.1.5 Future Trends in Land Use and Growth

Future land use and growth are predicted using several primary areas and growth methodology criteria. Typically, these growth criteria assume that:

- Growth generally occurs along primary transportation corridors

- Transportation corridors generally co locate linear infrastructure (electric transmission, pipelines, etc.) and therefore can support more growth than areas where no infrastructure exists
- Land use densities and growth patterns generally follow historical trends
- Private lands support growth areas, whereas federal and state lands generally do not support population growth

Table 3-1 Existing Wells and Roads in the CIR Study Area				
Jurisdiction	Number of Wells			
	CBM	Non-CBM	Disposal	Total
Private	217	12	5	234
State	13	1	1	15
FS	16	0	0	16
BLM	20	0	0	20
Total	266	13	6	285
Existing CBM Access Roads				
All Jurisdictions	285 roads*			

Note: Average length of an access road, requiring an easement, is estimated to be between 0.25-0.33 miles in length and 25 feet wide permanent right of way per well.

Therefore, source information and specifics were used to predict future growth areas. The specific information used to predict potential future growth areas are provided in **Table 3-2**.

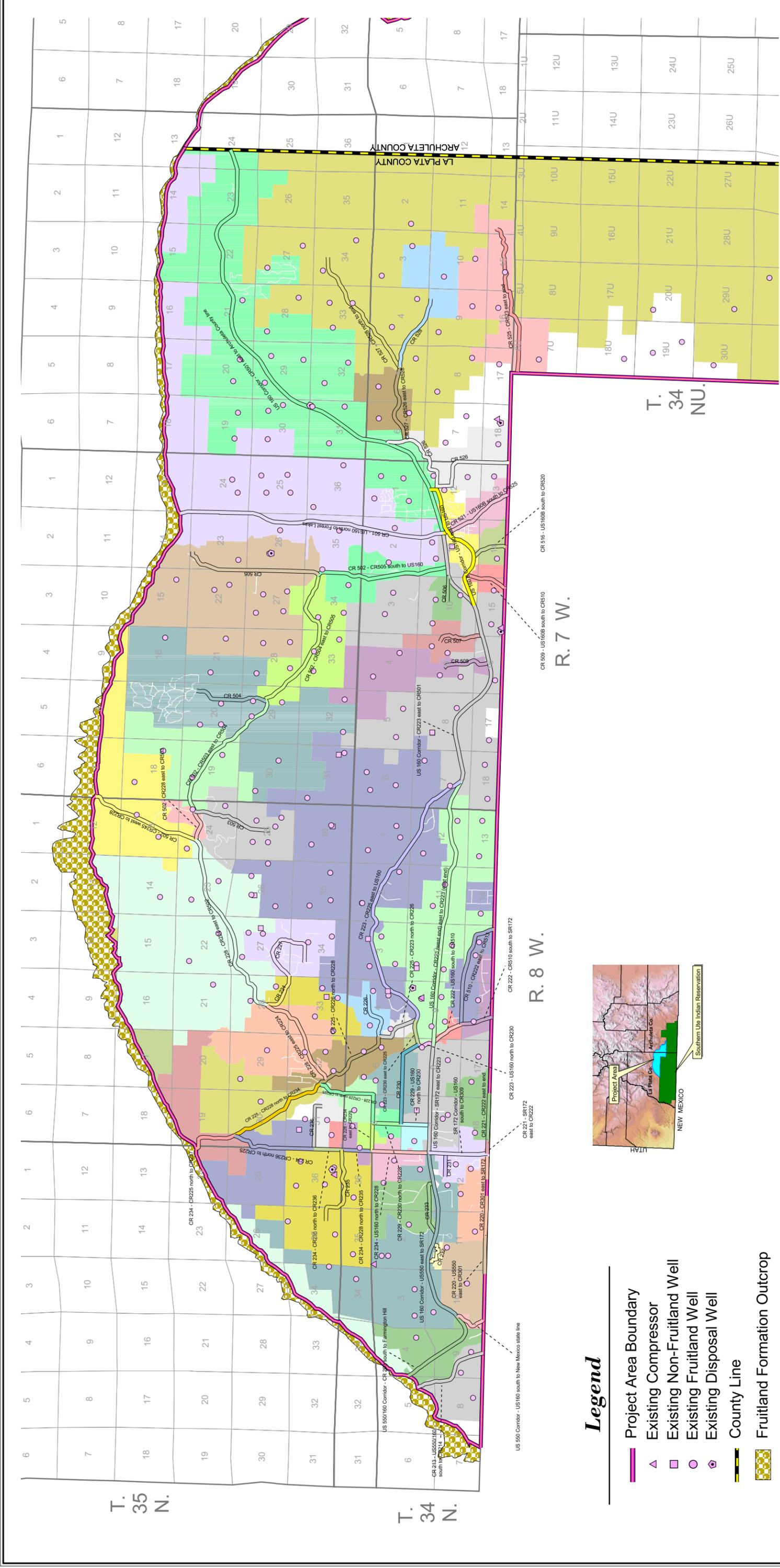
In addition, La Plata County conducted a comprehensive traffic study (Bechtolt 1999), which was focused on identifying residential growth areas to assist in evaluating potential residential growth and future land use within the study area.

The La Plata County Comprehensive Traffic Study (Bechtolt 1999) based growth projections on the following methodology:

- Identify road segments.
- Identify individual land parcels.
- Determine current land use for each parcel, and compile data for land uses that generate the most traffic: number of residential units, amount of commercial square footage, and number of tourist accommodations.
- Develop projections for 2005 and 2020 for number of residential units and population for the entire county for each road segment.
- Assign every parcel a road segment.

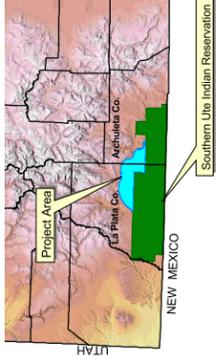
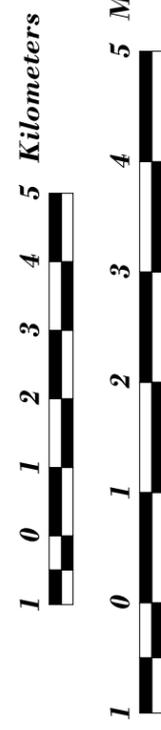
The county identified all roads under the jurisdiction of the county and divided them into logical segments. **Figure 3-10** includes the named road segments that are within the study area. A road segment was defined as a portion of road between major intersections (an intersection with another county road [CR] state highway [SH], or U.S. highway).

The county then assigned each county land parcel to a road segment primarily based on locations and connectivity of minor roads, topography, and local knowledge. Current residential or commercial land use was assigned for each road segment. These relationships are show in **Figure 3-10**.



Legend

- Project Area Boundary
- Existing Compressor
- Existing Non-Fruitland Well
- Existing Fruitland Well
- Existing Disposal Well
- County Line
- Fruitland Formation Outcrop



The road segments represented here are ones extracted from the La Plata County road file that have the 'LEVEL7' attribute field populated. LEVEL7 appears to be the only field that would properly join the 'iparcels' coverage to the La Plata County roads coverage.

La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data. Existing wells extracted from COGCC well database.

Transverse Mercator Projection
1927 North American Datum
Zone 13

LA PLATA COUNTY IMPACT REPORT	
FIGURE 3-10	
ROADS BY PARCEL LINK	
ANALYSIS AREA:	LA PLATA COUNTY, COLORADO
Date:	06/15/02
ArcView File:	C:\944-san-juan\CIR.apr
Prepared By:	JG

Criteria	Specifics
Primary transportation corridors	U.S. Highway 160, CR 501, CR 223
Historical trends/Annexation areas/New development	Cedar Hill, Sagebrush, Village East Land Development Proposals, Durango Potential Urban Area in western portion of CIR study area.
Elimination of Isolated Tracts of Federal and State Lands	Isolated tracts of BLM and state lands throughout the study area

The county then developed projections for housing units and populations in 2005 and 2020. These projections were based first on the development of baseline projections, which were taken from the Colorado Demography Section 1997 population estimate of 40,939 for La Plata County, and population projections for 2005 (50,495) and 2020 (63,987).

The number and location of residential building permits issued since 1977 were obtained from the county and assigned to the various road segments. To address anomalies, residential building permits issued for all county road segments within a planning district were aggregated, thus yielding annual average growth factors.

With baseline and projections on trends described above as references, future residential growth on each road segment was analyzed in light of land use plans, recent trends in development, and the capacity of vacant or undeveloped land to accommodate future residential growth.

Baseline and trend projections were compared for each road segment while land use plans, recent trends in development, and vacant/undeveloped land capacity were analyzed. Based on this comparison and analysis, “most probable” projections of number of housing units for 2005 and 2020 were developed for each road segment.

To extrapolate the data presented and project growth of residences in the study area, the existing number of residential units per road segment was compared with the number of residences projected for 2020. This projection was then translated into a growth percentage for residential units (representing change from the 1998 existing number to 2020-projected number). The parcels associated with the corridors were mapped to represent potential parcels associated with the primary transportation corridor criteria described above. (**Table 3.3**)

	Existing	2020 Most Probable	20 year Growth (%)
U.S. 550/160 Corridor - CR 203 south to Farmington Hill	5929	7115	120
CR 501 - U.S.160 north to Forest Lakes	515	1579	307
CR 502 - CR 245 west to CR 228	26	80	308
CR 502 - CR 228 east to CR 503	8	13	163
CR 502 – CR 503 east to CR 504	4	12	300
CR 502 – CR 504 east to CR 505	23	49	213
CR 502 – CR 505 south to U.S.160	21	64	305
CR 503	21	48	229
CR 504	43	132	307
CR 505	23	71	309
CR 506	0	0	0

Table 3-3 Road Segment Descriptions			
	Existing	2020 Most Probable	20 year Growth (%)
CR 507	0	0	0
CR 508	24	37	154
CR 509 - U.S.160B south to CR 510	6	18	300
CR 516 - U.S.160B south to CR 520	19	58	305
CR 521 - U.S.160B south to CR 525	86	143	166
CR 525 – CR 523 east to end	14	34	243
CR 526	12	37	308
CR 527 – CR 526 east to CR 528	8	25	313
CR 527 – CR 528 north to end	6	15	250
CR 528	0	0	0
U.S. 160 Corridor - CR 223 east to CR501	58	79	136
U.S. 160 B Corridor - U.S.160 east to U.S.160	235	367	156
U.S. 160 Corridor - CR501 east to Archuleta County line	212	287	135
CR 335	0	0	0
CR 213 - U.S.550/160 south to CR 214	46	110	239
CR 220 - U.S.550 east to CR301	18	43	239
CR 220 – CR 301 east to SH 172	61	110	180
CR 221 – SH 172 east to CR 222	18	18	100
CR 221 - CR 222 east to end	7	30	429
CR 222 - U.S.160 south to CR 510	11	14	127
CR 222 – CR 510 south to SH 172	59	92	156
CR 222 – SH 172 north to CR 221	13	25	192
CR 223 - U.S.160 north to CR 230	1	2	200
CR 223 - CR 230 east to CR 225	2	3	150
CR 223 - CR 225 east to U.S.160	99	155	157
CR 224	37	58	157
CR 225 - CR 223 north to CR 226	3	5	167
CR 225 - CR 226 north to CR 228	37	89	241
CR 225 - CR 228 north to CR 234	15	36	240
CR 226	25	29	116
CR 227	53	127	240
CR 228 - CR 234 east to CR 229	0	0	0
CR 228 - CR 229 north to CR 225	7	17	243
CR 228 - CR 225 east to CR 224	43	103	240
CR 228 - CR 224 east to CR502	21	50	238
CR 229 - U.S.160 north to CR 230	0	0	0
CR 229 - CR 230 north to CR 228	2	5	250
CR 230	4	10	250
CR 231	NA	NA	NA
CR 232	39	42	108
CR 233	74	110	149
CR 234 - U.S.160 north to CR 228	32	50	156
CR 234 - CR 228 north to CR 235	4	4	100
CR 234 - CR 235 north to CR 236	1	2	200
CR 234 - CR 236 north to CR 225	18	43	239
CR 234 - CR 225 north to CR 237	1	2	200
CR 235	0	0	0
CR 236	5	12	240

Table 3-3 Road Segment Descriptions			
	Existing	2020 Most Probable	20 year Growth (%)
CR 301 - CR304 north to CR 220	22	40	182
CR 510 - CR 222 east to CR513	149	300	201
SR 172 Corridor - U.S.160 south to CR309	199	269	135
U.S. 160 Corridor - U.S.550 east to SR172	154	209	136
U.S. 160 Corridor - SR172 east to CR 223	55	74	135
U.S. 160 Corridor - CR 223 (west end) east to CR 223 (east end)	106	144	136
U.S. 550 Corridor - U.S.160 south to New Mexico state line	187	253	135
CR 526	12	37	308
U.S. 160 B Corridor - U.S.160 east to U.S.160	235	367	156

A graphic representation of the future land use trends based on the criteria described is provided in **Figure 3-11**.

3.2 SOCIAL AND ECONOMIC ENVIRONMENT

The existing social and economic characteristics and indicators for La Plata County and the state are presented in this section to develop the impact analysis and potential mitigation measures for proposed CBM development.

This assessment of the socioeconomic resources in La Plata County is based on countywide and regional data; therefore, the area considered for social and economic values is larger than the study area within La Plata County.

The estimated population of the City of Durango, which is situated within La Plata County, is more than 14,000; the city is located about 2 miles west and northwest of the western edge of the study area. The City of Durango is the nearest large center for population and trade to the study area. The Town of Bayfield, with a population of about 1,600, is located near the eastern portion of the study area. Bayfield has historically been a farm and ranch community and is now becoming a bedroom community for Durango.

Over the years, development of oil and gas in the NSJB has stimulated a large service industry that encompasses a number of places in Colorado and New Mexico near the study area. Farmington, a city of about 34,000 in San Juan County, New Mexico, is located about 50 miles south of Durango and is the regional center for the oil and gas service industry. Significant numbers of oil and gas service establishments are located in Cortez, 45 miles west of Durango; in Ignacio, 22 miles southeast of Durango and inside the external boundary of the SUIIT Reservation; in Aztec, New Mexico, 36 miles south of Durango; and in Durango itself.

The SUIIT Reservation in La Plata County is located south of the study area. The SUIIT Reservation holds CBM resources and is the location of current and anticipated CBM development. A separate analysis of the socioeconomic impacts of current and anticipated CBM development of resources within the SUIIT Reservation has been prepared (BLM 2000b).

Existing oil and gas facilities in NSJB reflect past development of both conventional and CBM wells; however, relatively few conventional wells are in the study area. Since 1988, most new development of oil and gas in study area has been CBM.

3.2.1 Economy, Population, and Employment

CBM development typically draws on local and imported labor to develop, maintain, and operate facilities. The existing characteristics of employment, labor force, and income are important factors in the analysis of impacts of future CBM development on the local labor force, income, infrastructure, and housing. Impacts to employment can ultimately be an indicator of the effects to other local infrastructure.

3.2.1.1 *Population*

The following section describes the demographic characteristics of the populations that reside in the study area. Summary histories of population and additional detailed demographic information are provided for La Plata County.

As demonstrated in **Tables 3-4 and 3-5**, the 1990s were a period of high population growth for La Plata County, as well as for the entire State of Colorado. During that time, La Plata County grew by 27 percent, while Colorado's total population increased by 23.4 percent.

The population tables include data that detail change in population for municipal areas within the study area. Most of the municipalities in La Plata County experienced increases in population; however, a large share of the total growth occurred in unincorporated areas.

La Plata County experienced similar growth patterns, with unincorporated areas gaining population much faster than municipalities. Durango, La Plata County's largest municipality, experienced a 10.7 percent increase in population throughout the 1990s. Bayfield grew by 30 percent, to more than 1,600 residents in April 2000. The population of unincorporated La Plata County grew by 35 percent in the 1990s, and by April 2000 represented more than 63 percent of the total for the county.

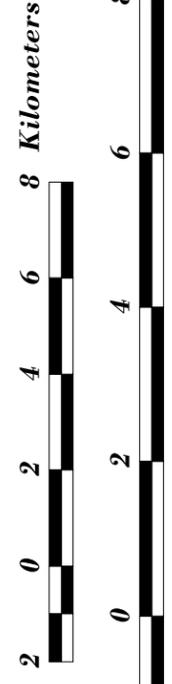
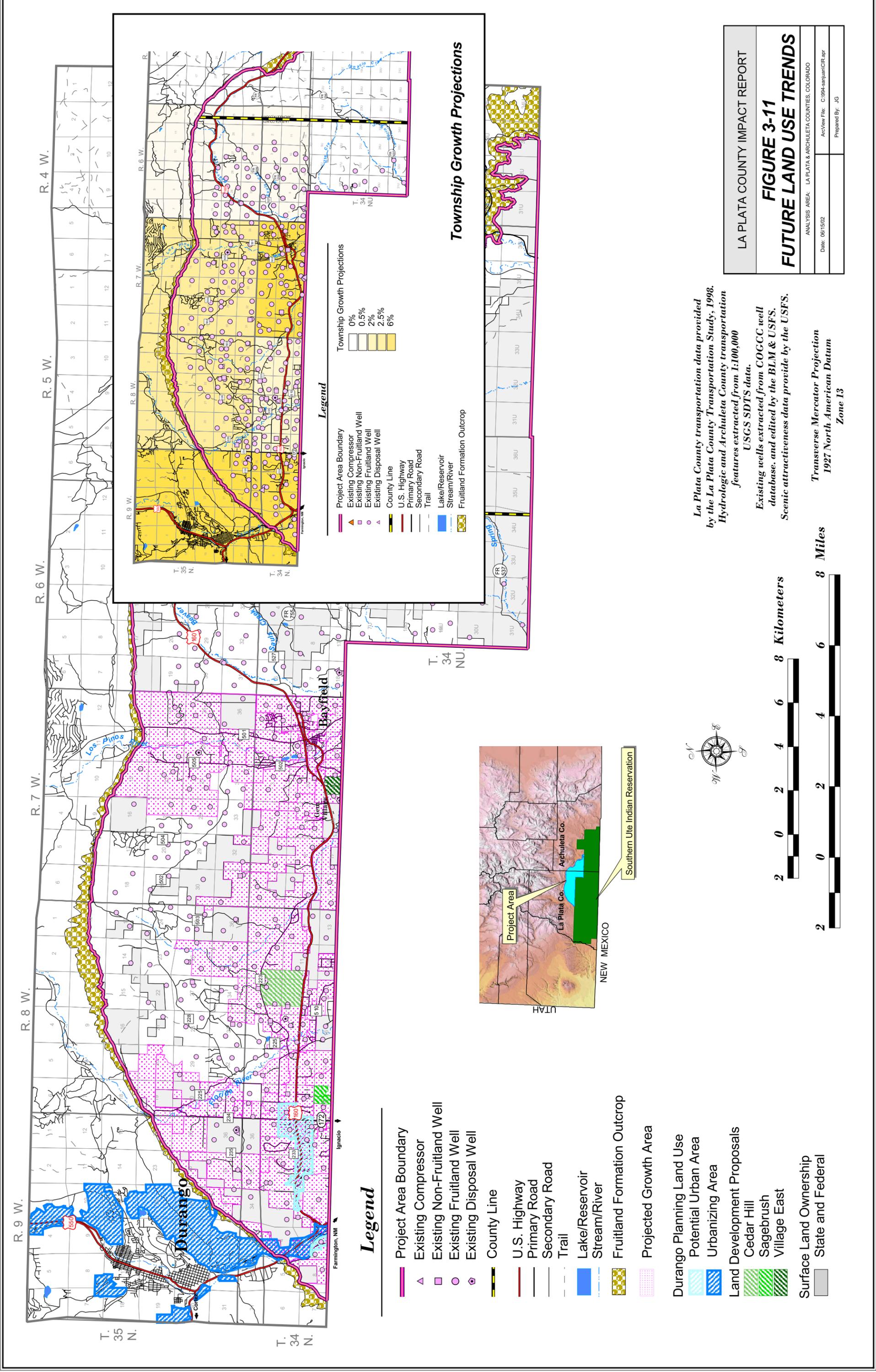
Population growth is the result of both natural increases (births) and net migration. The population tables highlight these factors. Throughout the 1990s, the contribution of net migration to population growth was larger in the study area than were natural increases. From 1992 to 1999, net migration contributed to almost 83 percent of the growth in La Plata County. This percentage is higher than the relative increase in population that is attributable to net migration for the state as a whole, which was 70 percent.

Population Trends

Overall, the State of Colorado has experienced high growth in population over the last decade. In addition, the population is projected to continue to increase, although at a much slower rate. As demonstrated in **Table 3-6**, the Colorado Department of Local Affairs (DOLA) has projected that the total state population will increase at an annual rate of 1.66 percent over the next 25 years, compared with the average annual rate of 2.7 percent experienced during the 1990s (DOLA 2000, 2001d). Similarly, the population of La Plata County grew at an annual rate of 3.4 percent from 1990 to 1999 and is projected to increase by 1.7 annually over the next 25 years.

Household Information

The changes in persons per household within the study area and in the State of Colorado from 1990 to 2000 are summarized in **Table 3-7**. Across the state, the average number of persons per household grew a modest 1.19 percent; however, in La Plata County, the ratio of total population to the number of households decreased. In 1990, the county had more persons per household than the statewide average. By 2000, conversely, La Plata had fewer persons per household than the state as a whole.



La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data.

Existing wells extracted from COGCC well database, and edited by the BLM & USFS. Scenic attractiveness data provide by the USFS.

*Transverse Mercator Projection
1927 North American Datum
Zone 13*

LA PLATA COUNTY IMPACT REPORT	
FIGURE 3-11	
FUTURE LAND USE TRENDS	
ANALYSIS AREA: LA PLATA & ARCHULETA COUNTIES, COLORADO	Prepared By: JG
Date: 06/15/02	ArcView File: C:\994-sanjuan\CIR.apr

Table 3-4 Population Estimates, 1990-2000, La Plata County, Colorado

County and Municipal Population	Apr90	Jul91	Jul92	Jul93	Jul94	Jul95	Jul96	Jul97	Jul98	Jul99	Apr00	Percent Change 1990-2000	Average Annual Percent Change 1990-2000
La Plata	32,284	33,411	34,429	35,598	36,906	38,760	39,704	40,318	41,173	42,757	43,941	27	3.1
Bayfield	1,090	1,121	1,153	1,225	1,335	1,422	1,525	1,545	1,555	1,552	1,549	30	3.6
Durango	12,439	12,622	12,927	12,993	13,103	13,103	13,350	13,278	13,468	13,731	13,922	10.7	1.1
Ignacio	720	715	729	709	705	693	706	709	701	682	669	-7.1	-0.7
Unincorporated	18,035	18,953	19,620	20,671	21,763	23,542	24,123	24,789	25,449	26,792	27,801	35.1	4.4
Municipal Population Shares													
Bayfield	3.4%	3.4%	3.3%	3.4%	3.6%	3.7%	3.8%	3.8%	3.8%	3.6%	3.5%		
Durango	38.5%	37.8%	37.5%	36.5%	35.5%	33.8%	3.6%	32.9%	32.7%	32.1%	31.7%		
Ignacio	2.2%	2.1%	2.1%	2.0%	1.9%	1.8%	1.8%	1.8%	1.7%	1.6%	1.5%		
Unincorporated	55.9%	56.7%	57.0%	58.1%	59.0%	60.7%	60.8%	61.5%	61.8%	62.7%	63.3%		
Change in County Population with Components of Change													
La Plata County	32,284	33,411	34,429	35,598	36,906	38,760	39,704	40,318	41,173	42,757	43,941		
Net Change		1,127	1,018	1,169	1,308	1,854	944	614	855	1,584	1,184		
% Change		3.4%	3.0%	3.3%	3.5%	4.8%	2.4%	1.5%	2.1%	3.7%	2.7%		
Births	448	412	413	413	479	404	410	464	417	455			
Deaths			201	231	220	245	224	249	231	248			
Net Natural Increase			212	182	259	159	186	215	186	207			
Net Migration			806	987	1,049	1,695	758	399	669	1,377			

Note: Net migration computed by subtracting net natural increase from net change. Source: DOLA 2001a, b.

Table 3-5 Population Estimates, 1990-2000, Colorado													
Colorado Population	Apr90	Jul91	Jul92	Jul93	Jul94	Jul95	Jul96	Jul97	Jul98	Jul99	Apr00	Percent Change 1990-2000	Average Annual Change 1990-2000
	3,294,473	3,380,951	3,489,832	3,605,038	3,712,062	3,811,074	3,902,448	3,995,923	4,102,491	4,215,984	4,301,261	23.4	2.71
Change in Colorado Population with Components of Change													
Net Change		76,910	108,882	115,210	107,022	99,012	91,374	93,473	106,567	113,493	85,277		
% Change		2.3%	3.2%	3.3%	3.0%	2.7%	2.4%	2.4%	2.7%	2.8%	2.0%		
Births			54,156	54,269	54,028	54,176	54,943	55,933	57,823	60,641			
Deaths			22,480	23,083	23,951	24,523	25,221	25,517	25,991	26,737			
Net Natural Increase			31,186	30,077	29,653	29,722	30,416	30,416	31,832	33,904			
Net Migration			77,696	85,133	77,369	69,290	60,958	63,057	74,735	79,589			

Note: (1) Net migration computed by subtracting net natural increase from net change. Source: DOLA 2001a, b.

Table 3-6 Population Projections, 2000-2025 La Plata County, Archuleta County, and State of Colorado

Area	2000	2001	2002	2003	2004	2005	2010	2015	2020	2025	Average Annual Growth
La Plata County	44,183	44,415	45,626	46,829	48,026	50,150	55,839	60,387	64,105	67,378	1.70
Colorado	4,324,919	4,406,267	4,488,405	4,568,515	4,648,371	4,733,167	5,170,938	5,617,933	6,067,413	6,523,992	1.66
Planning Region 9	80,511	82,801	85,102	87,406	89,715	92,032	103,426	113,744	123,077	131,710	1.99

Source: DOLA 2001a.

Table 3-7 Households, 1990-2000 La Plata County and State of Colorado

Area	1990		2000		Persons per Household
	Households	Persons per Household	Households	Persons per Household	Percent Change 1990-2000
Colorado	1,282,489	2.51	1,658,238	2.53	1.19
La Plata County	11,976	2.56	17,342	2.43	-6.11

Source: U.S. Census 2001.

Racial and Ethnic Composition and Demographics

As indicated in **Table 3-8**, the racial composition of the entire State of Colorado is comparable to La Plata County. In 2000, minority population was low in the state as a whole (17.2 percent), and was lower in La Plata County (12.7 percent). Native Americans were more highly represented in La Plata County, at 5.8 percent, as compared with the overall 1.0 percent for the state. African American and Asian populations were much lower in these two counties than statewide. Within La Plata County, 10.4 percent of the population was Hispanic, lower than the state as a whole (17.1 percent).

The age structure of the populations within La Plata County is comparable to the State of Colorado and to the country as a whole. The middle cohort of the population (35 to 64) gained representation from 1990 to 2000 at the expense of youngest third (under 5 to 34), consistent with the aging of the general population. There is no indication of economic flight to employment opportunities in cities by the heads of families (**Table 3-9**).

3.2.1.2 Employment

The 1990s were a period of economic prosperity throughout the State of Colorado, and La Plata County shared in it. Statewide, the number of employed workers grew faster than the total labor force, resulting in a dramatic reduction in unemployment at the decade's end. From 1990 to 1999, total employment in Colorado grew at an average of 3.1 percent, while the unemployment rate fell to 2.9 percent. This growth in employment was exceeded in La Plata County, where total employment grew by 4.0 percent during this period (**Table 3-10**).

Employment Activity by Business Sector

The local economic base consists of industries that bring in dollars from outside the regional economy. Basic income and employment result from various local industries, especially in an economy that relies at least in part on tourism.

Table 3-8 Racial and Ethnic Composition of Colorado and La Plata County					
	1990		2000		1990-2000
	Number	Percentage	Number	Percentage	Percent Change
Colorado (total)			4,301,261	100	
One Race			4,179,074	97.2	
White	2,905,474	88.2	3,560,005	82.8	22.5
Black	133,146	4.0	165,063	3.8	24.0
Native American	27,776	0.8	44,241	1.0	59.3
Asian	57,122	1.7	95,213	2.2	6.7
Pacific Islander	2,740	0.1	4,621	0.1	68.6
Other	168,136	5.1	309,931	7.2	84.3
Two or more races	-		122,187	2.8	-
Hispanic (of any race)	424,302	12.9	735,601	17.1	73.4
La Plata County (total)			43,941	100	
One Race			42,952	97.7	
White	29,022	89.9	38,364	87.3	32.2
Black	71	0.2	136	0.3	91.5
Native American	1,602	5.0	2,539	5.8	58.5
Asian	168	0.5	177	0.4	3.5
Pacific Islander	11	0.0	24	0.1	200.0
Other	1,410	4.4	1,712	3.9	21.4
Two or more races	-		989	2.3	-
Hispanic (of any race)	3,586	11.1	4,571	10.4	

Source: U.S. Census 2001

Table 3-9 Population Demographics for La Plata County and Colorado					
		Age Classes			Totals
		<5 to 34	35 to 64	65 to 85>	
Colorado	1990				
	Population	1,808,640	1,156,311	329,443	3,294,394
	% of 1990 Total	55	35	10	
	2000				
	Population	2,194,933	1,690,255	416,073	4,301,261
	% of 2000 Total	51	39	10	
La Plata County	1990				
	Population	17,840	11,224	3,220	32,284
	% of 1990 Total	55	35	10	
	2000				
	Population	21,651	18,162	4,128	43,941
	% of 2000 Total	49	41	10	

Source: U.S. Census 2001.

Table 3-10 Resident Labor Force, Employment and Unemployment, 1990-1999 Colorado and La Plata County					
Category	1990	1995	1999	Percent Change 1990-1999	Average Annual Rate
Colorado					
Labor Force	1,764,181	2,087,524	2,264,105	28.3%	2.8%
Employed	1,675,124	2,000,025	2,198,147	31.2%	3.1%
Unemployed	89,057	87,499	65,958	-25.9%	-3.3%

Table 3-10 Resident Labor Force, Employment and Unemployment, 1990-1999 Colorado and La Plata County					
Category	1990	1995	1999	Percent Change 1990-1999	Average Annual Rate
Unemployment Rate	5.05%	4.19%	2.91%		
La Plata County					
Labor Force	17,399	23,123	24,175	38.9%	3.7%
Employed	16,390	22,043	23,249	41.8%	4.0%
Unemployed	1,009	1,080	926	-8.2%	-0.9%
Unemployment Rate	5.80%	4.67%	3.83%		

Source: DOLA 2001b, c.

Basic economic activity may be direct or indirect. Direct basic employment and income are generated when an industry exports goods and services or attracts expenditures from other outside sources, such as tourists. Indirect basic industries supply goods and services to the direct basic industries. Direct and indirect basic employment generates additional employment in a range of economic sectors within the region because of the goods and services demanded by employees. The following description of the economic base for La Plata County summarizes the analysis presented in the Comprehensive Economic Development Strategy published by the Region 9 Economic Development District (Region 9 EDD 2001).

Direct basic activities account for 43 percent of all employment in La Plata County, generating more than 13,000 jobs. Although it is not a specific industrial category, tourism is considered a direct basic activity because it consists of expenditures from outside visitors. Tourism itself is a collection of other sectors, such as hotel/lodging and eating and drinking establishments. Tourism is the largest basic industry employer, accounting for more than 8,000 jobs, thus resulting in 62 percent of direct basic employment. In comparison, agricultural production and services generate 4.7 percent of total direct basic employment, and oil and gas extraction results in 1.9 percent of total direct basic employment.

The income these industries generate is not directly proportional to the employment percentages, however. Lower-paying jobs in the agricultural and service sectors represent a much smaller contribution to total income. Therefore, tourism accounts for only 35.7 percent of all direct basic income, and agriculture generates 0.5 percent of direct basic income. In contrast, oil and gas extraction accounts for almost twice its employment share, contributing 3.6 percent of direct basic income but only 1.9 percent total direct basic employment.

Trends in La Plata County for employment, unemployment, and wages are similar to statewide trends. La Plata County and the state have experienced dramatic increases in the labor force during the period from 1990 to 1999. In addition, the service sector, including agricultural services, is the largest employment sector in the county and in the state.

Local data on employment are not available in disaggregated categories (full-time/annual and full-time/seasonal). However, tourism, which provides 62 percent of basic employment in La Plata County, is highly seasonal, with the winter ski season (December through April) representing the strongest single activity. As a result, a significant portion of the direct basic and indirect employment in the service sector can probably be regarded as equivalent to part time.

In La Plata County, the largest job sector from 1990 to 1999 was the services industry, including agriculture, which represented 35 percent of the jobs in the county. Retail trade and government were the only other sectors that accounted for more than 10 percent of the jobs. The largest annual average change in job sector between 1990 and 1999 was in financial services, insurance, and real estate, at 6.8 percent. The type or place of work, as well as earnings, for La Plata County and the State of Colorado is shown in **Tables 3-11 and 3-12**.

In the state, similar trends were evident during 1990 to 1999. The largest job sector was the services industry, including agriculture, with 32 percent of the jobs. Retail trade and government were the only other sectors that accounted for more than 10 percent of the jobs. The largest annual average change in job sector was in construction, at 9 percent.

Total statewide employment in oil and gas extraction diminished throughout the 1990s, falling more than 50 percent. In La Plata County, more than 100 fewer people were employed in the oil and gas industry at the decades end, as compared with 1990, although oil and gas employment grew during the first half of the decade.

The oil and gas industry has traditionally been an important source of employment in southern Colorado. In La Plata County, the number of people employed in the oil and gas industry fell between 1990 and 1999; however, total earnings increased, resulting in a dramatic rise in per capita earnings. The 1999 per capita earnings for people employed in the oil and gas industry were more than 200 percent higher than in 1990, while statewide earnings for oil and gas industry employees increased more than 150 percent during the 1990s (**Table 3-13**).

Although these increases in per capita earnings were significant, they represent a small share of the total earnings in La Plata County. In 1999, earnings by employees of the oil and gas industry accounted for only about 1.9 percent of all earnings in the county (**Tables 3-11 and 3-13**).

Table 3-11 Employment and Earnings by Place Of Work, 1990-1999 La Plata County, Colorado					
Category	1990	1995	1999	Average 1990-1999	Average Annual Change, 1990-1999
Full and Part Time Jobs					
Farm	903	857	833	863	-0.9%
Mining	324	432	332	379	0.3%
Construction	1,741	2,626	3,090	2,413	6.6%
Manufacturing	689	1,017	1,072	930	5.0%
Transportation and public utility	706	845	982	813	3.7%
Wholesale Trade	522	723	826	689	5.2%
Retail Trade	3,734	5,528	6,130	5,135	5.7%
Financial services, insurance, and real estate	1,451	2,047	2,617	1,976	6.8%
Services, including Agric. Services	6,687	9,744	11,069	9,209	5.8%
Government	3,218	3,480	3,814	3,532	1.9%
Total Employees	19,975	27,299	30,765	25,940	4.9%
Percent by Sector (Column %)					
Farm	4.5%	3.1%	2.7%	3.4%	NA
Mining	1.6%	1.6%	1.1%	1.5%	NA
Construction	8.7%	9.6%	10.0%	9.2%	NA
Manufacturing	3.4%	3.7%	3.5%	3.6%	NA
Transportation and public utility	3.5%	3.1%	3.2%	3.1%	NA
Wholesale Trade	2.6%	2.6%	2.7%	2.7%	NA
Retail Trade	18.7%	20.2%	19.9%	19.8%	NA
Financial services, insurance, and real estate	7.3%	7.5%	8.5%	7.6%	NA

Table 3-11 Employment and Earnings by Place Of Work, 1990-1999 La Plata County, Colorado					
Category	1990	1995	1999	Average 1990-1999	Average Annual Change, 1990-1999
Services, including Agric. Services	33.5%	35.7%	36.0%	35.4%	NA
Government	16.1%	12.7%	12.4%	13.8%	NA
Total Employees	100.0%	100.0%	100.0%	100.0%	NA
Earnings by Industry (\$000s)					
Farm	\$1,240	-\$1,501	-\$1,542	-\$816	NA
Mining	\$7,640	\$15,130	\$17,377	\$13,486	NA
Construction	\$43,828	\$68,778	\$89,801	\$66,513	NA
Manufacturing	\$9,733	\$20,498	\$24,981	\$17,665	NA
Transportation and public utility	\$20,493	\$28,876	\$41,801	\$29,245	NA
Wholesale Trade	\$11,113	\$18,367	\$25,927	\$17,761	NA
Retail Trade	\$45,290	\$75,795	\$104,138	\$73,499	NA
Financial services, insurance, and real estate	\$12,777	\$36,755	\$53,705	\$32,618	NA
Services, including Agric. Services	\$105,740	\$193,006	\$247,498	\$177,764	NA
Government	\$80,808	\$101,764	\$126,480	\$103,236	NA
Total Employees	\$338,662	\$557,468	\$730,166	\$530,991	NA
Earnings per Employee					
Farm	\$1,373	-\$1,751	-\$1,851	-\$1,037	NA
Mining	\$23,580	\$35,023	\$52,340	\$35,748	NA
Construction	\$25,174	\$26,191	\$29,062	\$27,527	NA
Manufacturing	\$14,126	\$20,155	\$23,303	\$18,564	NA
Transportation and public utility	\$29,027	\$34,173	\$42,567	\$35,362	NA
Wholesale Trade	\$21,289	\$25,404	\$31,389	\$25,269	NA
Retail Trade	\$12,129	\$13,711	\$16,988	\$14,120	NA
Financial services, insurance, and real estate	\$8,806	\$17,956	\$20,522	\$15,677	NA
Services, including Agric. Services	\$15,813	\$19,808	\$22,360	\$18,973	NA
Government	\$25,111	\$29,243	\$33,162	\$29,113	NA
Total Employees	\$176,429	\$219,912	\$269,841	\$219,419	NA

Source: BEA 2001.

NA – not applicable

Table 3-12 Employment and Earnings by Place of Work, Colorado, 1990-1999

Category	1990	1995	1999	Average 1990-1999	Average Annual Change, 1990-1999
Full and Part Time Jobs					
Farm	43,690	39,739	44,360	42,294	0.2%
Mining	31,384	25,831	22,076	26,284	-3.8%
Construction	97,386	149,956	206,579	147,216	8.7%
Manufacturing	197,879	205,233	217,141	205,452	1.0%
Transportation and public utility	107,235	130,759	157,743	128,272	4.4%
Wholesale Trade	92,254	106,194	116,854	104,330	2.7%
Retail Trade	344,149	434,124	478,687	414,967	3.7%
Financial services, insurance, and real estate	179,826	208,084	280,864	212,751	5.1%
Services, including Agric. Services	628,547	795,071	948,643	780,138	4.7%
Government	332,420	353,129	373,321	356,444	1.3%
Total Employees	2,054,770	2,448,120	2,846,268	2,418,149	3.7%
Percent by Sector (Column %)					
Farm	2.1%	1.6%	1.6%	1.8%	
Mining	1.5%	1.1%	0.8%	1.1%	
Construction	4.7%	6.1%	7.3%	6.0%	
Manufacturing	9.6%	8.4%^	7.6%	8.6%	
Transportation and public utility	5.2%	5.3%	5.5%	5.3%	
Wholesale Trade	4.5%	4.3%	4.1%	4.3%	
Retail Trade	16.7%	17.7%	16.8%	17.2%	
Financial services, insurance, and real estate	8.8%	8.5%	9.9%	8.7%	
Services, including Agric. Services	30.6%	32.5%	33.3%	32.2%	
Government	16.2%	14.4%	13.1%	14.9%	
Total Employees	100.0%	100.0%	100.0%	100.0%	
Earnings by Industry (\$000s)					
Farm	\$912,477	\$512,211	\$911,182	\$692,106	
Mining	\$1,168,710	\$1,435,474	\$1472,740	\$1314,519	
Construction	\$2,547,432	\$4,659,131	\$7,540,324	\$4,688,665	
Manufacturing	\$6,545,084	\$7,989,580	\$10,196,289	\$8,100,087	
Transportation and public utility	\$4,302,248	\$6,620,614	\$10,347,280	\$6,685,205	
Wholesale Trade	\$2,866,171	\$3,989,366	\$5,536,857	\$3,983,749	
Retail Trade	\$4,491,652	\$6,588,106	\$9,066,570	\$6,516,716	
Financial services, insurance, and real estate	\$3,064,540	\$5,433,737	\$9,204,581	\$5,532,218	
Services, including Agric. Services	\$12,624,228	\$19,562,480	\$29,145,136	\$19,527,637	
Government	\$6,784,841	\$12,513,875	\$14,873,831	\$12,076,942	
Total Employees	\$45,307,383	\$69,304,574	\$98,294,790	\$69,117,843	
Earnings per Employee					
Farm	\$20,885	\$12,889	\$20,541	\$16,325	
Mining	\$37,239	\$55,572	\$66,712	\$51,157	
Construction	\$26,158	\$31,070	\$36,501	\$31,163	
Manufacturing	\$33,076	\$38,929	\$46,957	\$39,265	
Transportation and public utility	\$40,120	\$50,632	\$65,596	\$51,112	
Wholesale Trade	\$31,068	\$37,567	\$47,383	\$37,759	
Retail Trade	\$13,051	\$15,176	\$18,940	\$15,518	
Financial services, insurance, and real estate	\$17,042	\$26,113	\$32,772	\$25,280	
Services, including Agric. Services	\$20,085	\$24,605	\$30,723	\$24,591	
Government	\$20,410	\$35,437	\$39,842	\$33,728	
Total Employees	\$259,135	\$327,990	\$405,967	\$325,896	

Source: BEA 2001.

Table 3-13 Oil and Gas Employment and Earnings, 1990-1999										
Category	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Colorado										
Employment in Oil & Gas Industry	16,255	14,589	13,837	13,694	11,942	10,715	10,725	10,830	9,547	9,977
Earnings by Oil & Gas Employees (1000s)	\$716,080	\$746,586	\$862,758	\$987,040	\$1,007,235	\$1,026,669	\$858,932	\$912,085	\$1,021,834	\$1,048,660
Per Employee Earnings	\$44,053	\$51,175	\$62,351	\$72,078	\$84,344	\$95,816	\$80,087	\$84,218	\$107,032	\$105,108
La Plata County										
Employment in Oil & Gas Employees Industry	346	380	306	317	327	294	215	210	193	226
Earnings by Oil & Gas Employees (1000s)	\$7,915	\$8,972	\$8,615	\$11,522	\$12,103	\$13,531	\$11,710	\$13,359	\$12,541	\$15,818
Per Employee Earnings	\$22,876	\$23,610	\$28,154	\$36,347	\$37,012	\$46,024	\$54,465	\$63,614	\$64,979	\$69,991

Source: BEA 2001; DOLA 2001d.

Employment Trends and Projections

As shown in **Table 3-14**, job growth in La Plata County was dramatic from 1990 to 2000. There were more than 60 percent more jobs in La Plata County in 2000 than in 1990. Although this pace of growth in employment is not projected to continue, La Plata County is forecast to experience continued expansion of its employment base (**Table 3-14**).

Throughout the 1990s, more workers entered La Plata County than moved out of the county. Projections for La Plata County indicate that it will continue to be a very large net importer of employees.

Table 3-14 Projected Employment and Commuting Patterns to 2025, La Plata County								
Area	1990	1995	2000	2005	2010	2015	2020	2025
La Plata County								
Total Jobs	19,191	26,260	30,811	35,630	40,993	45,324	49,947	53,803
Commuting Out	833	850	900	925	950	975	1,000	1,025
Commuting In	1,623	4,150	5,559	6,710	8,412	10,041	12,682	15,468
Difference	-790	-3,300	-4,659	-5,785	-7,462	-9,066	-11,682	-14,443

Source: DOLA 2001d, e.

3.2.2 Income

As shown in **Table 3-15**, the 1990 per capita income for La Plata County was 82 percent of the statewide level. By 2000, this percentage had diminished to 78 percent because other regions of Colorado outpace the growth in per capita income for La Plata County. In 1990, a higher share of residents within the study area fell below the poverty line, as compared with statewide averages (**Table 3-15**).

Table 3-15 Measures of Income, 1990 and 2000, La Plata County						
Area	Per Capita Income		Median Household Income		Persons Below Poverty	
	1990	2000	1990	2000	1990	Percent
Colorado	\$14,821	\$24,801	\$30,140	\$46,511	375,214	11.4%
La Plata County	\$12,163	\$17,029	\$25,759	\$35,219	4,804	15.0%

Source: U.S. Census 2001.

Throughout the 1990s, there was little change in the ratio of the median household income in the county to the entire state. The median household income in La Plata County remained at 85 percent of the statewide average (**Table 3-15**). Household incomes in the county have increased at roughly the same rate as the state average, although in 2000 incomes were less than \$20,000 for more households in the county as compared with the state average (**Table 3-16**).

Table 3-16 Households by Income, 2000 La Plata County, Colorado, and Colorado				
Households by Income (2000)	La Plata County		Colorado	
	Number of Households	%	Number of Households	%
Less than \$5,000	837	5.4	65,290	4.1
\$5,000 to \$9,999	1,067	6.9	89,298	5.6
\$10,000 to \$14,999	838	5.4	67,096	4.2
\$15,000 to \$19,999	1,636	10.6	127,098	7.9
\$20,000 to \$24,999	1,164	7.5	105,636	6.6
\$25,000 to \$29,999	1,154	7.4	106,345	6.6
\$30,000 to \$34,999	1,996	6.4	90,865	5.7
\$35,000 to \$39,999	1,308	8.4	125,332	7.8
\$40,000 to \$44,999	1,517	9.8	149,802	9.3
\$45,000 to \$49,999	1,309	8.4	162,099	10.1
\$50,000 to \$59,999	1,196	7.7	188,502	11.8
\$60,000 to \$74,999	1,237	8.0	175,743	11.0
\$75,000 to \$99,999	509	3.3	71,317	4.4
\$100,000 to \$124,999	309	2.0	29,210	1.8
\$125,000 to \$149,999	422	2.7	50,053	3.1
Total	15,499		1,603,686	

Source: U.S. Census 2001.

3.2.3 Housing

Because oil and gas development employs local and non-local labor to develop, maintain, and operate facilities, housing is an issue when there is an influx of workers to an area. Therefore, existing characteristics are assessed to present impacts to housing from development and the additional workers who move into the area.

The number of housing units, building units, households, and vacation, recreation, or vacant housing units in La Plata County during 1990 through 1999 is provided in **Table 3-17**. The shortage of available housing units and the number of existing households for La Plata County between 1990 and 1999 is shown in **Table 3-18**.

Table 3-17 Housing, Households, Building Permits, and Vacant Housing La Plata County, Colorado, 1990-1999										
La Plata Housing	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Housing Units	15,412	15,657	15,921	16,613	17,165	17,755	19,237	19,768	20,233	20,747
Percent Change	-2.7%	1.6%	1.7%	4.3%	3.3%	3.4%	8.3%	2.8%	2.4%	2.5%
Net Building Permits	245	264	392	467	590	643	514	465	514	N/A
Percent Change	23.7%	7.8%	48.5%	19.1%	26.3%	9.0%	-20.1%	-9.5%	10.5%	N/A
Total Households	11,976	12,363	12,743	13,287	13,767	14,316	14,979	15,324	15,716	15,976
Percent Change	3.6%	3.2%	3.1%	4.3%	3.6%	4.0%	4.6%	2.3%	2.6%	1.7%
Vacant Units	3,436	3,294	3,178	3,326	3,398	3,439	4,258	4,444	4,517	4,771
Percent Change	-19.6%	-4.1%	-3.5%	4.7%	2.2%	1.2%	23.8%	4.4%	1.6%	5.6%

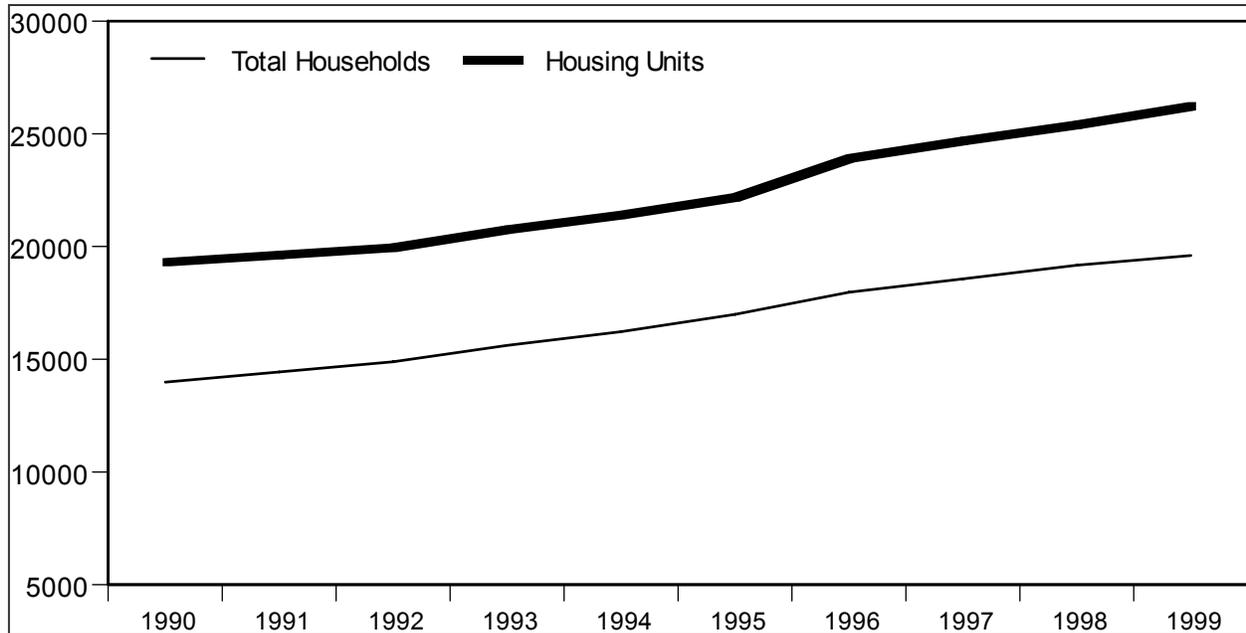
Note: Building permits include both private and public new housing units; data for years before 1995 subtracted demolitions. In most cases, the permits do not cover mobile homes or trailers. Vacant housing units are computed by subtracting total households from total housing. Households (total occupied housing units) are estimated from total housing units, household population, and persons per household.

Source: DOLA 2001b.

The total number of housing units in La Plata County increased by 35 percent over the 9-year period, from 15,412 (1990) to 20,747 (1999). During this same period, resident households in La Plata County rose from 11,976 in 1990 to 15,976 in 1999, an increase of 33 percent. In 1999, there were 4,771 more housing units in La Plata than resident households (DOLA 2001c), attributable to the large number of second homes used for recreation or vacation (or rented for recreation or vacation), and to vacant housing units sold.

Both median and average home prices in La Plata County fell from the first quarter 2000 to the first quarter 2001. This decline may be a result of the lessened availability of higher-end homes.

There are an estimated 9,000 rental units, including apartments, condominiums, and single-family homes in La Plata County. Average monthly residential rents range from \$450 for a studio or one-bedroom apartment to more than \$1,500 for a single-family home (Holmes 2001). Average monthly rent in Durango was \$714 for the first quarter of 2001, up 11.5 percent from the third quarter of 2000 (DOLA 2001f).

Table 3-18 Housing Units and Households, La Plata County, Colorado, 1990-1999

Source: DOLA 2001b.

The vacancy rate for the first quarter of 2001 was 2.9 percent, down sharply from the 6.2 percent vacancy rate in the third quarter of 2000, but higher than the 1.4 percent rate in the first quarter of 2000 (DOLA 2001f). As evidenced by the low vacancy rates, rental housing is in short supply in both Durango and other portions of La Plata County. This tight rental market appears primarily to be attributed to the following factors:

- Demand created by students at Fort Lewis College,
- Employees in the tourism- and recreation-based economy, and
- Positive net migration that is likely contributing to high occupancy of rental homes.

As of June 2001, there were 51 mobile home parks in La Plata County, with a total of 1,382 pads (Larson 2001). Most of the mobile home parks are small (70 percent have less than 30 pads).

3.2.4 Facilities and Services

CBM development has the potential to affect existing community facilities and infrastructure. The use of existing facilities or infrastructure, including roads, may affect the capacity of service agencies or conveyance systems, or may require installation of new facilities. Local community services also may be affected by growth in population and employment in the study area. The following sections characterize existing infrastructure and services in La Plata County to assess future impacts and present reasonable mitigation measures.

3.2.4.1 County Road and Bridge

Currently, there are 173 miles of paved roads and 485 miles of gravel roads in the study area. During the

last 4 years, the La Plata County Road and Bridge Department has experienced a dramatic increase in expenditures. According to the 2000 county budget, departmental expenditures have almost doubled in the last 4 years, from \$8.9 million in 1997 to an estimated \$15.1 million in 2000. Capital expenditures on road and bridge infrastructure and improvements account for most of this growth in budget. In 1995, the county added four full-time positions in road maintenance, raising the cost of service, in response to citizen demands for improved road surfaces (La Plata County 2000a).

3.2.4.2 Public Service

Summary data on public services such as law enforcement, emergency response, power, water, hospitals, and schools for La Plata County are presented in **Table 3-19**. The two fire districts that serve the portions of the study areas within La Plata County are the Durango Fire and Rescue District and the Upper Pine Fire Protection District (La Plata County 1999b). Fire response and emergency preparedness are discussed below.

Table 3-19 Summary of Local Government Services for La Plata County	
Service	Description
Law Enforcement	Law enforcement is provided by a combination of municipal and county agencies, including the following: <ul style="list-style-type: none"> • City of Durango Police Department (staff of 52 with 16 vehicles) • Town of Bayfield (staff of six with four vehicles) • La Plata County Sheriff's Department (staff of 100)
Education	Schools are administered through three districts: <ul style="list-style-type: none"> • Durango School District (seven elementary, two middle, one high school) • Bayfield School District (one elementary, one middle, one high school) • Ignacio School District (one elementary [K-4], one intermediate [5-6], one junior and one senior high school)
Fire/Ambulance	Fire and medical response services are provided by a combination of municipal and county agencies, including the following: <ul style="list-style-type: none"> • Durango Fire and Rescue District/Department (includes Bayfield) • Upper Pine Fire Protection District/Department
Hospitals	Mercy Medical Center serves all surrounding towns in and outside La Plata County. San Juan Basin Health provides additional care, and Four Corners Nursing Home (156 beds) cares for the elderly. Numerous dental, physician, therapist, and optometrist practices in Durango serve the region.
Utilities	La Plata Electric Association (LPEA) is a rural electric provider that served 33,321 customers in the year 2000; the utility has seen a rise from 107 to 143 megawatts (MW) in peak demand and produces power at a cost of \$0.0347 per kilowatt-hour. Utilities provide natural gas within incorporated areas. Propane is provided by numerous businesses such as Arrow Gas and Mesa Propane. Water is supplied to incorporated areas of La Plata County by the City of Durango.

The Upper Pine Fire Protection District serves most of the eastern portion of La Plata County, including the Town of Bayfield. The estimated response time to existing oil and gas facilities depends on their location relative to the existing fire stations. Response times may be 5 to as much as 20 minutes in some areas of the county, depending on location of the emergency relative to the existing fire stations. The district responds to approximately six incidents related to oil and gas per year (Cavaliere 2001). The Upper Pine Fire Protection District is currently developing a hazardous materials team.

The Durango Fire and Rescue District provides fire protection and Emergency Medical Service (EMS) within the Durango planning area outside of the city limits, including the northwestern portion of the study area. The FS and Colorado State FS also provide assistance in firefighting in forested areas near Durango. The City of Durango provides water to the incorporated area and adjacent unincorporated areas (City of Durango 1997). The city's water is supplied from the Florida and Animas Rivers.

There are currently 52 members of the Durango Fire and Rescue District; the typical emergency requires one engine with four men (Waters 2001a, b). The typical operation costs \$190 per hour, plus fuel. The district estimates that the oil and gas industry is responsible for about five emergencies annually (Waters 2001a, b). On average, it takes about 15 to 20 minutes for the Durango Fire and Rescue District to respond to an incident, depending on the location. Over the past year, the district has responded to an estimated six gas-related incidents (Clay 2002). The Durango Fire and Rescue District has concluded that it is more likely to respond to a gas-related traffic incident than to an incident at a well. Those incidents, which involve water trucks and other specialized vehicles, have required approximately eight to 10 responses per year (Clay 2002).

Under the La Plata County Land Use Code (La Plata County 1998a), a specific emergency preparedness plan is required for any project that involves drilling or penetrating through zones that contain hydrogen sulfide gas, as determined by the county's public safety officer, before field operations can begin.

3.2.4.3 General Government

La Plata County employs one staff person in the Planning Services Department to deal primarily with permitting oil and gas development and with permitting in La Plata County. The number of oil and gas projects reviewed has risen from 33 in 1997 to 73 in 2000, with an associated increase in workload projected for the future. The department handled 271 permit application reviews of all kinds in 2000 (Keller 2001).

Other general government units in La Plata County that would be affected by or that would exercise jurisdiction over aspects of oil and gas developments are County Administrative Services (negotiating impact mitigations), the Board of County Commissioners (conflict resolution), the Assessor's Office (reporting royalty interest), and the County Attorney (negotiation and litigation).

3.2.5 Fiscal Conditions of Local Government

La Plata County receives revenues from development of oil and gas in a variety of ways. The most important is through *ad valorem* property tax on oil and gas production and field equipment. These taxes are levied on the assessed value of natural gas produced during the previous year, as well as on the treatment and transmission facilities and other personal property involved in production of gas. Other sources for county revenue that are attributable to production of natural gas include redistribution of severance taxes and Energy Impact Assistance Grants from the State of Colorado and distribution of rental and royalty fees collected by the U.S. Department of the Interior for development of federally owned minerals. The existing fiscal conditions in the county are assessed to compare potential impacts from new development.

3.2.5.1 Assessed Valuation

The assessed value of oil and gas has consistently exceeded 30 percent of the total assessed valuation in La Plata County, and more recently has ranged between 40 and 50 percent. The assessed values of real and personal property, oil and gas property, and the share attributable to oil and gas property in La Plata County since 1993 are shown in **Table 3-20**.

Year	Total Assessed Valuation	Oil and Gas Portion	Share From Oil and Gas
1993	\$516,832,600	\$164,736,070	31.87%
1994	\$624,804,060	\$239,470,550	38.33%
1995	\$752,063,090	\$302,840,090	40.27%
1996	\$706,256,580	\$241,082,400	34.14%
1997	\$918,132,090	\$368,385,670	40.12%
1998	\$1,125,640,730	\$561,742,810	49.90%
1999	\$1,163,142,350	\$527,451,100	45.35%
2000	\$1,211,254,190	\$554,475,990	45.78%

Source: La Plata County 1993-2000.

As shown in **Table 3-21**, gas, primarily CBM production and equipment, has contributed at least 99 percent of the assessed values of minerals for each year since 1993.

Year	Total Oil	Total Gas	Total Coal and Minerals	Total Mineral Value	Share Gas
1993	1,068,460	102,992,210	427,170	104,487,840	98.57%
1994	807,800	171,012,960	316,090	172,136,850	99.35%
1995	766,970	215,821,520	276,690	216,865,180	99.52%
1996	853,430	153,872,520	279,860	155,005,810	99.27%
1997	1,392,480	366,993,190	552,480	368,938,150	99.47%
1998	1,108,390	560,394,800	788,460	562,291,650	99.66%
1999	733,160	522,723,310	994,800	524,451,270	99.67%
2000	890,480	548,775,030	1,270,920	550,936,430	99.61%

Source: La Plata County 1993-2000.

3.2.5.2 Ad Valorem Property Taxes

Property tax collections continue to represent a significant portion of revenue for La Plata County. As shown in **Table 3-22**, property tax has represented between 22 and 35 percent of total county revenues since 1993. County mill levies have been constant over the past decade, so revenues depend solely on increases in assessed production value to offset the increase in demand for services.

Table 3-22 Total Property Assessments, Taxes Levied, and Share of Total County Revenues, La Plata County

Year	Total Assessed Value	Mill Levy	Property Tax Revenue	La Plata County Total Revenues	Property Tax Revenue Share
1993	516,832,600	8.5	4,393,077	19,343,957	22.71%
1994	624,804,060	8.5	5,310,835	22,120,020	24.01%
1995	752,063,090	8.5	6,392,536	23,042,472	27.74%
1996	706,256,580	8.5	6,003,181	26,843,661	22.36%
1997	918,132,090	8.5	7,804,123	25,203,767	30.96%
1998	1,125,640,730	8.5	9,567,946	27,109,172	35.29%
1999	1,163,142,350	8.5	9,886,710	31,869,527	31.02%
2000	1,211,254,190	8.5	10,295,661	36,540,222	28.18%

Note: Revenues projected from 2000 Budget.

Source: La Plata County 1993-2000.

Over the last 8 years, property tax from production of natural gas and other natural resource commodities has constituted between 40 and 50 percent of the total county property tax revenue. Other important sources include residential property taxes (between 22 and 28 percent of total revenue) and taxes on commercial and industrial property (between 15 and 20 percent of total revenue).

3.2.5.3 Severance Tax Distributions

Redistribution of severance taxes, administered by the Colorado Department of Local Affairs, is another important source of county revenue. Severance taxes are assessed at between 2 and 5 percent of gross income, but revenues usually accrue only when production grows because producers are allowed to credit property tax payments against the severance tax obligations.

Counties and municipalities receive direct redistributions of severance tax revenues from the Department of Local Affairs based on the number of employees involved in oil and gas production who reside in the jurisdiction. **Table 3-23** shows that direct distributions of severance tax revenues to La Plata County and other jurisdictions have increased markedly since 1993.

3.2.5.4 Energy Impact Assistance Grants

County governments (and other entities) may also apply for grants from the Energy and Mineral Impact Assistance program, which assists communities affected by the fluctuations in energy and mineral industries in the state. Funds come from the state severance tax on energy and mineral production and from a portion of the state's share rentals and of royalties paid to the federal government for leasing and production of minerals and mineral fuels on federal mineral ownership lands.

Table 3-23 Severance Tax Direct Distributions to La Plata County and Other Jurisdictions				
Year	La Plata	Bayfield	Durango	Ignacio
1993	\$43,335	\$10,834	\$14,773	\$10,833
1994	\$20,191	\$6,424	\$7,989	\$6,424
1995	\$35,167	\$9,608	\$16,133	\$1,373
1996	\$30,772	\$10,919	\$16,527	\$7,871
1997	\$56,081	\$45,237	\$57,072	\$31,234
1998	\$25,654	\$39,678	\$67,946	\$39,303
1999	\$135,847	\$32,258	\$39,873	\$12,130
2000	\$145,558	\$50,342	\$43,932	\$21,111

Source: Colby 2001.

Entities that are eligible to receive these grants and loans include municipalities, counties, school districts, special districts, and other political subdivisions and state agencies. A sampling of the types of projects funded includes water and sewer improvements, road improvements, recreation centers, senior centers and other public facilities, fire protection buildings and equipment, and local government planning. Because these funds are distributed based only on applications received, annual amounts are not as directly related to gas production as is the direct distribution of severance taxes. Although these grants can provide a significant source of revenue, the annual amount may fluctuate significantly from year to year. **Table 3-24** lists the total Energy Impact Assistance Grant funds distributed in La Plata County since 1993.

3.2.5.5 Federal Mineral Royalty Distributions to Counties

The Minerals Management Service (MMS) of the U.S. Department of the Interior disburses portions of lease fees, bonuses, and royalties paid for production on lands with federal mineral ownership. After administrative charges are deducted, 50 percent of mineral rents and royalties from federal lands are returned to the state of origin. In Colorado, these funds are then redistributed among the county governments, the state school fund, and the State Water Conservation Board. Portions of these funds are also returned to the State Department of Local Affairs to fund the Energy Impact Assistance Grants program discussed above. **Table 3-25** details the total federal distributions for mineral leases and royalties within Colorado and La Plata County over the last 6 years. Also included is the portion of these totals that are attributable to natural gas royalties.

Table 3-24 Energy Impact Assistance Grants to La Plata County	
Year	La Plata County
1993	\$2,112,877
1994	\$1,169,744
1995	\$401,006
1996	\$666,027
1997	\$633,714
1998	\$1,343,180
1999	\$1,909,796
2000	\$4,614,692

Notes: Grants are made to multi-county entities. County totals are calculated using an apportionment mechanism from the Department of Local Affairs

Source: Colby 2001.

Table 3-25 Federal Rent and Royalty Distributions to Colorado and La Plata County				
Year	Colorado	Percent Gas Royalty	La Plata County	Percent Gas Royalty
1995	\$35,488,952	NA	\$845,542	53%
1996	\$34,563,025	17%	\$489,067	76%
1997	\$37,423,600	25%	\$1,001,462	78%
1998	\$43,297,268	21%	\$913,265	87%
1999	\$37,426,612	19%	\$838,397	80%
2000	\$42,320,322	23%	\$1,295,664	79%

Source: MMS 2002.

Total distributions to Colorado have increased slightly over the last 6 years, while the share attributable to natural gas royalties has remained between 20 and 25 percent. In contrast, 80 percent of the federal distributions to La Plata County are attributable to natural gas royalties.

3.2.5.6 Sales Tax Revenues

Local sales tax revenues also accrue to the county and municipal governments. The local sales tax rate is 2 percent in La Plata County. The steady growth that has occurred in both retail sales and county property tax revenue over the last 8 years is shown in **Table 3-26**. Specifically, retail sales have grown by 58 percent and county sales tax revenues in La Plata County have grown by 53 percent.

3.2.5.7 Revenues to the State of Colorado

Data on revenue generated from the state severance tax are not available at the county level. Data on the origination of severance tax are available only by taxpayer. Big producers that operate in

Year	Retail Sales (000s)	Sales Tax Revenue (000s)
1993	\$584,571	\$5,863
1994	\$640,133	\$6,556
1995	\$702,226	\$6,927
1996	\$758,798	\$7,156
1997	\$769,613	\$7,560
1998	\$831,822	\$7,931
1999	\$883,846	\$8,623
2000	\$929,099	\$9,011

Source: Retail Sales Data are from the Colorado Department of Revenue, Office of Tax Analysis, Reports 1993-2000.
Sales Tax Data are from the La Plata County 2000 Budget (2000 data projected).

many counties pay most of the severance taxes. Tax returns are not available for analysis as a result of taxpayer confidentiality. Data on revenue from severance taxes, both total and the amount that is attributable to oil and gas production, are available at the state level. Data on total net severance tax collections that are attributable to oil and gas production and the share of total collections represented since 1993 is provided in **Table 3-27**.

Year	Total Oil & Gas (\$)	Share Oil and Gas
1993	13,469,344	60.59%
1994	6,479,541	42.74%
1995	1,632,524	15.12%
1996	7,555,496	50.92%
1997	18,688,357	61.73%
1998	19,756,058	66.43%
1999	23,326,711	68.65%
2000	24,640,683	77.13%

Source: Colby 2001.

Colorado severance tax revenues that are attributable to the oil and gas industry have fluctuated widely during the past 8 years, bottoming out in 1995. Since then, severance taxes from oil and gas, measured both in terms of total attributable and as a share of total collections, have increased dramatically.

Half of the state severance tax revenues collected go to the State Trust Fund, and half of the revenues go to the Local Impact Fund. Monies in the State Trust Fund are divided equally between loans to the Colorado Water Conservation Board and support for the Colorado Department of Natural Resources. Monies in the Local Impact Fund are divided between Energy Impact Assistance Grants (85 percent) and Direct Distributions to Local Governments (15 percent).

3.2.5.8 Expenditures and Fiscal Indicators

Oil and gas field development and operations within the study area directly affect local services provided by La Plata County. Oil and gas production and well service employees who live in La Plata County also require services from local governments, principally La Plata County, the municipalities of Durango and Bayfield, and the Durango, Ignacio, and Bayfield school districts. La Plata County expenditures for the years 1990, 1995, and 2000 are summarized in **Table 3-28**. These data are reported in the statistical tables of the county's 1999 and 2000 Comprehensive Annual Financial Reports.

A key county priority in allocating revenue is indicated by the growth of the capital improvements program, which rose 6 percent per year from 1990 to 1995 (compared with the population growth of 4 percent per year) and 16 percent per year from 1995 to 2000 (compared with the population growth of 2 percent per year).

The county also has invested a disproportionate share of current revenues over the past decade in public works, including the county's road and bridge programs. Expenditures for public works were about 22 percent of operating expenditures in the year 2000, up from 17 percent in 1995 and 14 percent in 1990. Public safety remains the largest county program, at 24 percent of operating expenditures in 2000. However, the share of total operating expenditures for public safety is down from 26 percent in 1995. County expenditures for health and welfare programs, as a share of total operating expenditures, are down significantly, reflecting reforms in the program and the health of the economy.

	1990	1995	2000
Total Expenditures	\$16,362,587	\$21,648,822	\$34,541,411
General Government	2,538,203	3,293,679	4,825,909
Public Safety	2,996,078	4,232,018	5,616,273
Public Works	1,675,640	2,756,246	5,000,812
Health & Welfare	3,066,742	3,166,854	4,153,871
Auxiliary Services	481,675	1,150,525	1,583,143
Community Programs	1,419,466	1,609,239	2,100,038
Operating Expenditures Subtotal	\$12,177,804	\$16,208,561	\$23,280,046
Capital Improvements	3,402,702	4,618,250	9,863,624
Debt Service	782,081	822,011	1,397,741

Source: La Plata County 1999c; 2000b.

La Plata County continues to pay debt service on an estimated \$3.3 million of sales tax revenue bonds and bond refunding for construction of capital projects completed in 1985 to 1988: a detentions center, an annex to the courthouse, and airport improvements. La Plata County currently carries no general obligation debt. In 2000, county voters rejected a proposed increase in the mill levy to build and operate a new jail. The levy would have raised \$3.1 million annually. The county is now deciding whether to use sales tax revenue to proceed with the jail project.

Property tax rates for La Plata County and other tax jurisdictions within the county are summarized in **Table 3-29** and compared with statewide averages. Property tax rates in La Plata County and its major taxing jurisdictions are all below statewide averages. Rates reflect either the impact of strong sales tax revenues from tourism spending, the assessed value of gas field production and personal property, or both, depending on the jurisdiction.

Table 3-29 Comparative Property Tax Levies, 1990 and 2000

Total Levy in millions of dollars		
	1990	2000
La Plata County	8.574	8.500
City of Durango	2.618	2.507
Town of Bayfield	7.920	5.964
Town of Ignacio	4.816	3.370
Statewide Average for Municipalities	8.343	7.729
Durango School District	39.710	21.052
Bayfield School District	44.551	39.326
Ignacio School District	38.300	15.958
Statewide Average for School Districts	44.519	41.865

Source: DOLA 1990; 2000.

The financial contributions by the industry impact the individual taxpayer. A simple proxy of the benefit local taxpayers receive due to the property taxes paid by the industry is gained by calculating the property tax bill under the existing conditions and assuming the oil and gas industry's entire assessed valuation suddenly evaporated and taxpayers were required to generate a comparable amount of revenue to offset the losses. This approach was taken for the owner of a typical single-family residential property (market value of about \$193,000) and for a commercial building with a market value of \$500,000. For purposes of this illustration, taxes paid to support county government and local school district operations were both examined, the latter based on the tax rates for Durango School District 9R because they are the lowest in the county and also where a large portion of the production occurs. Results of the analysis are shown in the following table.

Table 3-30 Impact of Oil & Gas Development and Production on Taxes Paid by Other La Plata County Taxpayers, 2001

	Single Family Residential @ \$193,000		Commercial Building @ \$500,000	
	SD 9R – Operating	La Plata County	SD 9R - Operating	La Plata County
2001 Taxes w/o Oil & Gas	\$ 557	\$ 415	\$ 3,631	\$ 3,203
2001 Taxes with Oil & Gas	\$ 214	\$ 160	\$ 1,654	\$ 1,233
Tax Savings due to Oil & Gas	\$ 343	\$ 255	\$ 1,977	\$ 1,970
Combined Annual Savings	\$ 598		\$ 3,947	

Data sources: Thirty-First Annual Report – 2001, Colorado Department of Local Affairs, Division of Property Taxation, 2002

The analysis indicates that owners of each of the more than 12,000 single-family residences throughout La Plata County would have seen their 2001 property tax for the school operating and county portions increase from an average of \$374 to \$972 – a \$578 or 160% increase. For the commercial properties, the impact would still be a very large increase, as taxes for a \$500,000 property would increase from \$2,887 to \$6,834, or \$3,947 (over 136% increase). Although the savings were not estimated, property owners of vacant land, farmers and ranchers, and other types of property benefit similarly. It should be noted that while every taxpayer receives this benefit, other individuals bear the burden of a gas wells on their property or near their residence. Additionally, other taxing districts have obtained Energy Impact Grants that help fund schools, fire districts and any other organization that received a grant.

One of La Plata County's key fiscal responsibilities is maintaining and improving the county's road network, which now comprises about 690 miles, up from about 400 miles in 1990. The La Plata County

Comprehensive Traffic Study (Bechtolt, 1999) identified a total of \$251 million in road improvements needed countywide by 2020 based on an analysis of projected traffic volumes and existing safety concerns. The estimated costs for needed road improvements by priority of need are summarized in **Table 3-31**.

Table 3-31 Estimated Costs for Needed Improvements to La Plata County Roads	
Priority	Costs (in millions of 1999 dollars)
Improvements Needed by 2001	50.3
Improvements Needed by 2010	11.2
Improvements Needed by 2020	134.5
New Roads and Alignments Needed by 2020	55
Total	255

Source: Bechtolt 1999.

Road and bridge capital projects are funded through the engineering and maintenance costs centers of the Road and Bridge Fund. The main categories of revenue and expenditures for roads and bridges in La Plata County during 1998 through 2000 are summarized in **Table 3-32**.

Property taxes provided 32 percent of road and bridge funds, on average, from 1998 to 2000. Sales taxes provided 29 percent and the highway-users tax provided 22 percent to road and bridge funds during the same period. Capital projects represented 41 percent of expenditures, on average, for the period. Recent ending balances varied, but remained between \$5 million and \$6 million for the same 3 years. In 2000, the higher than usual amount of intergovernmental revenues recorded reflected receipt of a \$2 million grant from the Colorado Energy Impact Assistance Fund.

The Public Safety Division of the Sheriff's Office handles traffic enforcement on roads in La Plata County and is the principal agency in responding to calls from unincorporated areas for law enforcement, traffic control, and emergencies. Division expenditures and revenues between 1998 and 2000 are provided in **Table 3-33**.

Table 3-32 Sources and Uses of Road and Bridge Funds, 1998, 1999, and 2000			
Sources and Uses of Funds	1998 dollars	1999 dollars	2000 dollars (estimate)
Funding Sources			
Property Taxes	3,904,981	3,084,371	2,490,469
Highway Users Tax	2,083,244	2,220,217	2,300,000
Intergovernmental Revenues	5,277,538	800,916	2,145,000
Sales Taxes	1,300,000	3,400,000	4,000,000
Other Sources	328,769	661,458	706,186
Total Sources	8,144,532	10,166,962	11,641,655
Funding Uses			
Personnel	1,879,617	2,004,229	2,291,554
Operations	3,918,642	3,463,763	2,720,483
Capital Projects	249,810	3,772,664	7,435,311
Total	6,048,069	9,240,656	12,447,348

Source: La Plata County 1999c; 2000b.

Table 3-33 Expenditures and Revenues for Public Safety, La Plata County Sheriff's Office			
Expenditures	1998 dollars	1999 dollars	2000 dollars (estimate)
Total Expenditures	1,867,845	2,123,827	1,889,193
Personnel	1,322,186	1,514,928	1,239,013
Revenues			
Directly Generated by the Division	238,600	285,085	219,747
Balance Required from General Revenue	1,629,245	1,838,741	1,669,446

Source: La Plata County 1999c; 2000b.

For the period, general revenue support was required to underwrite about 87 percent of the cost, on average, of the sheriff's public safety activities. For the same period, 69 percent of funds, on average, were for the division's personnel.

The La Plata County Planning Services Department reviews applications for minor and major gas facilities. In 2000, 73 out of the 271 review or permitting actions the department handled were associated with oil and gas facilities (Bedor 2001, Keller 2001).

3.2.6 Social Values

The quality of life in the area and the reasons people live there are subjective measures of a person's happiness with a geographic location based on an array of self-defined values. The area has experienced oil and gas development and there is a perception that this activity may be incompatible with perceptions of the quality of the natural environment and the visual landscape. However, many people support oil and gas development for its positive economic effects.

An estimated 13 percent of La Plata County's population (5,390 persons and 2,053 households) resides in the study area. Residents who live in the study area and own mineral rights as well as surface rights may support development for the direct benefit to their income. Others with no mineral ownership may view development more negatively.

Supporters of oil and gas development in southwestern Colorado, including some residents of La Plata County, generally view the industry as providing economic benefits. Benefits include royalty payments, relatively high-paying jobs, and revenues to local government generated by the industry that support increased public services.

At the same time, some residents of southwestern Colorado, including residents of La Plata County, are concerned about the effect of extractive industries such as gas development. These concerns typically focus on perceived effects to air quality, water quality, visual appeal, noise levels, public safety, wildlife, residents, and communities.

Some residents of the study area have expressed concerns about issues stemming from CBM-related traffic, such as noise, safety, and damage from heavy trucks to rural roads. Some residents are worried about the safety of living near industrial activity and flammable or hazardous materials.

Noise from drilling and operating oil and gas wells is also an issue. The close proximity of wells to private homes has created a conflict between the industry and landowners who have sought various forms of recourse in an attempt to alleviate the annoyance.

Concerns also have arisen for some residents of the study area who do not own the mineral rights beneath the land. These concerns involve:

- The need to negotiate surface use agreements,
- The cost of reaching agreement with mineral producers,
- The perception that they risk uncompensated damage,
- The perceived obligation to monitor industry compliance and regulatory enforcement and, in some cases,
- Feeling motivated to engage in direct opposition to the industry

Some residents also fear that the proximity of gas facilities to residences may adversely affect property values.

3.2.7 Property Values

This section presents the results of a special analysis (provided in **Appendix B**) conducted in 2001 to examine the impacts of existing oil and gas development on residential property values. The analysis is discussed in the following sections that was used to empirically test for the existence and magnitude of impact, if any, of CBM wells on the actual sales price of properties sold in the study area.

Real estate agents who represented the major real estate firms in La Plata County participated in a series of interviews as part of a special study of property values. Consistently throughout these interviews, respondents observed that owners of surface property perceive existing CBM development as having an adverse, if localized, effect on property values within view or earshot of CBM facilities. Interviewees said that surface owners generally identify impacts associated with what they believe to be CBM-related direct effects and potential risks. Direct effects include changes to views, noise, and traffic. Indirect effects caused by increased traffic may include airborne dust and road damage. According to the interviewees, the existing risks that surface owners perceive may include groundwater contamination, seeps of methane gas, and coal fires (Allen 2001; Campbell and Royer 2001; Fryback and Lorenz 2001; Jefferies 2001; Kurlander 2001a; Piccoli 2001; Zartner 2001a).

Some agents said they have observed both avoidance and lower prices when wells are located on or near properties. They also have observed that buyers will avoid properties that involve leased, potentially developable subsurface minerals. Demand is lower, in general, for properties located within the existing “gas zone” of La Plata County, which includes the study area. Real estate agents also have observed that, in the past, the location of a well near, but not on, a property made it more appealing because it was believed that no further drilling would occur in that area (Kurlander 2001b; Lorenz 2001; Zartner 2001b).

County officials deal with the issue directly because surface owners who perceive impacts from nearby wells attempt to adjust the assessed valuation. The La Plata County Assessor currently does not routinely adjust assessed values based on the presence of wells but would consider adjustments if a means to calculate the actual impact to market value could be identified (Kotlar 2000).

3.2.7.1 Study Approach

A hedonic pricing model is a recognized method for sorting and assigning value to the factors that contribute to the price of a complex good such as a residential property. A hedonic pricing model assumes that a residential property is a package of identifiable characteristics. The value of a property as a whole reflects the value the marketplace implicitly assigns to each of the characteristics. The model also can assess the impact of changing market circumstances over time (BBC 2001).

Hedonic pricing analysis may consider specific attributes of a property, such as the character of the housing unit, other improvements, and the size and quality of the lot. The analysis also may consider external characteristics such as appeal of the general location, area amenities and, perhaps, the proximity of qualities that may impair the appeal of the property (known for the model as “disamenities”). In theory, a hedonic pricing model can consider any measurable characteristic that could influence property values in the marketplace. In practice, a model may be limited in scope to considering characteristics where data are available or can be collected. The model used in this study drew on a set of previous applications of the method in estimating impacts to property value based on the presence of amenities such as beach frontage in southwest Colorado, and disamenities such as air pollution, electric transmission lines, airport noise, and livestock operations.

3.2.7.2 *Model Parameters and Data Sources*

The model for this study considered property characteristics available from the La Plata County Real Estate Sales Data Base maintained by Allen & Associates of Durango (Allen 2001). This real estate appraisal and information firm constructs a computerized database from the public records on property sales maintained by the La Plata County Assessor (Kotlar 2001). The analysis considered 754 property sales from 1989 through 2000 in the area, as shown in **Figure 3-12**.

This analysis examined all the information in the Allen & Associates database and included the following, based on their performance in the model: age of the housing unit, square footage of living space, whether the unit is a mobile or manufactured home, whether there is a garage, and the acreage of the building site or lot. Information on other potentially relevant property characteristics, such as topography, vegetation, water features, and views, was not available from an existing source and could not be collected given the resource constraints of this study. The analysis also explicitly estimated the impact of the year of sale both as a direct effect and in interaction with other characteristics to control for the effect of appreciation over time.

The study identified a number of external characteristics for possible inclusion in the model. Durango real estate agents interviewed for the study suggested a range of ways to differentiate “neighborhoods” within the study area. Respondents also unanimously proposed that the distance from the property to Durango was a primary factor in desirability of a neighborhood (Allen 2001; Campbell and Royer 2001; Fryback and Lorenz 2001; Jefferies 2001; Kurlander 2001a; Piccoli 2001; Zartner 2001a). The distance was measured on digital maps provided by the La Plata County GIS Office. Distance was statistically significant and was included in the model.

The analysis incorporates the influence of CBM development through four measures that relate each property to CBM wells in place at the time of sale. One measure indicates whether a well existed on the parcel itself. Three other measures indicate whether one or more CBM wells existed at the time of sale in three “rings” surrounding the property at distances of, first, from the parcel boundary to 550 feet; next, from 551 feet to 1,000 feet; and finally, from 1,101 feet to 2,600 feet, or a maximum of about one-half mile. The analysis considered another ring, from 2,600 feet to a mile, but discarded these results because the very small impact was statistically insignificant.

3.2.7.3 *Estimate of Impacts of Existing CBM Development to Residential Property*

This analysis found a statistically significant impact to the value of properties sold in the proposed study area during the period 1989 to 2000 wherever a CBM well was located on the selling property (**Figure 3-**

12). Within the sample of 754 properties sold, 12 contained wells. For that group of 12 properties, the estimate of the net impact of all effects of CBM wells is a reduction in value, on average, of about \$68,100, or about 22 percent. This overall average effect is based on values in the year 2000. The relative impact of reductions in value for these properties varies with the specific location and individual characteristics of each property. For example, a CBM well may have a relatively larger effect on lower-priced properties and a relatively smaller effect on higher-priced properties. Prices may vary where the size and terrain of a property offer opportunities to maintain separation between the CBM well and the residence or other improvements. The results of the property value study (BBC 2001) are provided in **Appendix B** and are further summarized below.

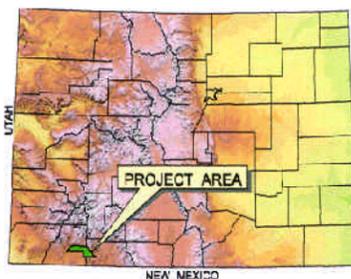
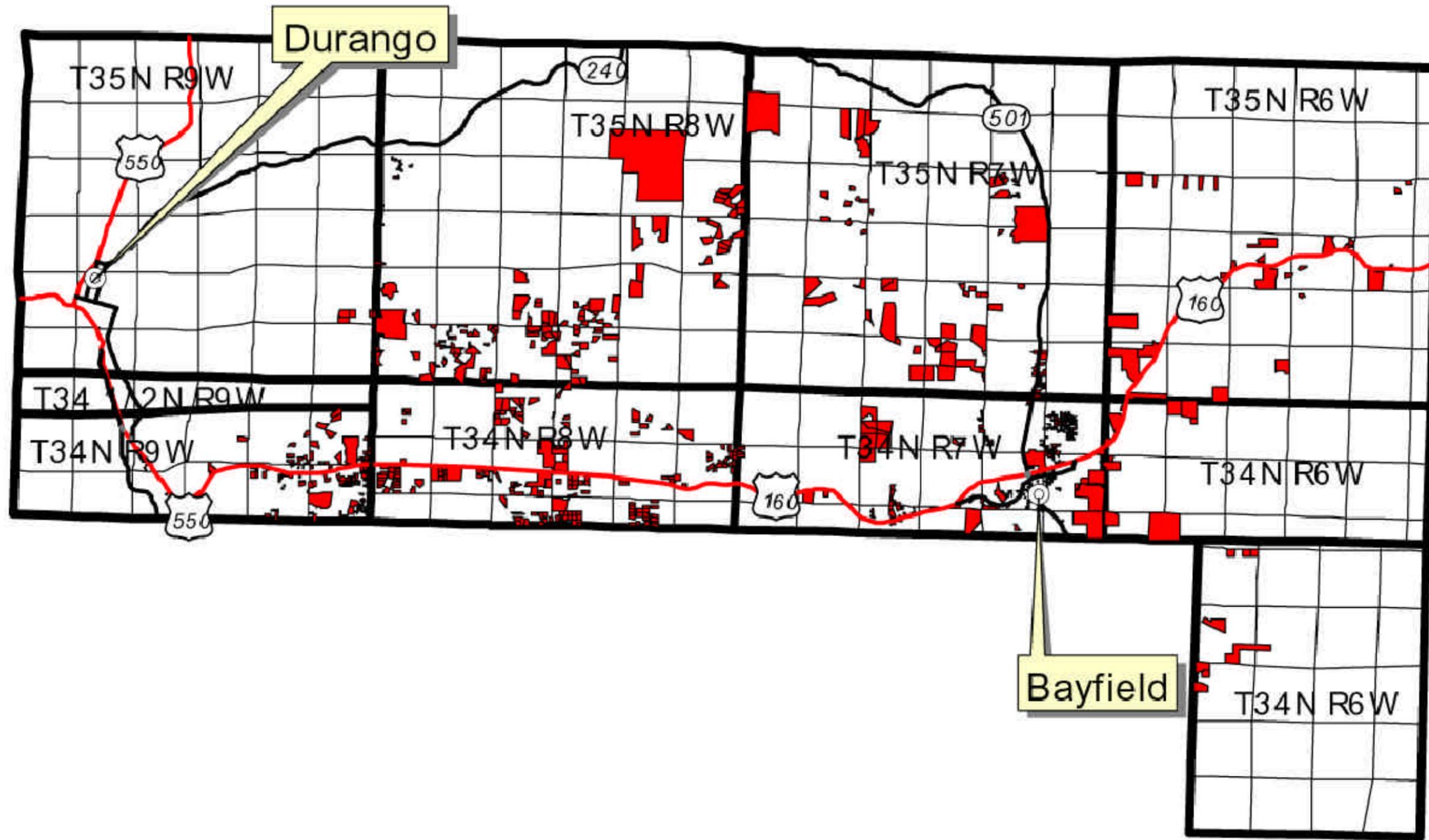
The analysis also considered the impact on properties with wells nearby. Within the sample of 754 sales, 544 were sold with wells located near, but not on, the property. For that group of 544 properties, the estimate of the net impact of all effects of the well is a reduction in value, on average, of only about \$200, or less than 1 percent. This reduction represents an overall average effect based on values in the year 2000. The relative impact of reductions in value for these properties varies with the specific location and individual characteristics of each property, including the size and terrain and the separation between the well and the property improvements. Details of these estimates are provided in **Table 3-34**.

Within the subgroup with wells near, but not on, the property, the estimated reduction in value of \$200 is attributable to offsetting positive and negative effects of the proximity of a CBM well. The unexpected positive effects of a well within 550 feet of the property contradict the expectation that property values would decline in the nearest distance zone. The contradictory effect may be explained by the assumption that the presence of the well in the nearest proximity zone signaled, in the past, that a property was immune to becoming the site of future well development. This assumption was based on COGCC spacing rules and the belief that the spacing of new wells would be stable in the long term. Interviews with local real estate agents familiar with the area suggest that this belief was in place before the potential for down spacing became widely known (Kurlander 2001b; Lorenz 2001; Zartner 2001b). It is unknown at this time whether such an effect will continue in the future.

3.3 TRAFFIC AND TRANSPORTATION

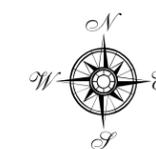
The transportation network that serves the CIR study area consists of federal and state highways (SHs), county roads (CRs), FS roads, and BLM roads. Workers and vehicles that transport oil and gas equipment and supplies for CBM operations and maintenance in the study area would use this network, sharing this infrastructure with residential, business, or agricultural traffic and visitors to the area.

Additional development of CBM could result in increased road use and construction of new roads which in turn, could affect public safety, the cost of road maintenance, invasions of weeds and noxious species, public access to new areas, or fragmentation of lands that are currently roadless areas. Increased public access could lead to increases in dispersed activities such as woodcutting, wildlife viewing, and travel by off-road vehicles or snowmobiles. Unlawful actions such as poaching, illegal woodcutting, disturbance of cultural sites, travel in closed areas, and harassment of wildlife could increase. In addition, increased CBM-related traffic from industry could impair traffic safety or require increased maintenance, primarily for weed control and repair of damage to roads. The existing conditions of traffic and transportation in the area are presented to assess potential impacts and mitigation measures from future development.



Legend

 Properties



LA PLATA COUNTY IMPACT REPORT

FIGURE 3-12

**PROPERTIES SOLD IN THE STUDY AREA FROM
1989 THROUGH THE FIRST HALF OF 2000**

ANALYSIS AREA: LA PLATA & ARCHULETA COUNTIES, COLORADO

DATE: 11/26/01

AUTOCAD FILE: 1023 FIG 3-12.dwg

SCALE: NTS

PREPARED BY: ETC

Table 3-34 Estimated Value of Average Residential Property in Study Area in 2000: Well on Property Versus Wells Nearby but Not on Property

Property Attributes	Sales With Well On Property = 12	Sales With Well Near But Not On Property = 544
Constant for Year 2000	\$50,638	\$50,638
Impact of Property Characteristics		
Distance From Durango	-\$18,786	-\$28,295
Acreage	\$150,048	\$29,791
House Square Footage	\$122,307	\$106,628
Garage	\$13,956	\$18,275
House Age	-\$352	-\$344
Total Value Change If Mobile Home	-\$10,801	-\$5,603
Total Property Value: Excluding Well Effect	\$307,010	\$171,090
Impact of Well Proximity		
One or More Wells on Property	-\$103,169	-
Number of Wells Within 550 Feet	\$37,372	\$709
Number of Wells Within 1,100 Feet	-\$2,275	-\$819
Number of Wells within 1,101 to 2,600 Feet	-\$26	-\$71
Total Property Value: Including Well Effect	\$238,912	\$170,909
Percent Impact of Well Effects	-22%	0%

Note: Values for acreage, house square footage, garage, house age, and mobile home are combined totals of the variable's main effect and its interaction with time. The value for acreage is the sum of the effects of both nominal acreage and acreage squared. A well or wells is within 2,600 feet of all properties considered.

Source: BBC 2001.

3.3.1 Federal Highway Network

U.S. Highway 160 is the primary east-west transportation route through La Plata County and links the communities of Durango and Bayfield east to Interstate 25 along the Front Range of Colorado, and west to Utah and Arizona. U.S. Highway 550 and SH 172 extend south from U.S. Highway 160 through the Southern Ute Indian Tribe Reservation into New Mexico. State Route 151 connects U.S. Highway 160 with communities in the Southern Ute Indian Reservation and with the Navajo State Recreation Area. Several smaller paved and unpaved county roads provide access from these primary highways to public and private lands.

Access to existing CBM well sites in the study area is from county and FS roads that connect with the highway system. These county roads also provide access from the highways to residential subdivisions and isolated rural residences located throughout the study area. In addition to the network of public roads, an estimated 1.3 miles of oil and gas development roads access existing CBM and non-CBM wells on federal, state, and private lands in the study area. Access roads to wells are generally closed to public use.

Road Conditions and Traffic Flows and Volume

Annual Average Daily Traffic (AADT) counts for U.S. Highway 160 were obtained from the Colorado Department of Transportation (CDOT 2001). AADTs consist of the annual average weekly traffic counts. **Table 3-35** shows the counts recorded at the counting stations within the study area and provides a summary of road conditions.

A Transportation System Inventory (TSI) prepared by the Southwest Transportation Planning Region 9, Regional Planning Study (Daniel et al., 1999) describes existing transportation features, including roads, trailways, aviation facilities, freight corridors, bicycle and pedestrian corridors, and other transportation facilities. The study concluded that surface conditions of the regional highway system, including the roadways in the study area, are generally poor to fair. Furthermore, large increases in annual daily traffic were projected over the next 20 years.

The functional class for U.S. Highway 160 is Arterial Roadway, which the Federal Highway Administration characterizes as a major highway, primarily for through traffic on a continuous route. The surface condition of most of U.S. Highway 160 between Durango and Bayfield is poor; surface conditions range from poor to fair between Bayfield and the eastern boundary of the study area.

Short segments of U.S. Highways 550 and SH 172 lie within the study area and are classified in the Arterial Roadway functional class. The surface condition of these highway segments is fair.

An analysis of traffic volume to roadway capacity for U.S. Highway 160, included in the TSI, was used to assign a Level of Service (LOS) for 1996 conditions. LOS for conditions in 2016 also was studied. Six levels of service can be assigned to describe a range of ratios for volume to capacity, which are shown below:

Three levels were identified for existing (1996) and projected (2016) highway volume and capacity for U.S. Highway 160. The highway between Durango and Bayfield was assigned LOS E to describe 1996 conditions. East of Bayfield, 1996 conditions were assigned LOS A-C. The TSI projected that increasing volumes of traffic by 2016 will worsen to LOS F for the entire stretch of the highway located within the study area. The stretch of U.S. Highway 160 between Durango and Pagosa Springs is expected to reach forced or breakdown of flow conditions within 20 years.

Movement of freight is limited because of the mountainous terrain and seasonal road hazards. U.S. Highways 160 and 550 are part of the designated hazardous materials route CDOT has identified.

Three bridges on U.S. Highway 160 within the study area are functionally obsolete or structurally deficient. The bridge over the Florida River, in the western part of the study area, is functionally obsolete. The Los Pinos River Bridge, west of Bayfield, is structurally deficient. The bridge over the Los Pinos River overflow is also functionally obsolete.

The highest rates of accidents on U.S. Highway 160 that caused injuries occurred near Bayfield between 1990 and 1996. The accident rate was two or more injuries per million vehicle miles traveled (VMT). No high rates of fatalities occurred along this stretch of the highway during this period. No high rates of accidents were recorded for any other locations on U.S. Highways 160, 550, and 172 that resulted in injuries or fatalities between 1990 and 1996. Most accidents along the highway caused damage, but no injuries or fatalities. The majority of these accidents occurred east of the intersection of U.S. Highways 160 and 550 and along the stretch of U.S. Highway 160 through Durango.

Table 3-35 1998 Annual Average Daily Traffic for U.S. Highway 160 in the Northern San Juan Study Area

Highway Number	Reference Point	Length (Miles)	AADT	Percent Trucks	Segment Description	Condition	Bridges
160A	86.603 to 101.386	16.189	10,432	10.26	Jct SH 3 N to Jct U.S.160 Bayfield Business Loop	Poor to good	Florida River Bridge – functionally obsolete
160A	103.176 to 103.624	14.345	4,228	13.77	Rd NW (CO Rd 501) to Jct U.S. 160 Bayfield Business Loop	Poor to fair	(1) Pine River Bridge Overflow – functionally obsolete (2) Los Pinos River Bridge structurally deficient
160E	0.563 to 1.558	1.889	1,979	6.69	Rd N (CO Rd 509) to Rd NW (CO Rd 501) – through Bayfield	Poor to fair	None
160A	103.624 to 117.6	17.769	4,134	13.85	Jct U.S.160 Bayfield Business Loop to Rd SE (CO Rd 7.3)	Poor to fair	None

Source: CDOT 2001.

Notes: ¹ Four or more axles-single trailer, seven or more axle multi-trailer² Buses through four or less axles single-trailer

LOS A – free flow conditions

LOS B – stable flow conditions

LOS C – stable flow conditions but less maneuverability

LOS D – high density but stable flow conditions

LOS E – operating conditions near or at capacity

LOS F – forced or breakdown flow conditions

Recreational and competitive bicyclists and bicycle commuters also use the highways and the La Plata County Road system. The La Plata County Comprehensive Traffic Study (Bechtolt 1999) has defined the bicycle route network in the county.

3.3.2 County Transportation Network

The La Plata County Comprehensive Traffic Study (Bechtolt 1999) developed a coordinated strategy to manage and improve the county transportation system over the next 20 years. Phase A of the traffic study surveyed existing road conditions and consisted of information on traffic accidents, an inventory of roadway data (signing, striping, and alignment), analysis of speed, and traffic volume counts for selected locations throughout the county.

County roads in the study area include paved and gravel surfaces. Paved roads are all-weather asphalt that provide excellent access. Gravel roads are constructed with aggregate material with designed drainage. There are nearly 80 miles of paved and graveled roads in the study area.

Road Conditions and Traffic Flows

Road types, conditions, and daily traffic counts for selected locations within the study area are summarized in the **Tables 3-36 and 3-37**.

Table 3-36 Existing Road Classifications for La Plata County Roads

Route Name	Current Road Classification	Surface Type	Length in Study Area (miles)
213	Local	Gravel	1.39
220	Local	Asphalt	1.78
221	Local	Gravel	1.05
222	Local	Asphalt	1.13
222B	Local	Gravel	NA
223	Local	Gravel	5.81
224	Local	Gravel	0.72
225	Local	Dirt	4.05
225A	Local	Dirt	Na
226 (Rustic Road)	Local	Gravel	0.86
227	Local	Gravel	1.83
227A	Local	Dirt	NA
227G	Local	Gravel	NA
228	Local	Gravel	7.12
229	Local	Gravel	0.99
230	Local	Gravel	1.53
231	Local	Gravel	0.40
232	Local	Gravel	0.52
233	Local	Asphalt	0.97
234	Minor Collector	Asphalt	4.29
235	Local	Gravel	1.51
236	Local	Gravel	0.87
501 (Vallecito Road)	Minor Collector	Asphalt	4.63
502	Local	Gravel	10.08
503	Local	Gravel	1.38
503A	Local	Gravel	NA
503B	Local	Gravel	NA
504	Local	Gravel	1.28
505	Local	Gravel	2.35
505A	Local	Gravel	NA
506	Local	Gravel	0.44
507	Local	Asphalt	0.81
509	Local	Asphalt	0.82
509	Local	Asphalt	1.04
510	Local	Gravel	1.91
516	Local	Asphalt	0.88
521 (Buck Highway)	Major Collector Rural	Asphalt	1.24
523	Minor Collector Rural	Gravel	NA
526	Local	Gravel	3.16
527	Local	Gravel	3.75
528	Local	Dirt	1.35
Total County Roads			79.53

Source: Bechtolt 1999.

Table 3-37 Average Daily Traffic (ADT) Count and Speed Limit Summary for Selected La Plata County Roads in the Study Area

Route Name	Location	1998 ADT	Projected 2020 ADT	Percent Change	Posted Speed (N or E/S or W)	Proposed Speed Limit (N or E/S or W)
CR 220	2.3 Mile W of SH 172	1,817	3,579	96.97	45/45	45/45
CR 220	0.67 Mile W of SH 172	1,378	2,715	97.02	45/45	45/45
CR 223	1 Mile E. of CR 225	245	385	57.1	35/35	35/35
CR 223	0.54 Mile N. of U.S. 160	357	560	56.9	35/35	45/45
CR 225	0.67 Mile N. of CR 223	574	1,366	138.0	35/35	35/35
CR 225	2.81 Mile N. of CR 223	427	1,017	138.2	30/30	30/30
CR 228	0.31 Mile E. of CR 234	289	690	138.8	35/30	30/30
CR 228	2.02 Mile E. of CR 225	374	895	139.3	35/35	35/35
CR 229	0.26 Mile N. of U.S. 160	562	1,404	149.8	35/30	35/35
CR 233	0.53 Mile N. of U.S. 160	330	491	48.8	30/30	35/35
CR 234	2.1 Mile N. of U.S. 160	898	1,401	56.0	45/45	45/45
CR 234	0.5 Mile N. of U.S. 160	1,249	1,948	56.0	35/35	45/45
CR 501	4.2 Mile N. of U.S. 160	2,182	5,346	145.0	55/55	55/55
CR 502	0.77 Mile N. of U.S. 160	707	1,950	175.8	35/35	35/35
CR 502	3.4 Mile N. of U.S. 160	342	945	176.3	35/30	35/35
CR 502	7.09 Mile N. of U.S. 160	217	599	176.0	35/30	35/35
CR 509	0.56 Mile S. of U.S. 160	907	2,784	206.9	35/35	40/40
CR 510	0.52 Mile E. of CR 222	883	1,854	109.97	35/35	35/35

Note: Survey dates for each location are September through November 1998.

Source: Bechtolt 1999.

The TSI identified a bridge on La Plata County Road 234, which crosses the Florida River, as functionally obsolete. No other bridges on county roads within the study area have been identified as functionally obsolete or structurally deficient.

All of the county roads (CRs) in the study area are expected to experience substantial increases in traffic, reflecting a projected increase in population of nearly 56 percent in La Plata County between 1998 and 2020 (DOLA 2001a). The county roads expected to see the largest increases in traffic are CRs 225, 229, 501, 502, and 509.

The traffic study projected future residential growth on along highways and county roads for the 10 planning districts in La Plata County. As discussed earlier, the study area contains portions of the Bayfield, Durango, Southeast La Plata, and Florida Mesa Planning Districts. The projected growth in population and housing units along county roads in the Bayfield Planning District is 179 percent from 1998 through 2020. The projected growth along county roads in the Southeast La Plata Planning District is 129 percent, and the growth projected for Florida Mesa is 31 percent. The projected population growth in La Plata County for the period 1998 to 2020 is 56 percent.

The traffic study analyzed records for La Plata County to identify the number of accidents that occurred on county roads from January 1991 through August 1998. The data were used identify the locations of multiple accidents to focus on county road segments with safety issues. High rates of accidents were identified for locations on four county roads within the study area: four locations on CR 501 and one each for the other road segments. These locations are summarized in **Table 3-38**.

The traffic study identified three alternatives to mitigate impacts from increased truck traffic and overweight vehicles. The first alternative recommends that traffic generators be responsible for constructing improvements that are directly necessitated by their operation. Potential improvements include paving a gravel roadway and improving intersections and sight distances. The second alternative would involve a permitting process for trucks that use county roads. The permit would create a revenue stream that would address the impacts of trucks on county roads. A third alternative would be increased enforcement of existing regulations for overweight vehicles. The impacts of overweight vehicle violations can be significant on county roads intended for low-volume traffic.

The Florida Mesa Land Use Plan (La Plata County 1998b) provided recommendations on land use for the western part of the study area and identified roadway improvements needed on U.S. Highways 550 and 160. The congested highways have prompted drivers to use county roads as primary travel routes, resulting in deterioration of and heavy commercial traffic on roads that were designed for light, local flow. A goal of the plan is to develop a safe and efficient traffic system that does not adversely affect adjacent land uses. Objectives to meet the goal are:

- Objective 1: To eliminate dangerous bottlenecks on state highways within the county (especially on U.S. Highways 160, 550, and 172).
- Objective2: To anticipate, rather than react to, increased traffic flow by improving and maintaining capacities on highways and arterials, reducing community and commercial truck traffic on local roads.
- Objective 3: To protect riparian corridors from increased traffic to the maximum extent possible, to protect high-priority wildlife areas and minimize dangers to drivers and wildlife alike from collisions.
- Objective 4: To develop more attractive “gateway” areas along the main roads into Durango.

Table 3-38 Accident Cluster Locations Surveyed From January 1991 through August 1998					
County Road	Location of High Accident Volume	Number of Accidents at Location of High Accident Volume	Number of Accidents on Entire Road	Accident Rate	Recommended Safety Improvements¹
CR 228	0.4 mile E of CR 224	5	22	4.83	None
CR 234	3.1 mile N of U.S. 160	6	26	2.41	Realign Roadway
CR 501	-Intersection of U.S. 160	10	130	1.20	-None
	-0.1 mile N of Sossaman Rd.	4		0.55	-Construct Auxiliary Lands and Replace Bridge
	-Intersection of CR 502	5		1.13	-Realign Roadway
	-0.2 mile S of CR 500	7		2.01	-None
CR 509	Intersection of U.S. 160B	6	20	2.39	None

Note: ¹Safety improvements for road segments with high accident rates were identified in the La Plata County Comprehensive Traffic Study (Bechtolt 1999).

The Bayfield Land Use Plan (La Plata County 1997a) identified the need to support maintenance of infrastructure as a goal for transportation in the Bayfield area, in the eastern part of the study area. Objectives identified to achieve the goal are:

- Objective 1: Improve county roads
- Objective 2: Allow no more growth than infrastructure will support (growth should pay its own way).
- Objective 3: Encourage more responsible use of roads (speed, weight).

Recommended actions to achieve Objective 2 include institution of up-front development fees with provisions for payback to the developer.

3.3.3 Public Land Roads

Current management direction for FS roads is to provide the minimum facilities and maintenance needed to safely accommodate the expected type and volume of traffic. No traffic data are available for the FS roads in the eastern portion of La Plata County, within the study area. Most are unimproved and accommodate only high-clearance vehicles. A few roads are gravel-surfaced and will accommodate passenger cars during snow-free months.

Public land administered by BLM is the smallest ownership type in the study area. BLM lands consist of isolated islands and tracts surrounded by private lands. No BLM system roads on BLM lands are within the study area. Primitive roads or trails connect at least three parcels with county roads.

3.3.4 Other Types of Transportation

Two airports serve La Plata County. A designated airport safety zone covers a 2-mile radius around both. According to the La Plata County Code, all development within airport safety zones must conform to FAA regulations concerning safety zones around airports. A safety zone provides standards that promote navigational safety at the airport and will reduce potential safety hazards for property and persons on lands near airports. FAA regulations require a filing of notice (FAA Form 7460-1) for every construction

project that extends 200 feet or higher above natural terrain or is located within 5 miles of an airport. A small area of the southwest portion of the study area is situated within the 2-mile safety zone of Animas Air Park, a small airport located southwest of the intersection of U.S. Highways 160 and 550. The La Plata County Airport is located 3.5 miles south of the study area, so only a small portion of its safety zone could be affected by development of CBM.

3.3.5 Oil and Gas Development Access Roads

Traffic related to development of oil and gas in the study area consists of vehicle trips associated with installation of wells, production facilities, compressors, and pipelines, and with maintenance of the facilities. Maintenance occurs over the life of the facilities and consists of well workover and operations.

Road Conditions and Traffic Flows

The estimated number of vehicle trips required for each well type is provided in **Table 3-39**. Average annual maintenance trips per well are 371 trips for CBM and non-CBM wells (BLM 2000b). Compressor facilities are treated as stand-alone to count vehicle trips even though some smaller compressors are actually collocated with wells at some sites. In these cases, one trip would be adequate to service both facilities.

Table 3-39 Baseline Trip Generation by Well Type				
	Active CBM	Active non-CBM	Disposal	Total
Number of Wells	266	13	6	285
Annual Trip Production	98,686	4,823	2,226	105,735
Daily Vehicle Trips	34	2	<1	37

Currently, 285 well sites are located in the study area. The total includes 266 CBM production wells, 13 existing non-CBM wells, and five disposal wells. The analysis assumed in establishing the baseline vehicle trips for existing operations that active production wells and disposal wells currently require daily maintenance trips totaling 365 per year plus an annual workover (six trips per workover), for a total of 371 trips per year for each well. Therefore, the total number of annual trips is 105,735 for the 285 CBM and non-CBM production wells and the disposal wells. Daily service trips must be adjusted by the average number of well sites each service crew can visit in 1 day to compute daily vehicle trips for all wells in the study area. This analysis assumed that one service crew could visit eight well sites per day. Thus, daily vehicle trips equal the annual service trips divided by 365 days per year divided by 8 well sites per service crew. It is anticipated that new technology will enable operators to remotely monitor active production wells, decreasing the number of trips required per well over the course of 1 year.

Six compressors are located in the study area. Baseline annual trips for compressor maintenance are summarized in **Table 3-40**. Each compressor site currently requires daily maintenance trips, thus totaling 365 per year (pickup and crew cab visits) and an annual site visit (multi-axle vehicle). This analysis assumed that each service crew could visit four sites per pickup/crew cab vehicle per day. Daily trips average 1.5 vehicles per day, which is less than 1 percent of total average daily traffic on SHs or CRs within the study area.

Table 3-40 Compressor Maintenance Vehicle Trip Generation – Baseline				
Number of Compressors	Average Number of Trips Generated	Annual Service Trips per Unit	Annual Trips	Daily Vehicle Trips
6	(1) 7 - 14 crew cab/pick-up visits per week	546	2,730	1.5
	(2) 1 multi-axle visit per year	1	5	<1
Total Compressor Maintenance Trips Generated			2,735	1.5

Source: BLM 2000b.

Assumption: 1 Daily vehicle trip + annual trips/365/4 sites per vehicle per day

3.3.5.1 Estimated Traffic from Existing CBM Facilities

Development of CBM involves specialized vehicles that would be used during associated construction and operation and maintenance. Included in **Table 3-41** are the vehicle types, weight, and frequency for CBM development.

As described in the La Plata County Comprehensive Traffic Study (Bechtolt 1999) and depicted on **Figure 3-10**, the county identified and assigned primary parcels to each road segment. The number of facilities per road segment was counted to estimate the amount of current traffic that is associated with existing CBM facilities by road segment. The estimated number of facilities per road segment parcel, and number of existing trips related to wells over the next 17 years (to 2020) are provided in **Table 3-42**. This assumption is based on the most conservative scenario for existing well operations. It assumes that existing wells remain in operation over the next 17 years and presents a maximum development and operational scenario. This table assumes that no trips are associated with additional wells. The table is then categorized on a relative scale as low, medium, and high traffic, based on the deviation from the median number of well trips, as illustrated on **Figure 3-13**. The baseline trip by CBM facility type (**Tables 3-40 and 3-41**) was then used to identify the potential number of trips generated for each road segment.

These tables present existing trips generated by road segment and typical weights of CBM vehicles. This information will be used to present the amount of road degradation that may be anticipated from proposed development of CBM. Although the existing impacts to road degradation and maintenance cannot be assessed accurately because of additional traffic on the segments, impacts, and road maintenance will be assessed by road and facility type for new development of CBM in the impacts section of this document.

Table 3-41 Vehicle Type and Round Trip Frequency for Field Development and Operations			
Facility/Activity	Vehicle	Vehicle Class	Trip Frequency
Access Road And Well Pad Construction			
	Haul Truck For Dozer	5+ ax TST	2/Well
	Haul Truck For Grader	5+ ax TST	2/Well
	Haul Truck For Backhoe	5+ ax TST	2/Wel
	Gravel Truck (20 Yard)	3+ ax SU	240/Mi Of Road
	Flatbed Truck For Rig-Up, Rig-Down	5+ ax TST	50/Well
Well Drilling, Completion, Testing, And Installation			
<i>Well Drilling</i>	Truck Mounted Rig	5+ ax TST	1/Well
	Support Trucking	3+ ax TST	32/Well

Table 3-41 Vehicle Type and Round Trip Frequency for Field Development and Operations			
Facility/Activity	Vehicle	Vehicle Class	Trip Frequency
	Casing Tong Truck	3+ ax SU	1/Well
	Water Truck	3+ ax SU	25/Well
	Mud Truck	3+ ax SU	3/Well
	Fuel Truck	3+ ax SU	2/Well
	Rig Crews/Pick-Up	Pick-up	3/Day
	Rig Mechanic/Truck	2 ax 6 tire SU	1/Well
	Proponent Supervisor/Pick-Up	Pick-up	2/Day
	Mud Engineers Truck	2 ax 6 tire SU	1/Day
	Casing Haul Truck	5+ ax TST	2/Well
	Cementers/Pick-Up	Pick-up	2/Well
	Bulk Truck	3+ ax SU	3/Well
	Loggers/Logging Truck	3+ ax SU	1/Well
	Loggers, Engineers Car	Pick-up	1/Well
	Misc. Supplies/Pick-Up	Pick-up	2/Well
<i>Well Completion And Testing</i>	Completion Unit/Rig	4 ax TST	1/Well
	Completion Equipment Truck	3+ ax SU	1/Well
	Completion, Crew Pick-Up	Pick-up	12/Well
	Completion Pusher	2 ax 6 tire SU	3/Well
	Proponent Supervisor	Pick-up	2/Well
	Tubing Trucks	3+ ax SU	1/Well
	Service Tools	3+ ax SU	2/Well
	Loggers/Truck	2 ax 6 tire SU	1/Well
	Loggers/Car	Pick-up	1/Well
	Anchor Installation	2 ax 6 tire SU	1/Well
	Frac Unit	3 ax TST	1/Well
	Sand Storage Bin	3 ax TST	1/Well
	Blender	2 ax 6 tire SU	1/Well
	Chemical Truck	3 ax TST	1/Well
	Sand Truck	3 ax TST	9/Well
	Manifold Truck	2 ax 6 tire SU	1/Well
	Manifold Trailer	2 ax 6 tire SU	1/Well
	Instrument Van	Pick-up	2/Well
	Misc. Supplies Pick-Up	Pick-up	4/Well
<i>Well Site Facilities Installation</i>	Roustabout Crew Truck	Pick-up	2/Well
	Welder Truck	2 ax 6 tire SU	5/Well
	Water Truck	3+ ax SU	24/Well
<i>Flowlines Installation</i>	Haul Truck For Dozer	5+ ax TST	2/Mi Of Flowline
	Haul Truck For Ditcher	5+ ax TST	1/Mi
	Haul Truck For Side Boom	5+ ax TST	4/Mi
	Haul Truck For Track Hoe	5+ ax TST	2/Mi
	Crew Pickups	Pick-up	21/Mi
	10 Yard Dump Trucks For Padding	3+ ax SU	117/Mi
	Haul Truck – Pipe & Materials	5+ ax TST	3/Mi For 4” Pipe 8/Mi For 20” Pipe
Well Operations			
<i>Well Workover</i>	Service Unit	3+ ax SU	1/Well
	Service Unit Crew Pick-Up	Pick-up	2/Well
	Pusher Truck	2 ax 6 tire SU	1/Well
	Proponent Supervisor Pick-Up	Pick-up	1/Well
Operations			
	Pumper Pick-Up	Pick-up	1/Well/Day
Compressor Site Installation And Operations			
<i>Installation</i>	Tractor Truck	5+ ax TST	8/Site

Table 3-41 Vehicle Type and Round Trip Frequency for Field Development and Operations

Facility/Activity	Vehicle	Vehicle Class	Trip Frequency
	Trailer	2 ax 6 tire SU	4/Site
	Cement Truck	3+ ax SU	4/Site
	Gang Truck	2 ax 6 tire SU	30/Site
	2 Welding Trucks	2 ax 6 tire SU	30/Site
	Pick-Up	Pick-up	100/Site
Operations			
	Pick-Up	Pick-up	2/Day
	Gang Truck	2 ax 6 tire SU	1/Week
	Water Truck	3+ ax SU	2/Month
<i>Produced Water Collection By Truck</i>	Water Truck ^a	3+ ax SU	

Vehicle Classes

SU = Single Unit Trucks
 TST = Trailer Semi-Trailer
 Ax = axle

Table 3-42 Projected Trips Related to CBM Development Road Segment Description

	Compressors			Wells			
	# of Existing Compressors	# of Trips/Year/Road Segment Parcel	# of Projected Trips Between 2003 and 2020	# of Existing Wells	# of CBM Trips/Year/Road Segment	# of CBM Projected Trips Between 2003 and 2020	CBM related Trip Distribution
U.S. 550/160 Corridor - CR 203 south to Farmington Hill	0	0	0	1	371	6307	Low
CR 501 – U.S.160 north to Forest Lakes	0	0	0	13	4823	81991	High
CR 502 – CR 245 west to CR 228	0	0	0	4	1484	25228	Med
CR 502 – CR 228 east to CR 503	0	0	0	0	0	0	Low
CR 502 – CR 503 east to CR 504	0	0	0	3	1113	18921	Med
CR 502 – CR 504 east to CR 505	0	0	0	4	1484	25228	Med
CR 502 – CR505 south to U.S.160	0	0	0	2	742	12614	Med
CR 503	0	0	0	6	2226	37842	Med
CR 504	0	0	0	9	3339	56763	High
CR 505	0	0	0	10	3710	63070	High
CR 506	0	0	0	2	742	12614	Med
CR 507	0	0	0	2	742	12614	Med
CR 508	0	0	0	4	1484	25228	Med
CR 509 – U.S.160B south to CR 510	0	0	0	1	371	6307	Low
CR 516 – U.S.160B south to CR 520	0	0	0	1	371	6307	Low
CR 521 – U.S.160B south to CR 525	0	0	0	0	0	0	Low
CR 525 – CR 523 east to end	0	0	0	6	2226	37842	Med
CR 526	0	0	0	5	1855	31535	Med
CR 527 – CR 526 east to CR 528	0	0	0	3	1113	18921	Med
CR 527 – CR 528 north to end	0	0	0	14	5194	88298	High
CR 528	0	0	0	2	742	12614	Med
U.S. 160 Corridor - CR223 east to CR501	0	0	0	11	4081	69377	High
U.S. 160 B Corridor – U.S. 160 east to U.S.160	0	0	0	1	371	6307	Low
U.S. 160 Corridor – CR 501 east to Archuleta County line	0	0	0	15	5565	94605	High
CR 335	0	0	0	2	742	12614	Med
CR 213 – U.S.550/160 south to CR 214	0	0	0	3	1113	18921	Med
CR 220 – U.S.550 east to CR 301	0	0	0	2	742	12614	Med
CR 220 – CR 301 east to SH 172	0	0	0	3	1113	18921	Med

Table 3-42 Projected Trips Related to CBM Development Road Segment Description

	Compressors			Wells			
	# of Existing Compressors	# of Trips/Year/Road Segment Parcel	# of Projected Trips Between 2003 and 2020	# of Existing Wells	# of CBM Trips/Year/Road Segment	# of CBM Projected Trips Between 2003 and 2020	CBM related Trip Distribution
CR 221 – SH 172 east to CR 222	0	0	0	0	0	0	Low
CR 221 – CR 222 east to end	0	0	0	2	742	12614	Med
CR 222 – U.S.160 south to CR 510	0	0	0	0	0	0	Low
CR 222 – CR 510 south to SH 172	0	0	0	0	0	0	Low
CR 223 – U.S. 160 north to CR 230	0	0	0	0	0	0	Low
CR 223 – CR 230 east to CR 225	0	0	0	0	0	0	Low
CR 223 – CR 225 east to U.S.160	0	0	0	25	9275	157675	High
CR 224	0	0	0	3	1113	18921	Med
CR 225 – CR 223 north to CR 226	0	0	0	1	371	6307	Low
CR 225 – CR 226 north to CR 228	0	0	0	4	1484	25228	Med
CR 225 – CR 228 north to CR 234	0	0	0	2	742	12614	Med
CR 226	0	0	0	3	1113	18921	Med
CR 227	0	0	0	4	1484	25228	Med
CR 228 – CR 234 east to CR 229	0	0	0	1	371	6307	Low
CR 228 – CR 229 north to CR 225	0	0	0	1	371	6307	Low
CR 228 – CR 225 east to CR 224	0	0	0	3	1113	18921	Med
CR 228 – CR 224 east to CR 502	0	0	0	12	4452	75684	High
CR 229 – U.S.160 north to CR 230	0	0	0	1	371	6307	Low
CR 229 – CR 230 north to CR 228	0	0	0	1	371	6307	Low
CR 230	0	0	0	2	742	12614	Med
CR 232	0	0	0	0	0	0	Low
CR 233	0	0	0	2	742	12614	Med
CR 234 – U.S.160 north to CR 228	0	0	0	0	0	0	Low
CR 234 – CR 228 north to CR 235	0	0	0	1	371	6307	Low
CR 234 – CR 235 north to CR 236	0	0	0	1	371	6307	Low
CR 234 – CR 236 north to CR 225	0	0	0	2	742	12614	Med
CR 234 – CR 225 north to CR 237	0	0	0	1	371	6307	Low
CR 235	2	732	12444	7	2597	44149	High
CR 236	0	0	0	2	742	12614	Med
CR 510 – CR 222 east to CR 513	0	0	0	2	742	12614	Med
SR 172 Corridor – U.S.160 south to CR 309	0	0	0	1	371	6307	Low

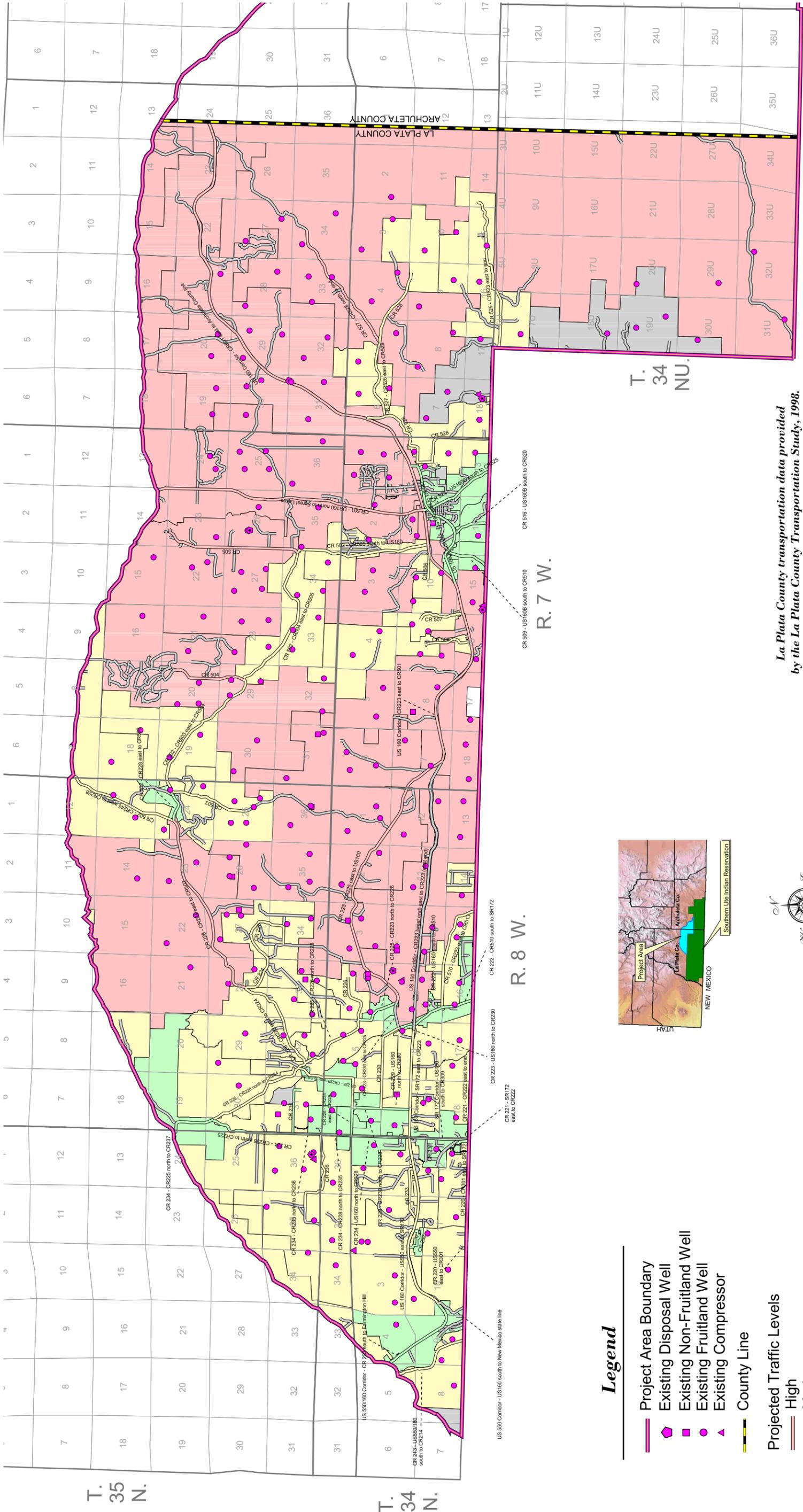
Table 3-42 Projected Trips Related to CBM Development Road Segment Description

	Compressors			Wells			
	# of Existing Compressors	# of Trips/Year/Road Segment Parcel	# of Projected Trips Between 2003 and 2020	# of Existing Wells	# of CBM Trips/Year/Road Segment	# of CBM Projected Trips Between 2003 and 2020	CBM related Trip Distribution
U.S. 160 Corridor – U.S.550 east to SH 172	1	366	6222	8	2968	50456	High
U.S. 160 Corridor – SH 172 east to CR 223	0	0	0	6	2226	37842	Med
U.S. 160 Corridor – CR 223 (west end) east to CR 223 (east end)	1	366	6222	16	5936	100912	High
U.S. 550 Corridor – U.S.160 south to New Mexico state line	0	0	0	0	0	0	Low
CR 526	0	0	0	5	1855	31535	Med
U.S. 160 B Corridor – U.S.160 east to U.S.160	0	0	0	0	0	0	Low
Areas not included in traffic study	1	366	6222	11	4081	69377	High
Total	5	2,196	37,332	259	96,089	1,633,513	High

Notes:

Projected trips are related only to development of CBM wells.

Assumes the same number of trips per well for CBM, non-CBM, and disposal wells.



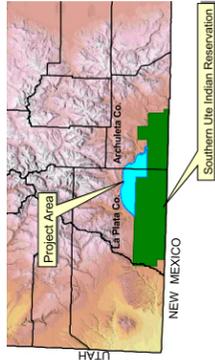
Legend

- Project Area Boundary
- Existing Disposal Well
- Existing Non-Fruitland Well
- Existing Fruitland Well
- Existing Compressor
- County Line

Projected Traffic Levels

- High
- Med
- Low
- Segment Not Linked In Study

The road segments represented here are ones extracted from the La Plata County road file that have the 'LEVEL7' attribute field populated. LEVEL7 appears to be the only field that would properly join the 'iparcel' coverage to the La Plata County roads coverage.



1 0 1 2 3 4 5 Kilometers

1 0 1 2 3 4 5 Miles

La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data. Existing wells extracted from COGCC well database.

*Transverse Mercator Projection
1927 North American Datum
Zone 13*

NORTHERN SAN JUAN BASIN CBM CIR	
FIGURE 3-13	
EXISTING CBM DEVELOPMENT	
PROJECTED TRAFFIC LEVELS	
ANALYSIS AREA:	LA PLATA COUNTY, COLORADO
Date:	06/17/02
ArView File:	C:\944-san-juan\CIR.apr
Prepared By:	JG

3.4 VISUAL RESOURCES

Typically, people are sensitive to modified landscapes and specifically to changes that could result from development of CBM. Although visual aesthetics vary and are difficult to quantify, information on the existing visual resources is presented to assess potential impacts from development of CBM.

3.4.1 Regional Context

The scenic quality of the landscape within the region that is visible from several sensitive viewing areas is medium to high. Public sensitivity to modifications of the landscape is relatively high. The primary issue is the potential effects of CBM development on sensitive viewpoints (highways, roads, and residential areas).

Visual sensitivity is based on a combination of visual exposure and viewing distance; areas that are visible from many locations at close range are considered the most sensitive to modifications of the landscape. Included in the study area are public lands administered by BLM, FS, and the State of Colorado. Private lands in the study area are under county jurisdiction.

BLM lands are scattered throughout the study area and occur in isolated tracts adjacent to the urban interface, while FS lands are combined in one large, contiguous area with considerably less urban interface. Private land is prominent throughout the western portion of the study area. Small tracts of private property abut FS land in the eastern portion of the study area.

3.4.2 County Visual Resource Management

Visual standards for La Plata County are defined in the La Plata County Code, Chapter 90, Natural Resources, Section 30-123(2)(b)(1-13), and Visual Impacts, Section 30-123 (2)(c)(1 – 2q), Visual Mitigation Plan (La Plata County 1998a). The goals of the code are to balance economic development with protection of the environment, natural resources, and character of the communities.

3.4.3 Visual Characteristics

Primary land use categories within the study area were identified through discussions with La Plata County, the FS, and BLM. The primary land use categories that make up the study area were identified as recreation/open space areas, transportation corridors, residential, and agricultural areas. Although these categories differ slightly from the classifications included in the section on land use, the categories used for visual analysis represent the primary land uses that would be affected by development of CBM.

The landscape types within the study area have been categorized based on information available from topographical and vegetation maps provided by the San Juan National Forest. Land use within a landscape type also influences the visual sensitivity of the natural environment, as discussed in the following section.

3.4.3.1 *Landscape Character and Land Base*

Landscape character types and subtypes were categorized based on similar visual patterns of landforms, rock formations, water bodies, and vegetative patterns. The landscape character types and subtypes were identified using the “Durango” 1993 BLM edition topographic map (BLM 1993), San Juan National Forest map (FS 1994) aerial photographs, vegetation maps, and field observations.

The landscapes in the study area are highly varied. The western portion of the study area is characterized by rolling hills, mesas, plateaus, and hogbacks, interspersed with broad to narrow drainageways. The vegetation ranges from agricultural cropland in the lower elevations to desert shrub, desert woodland, mountain shrub, and conifer woodland in the upper elevations.

Several waterways are used for recreation and are viewed by residents and motorists. Major waterways in the western portion of the study area consist of the Florida and Los Pinos Rivers. The Florida River is located along the eastern edge of Florida Mesa and eventually flows into the Animas River, south of the study area. The Los Pinos River lies just west of the Town of Bayfield and flows south.

The eastern portion of the study area consists of mountainous terrain mixed with upland hills, rolling uplands, ridges, narrow stream valleys, and broad river valleys. Vegetation in the eastern portion of the study area consists primarily of Piñon/Juniper, oak, and coniferous vegetation. As of 1982, approximately 48 percent of the San Juan National Forest had been altered by man to a degree that is visually evident to the forest visitor. Only minor or no alteration is evident in the remaining area. Recent activities in the forest have caused some alteration.

3.4.3.2 Distance Zones

Distance zones are divisions of a landscape that is being viewed. They are used to describe the part of a characteristic landscape that is inventoried or evaluated. Typical foreground, middleground, and background distance zones vary by project. For this study, the foreground (150 feet to 0.25 miles), middleground (0.25 to 1 mile), and background (1 to 5 miles) views were influenced by setbacks required by the State of Colorado and La Plata County Codes and the quality of the visual environment. The appearance of features in the landscape varies with viewing distance and project type. Components within foreground viewpoints likely will have the greatest impacts, and components in the background likely will fade into the landscape. The visual impacts that result from the setbacks discussed in Section 3.1.

3.4.4 Inventory of Scenic Quality

The scenic quality of an area is evaluated by establishing variety classes within a specific area. Landscapes were classified according to degrees of variety identifies areas that are more or less important from the standpoint of scenic quality. The classification assumes that all landscapes have some value, but that those with the most variety or diversity have the greatest potential for high scenic value. Factors to be considered include uniqueness, alteration by humans, the character of adjacent landscapes, and the diversity of landscape types. Three classes identify the scenic quality of the natural environment:

- Class A - Distinctive scenic quality: areas that contain features such as landforms, vegetative patterns, water forms, and rock formations that are of an unusual or outstanding visual quality and that are not common in the surrounding area;
- Class B - Common scenic quality: areas that contain features with a variety of form, line, color, and texture or combinations that tend to be common throughout the surrounding area and are not outstanding in visual quality; and
- Class C - Minimal scenic quality: areas generally characterized by little or no variety in form, line color, texture, or combinations that includes all areas not found under Classes A and B.

A summary of how landscape features factor into each of the class descriptions follows in **Table 3-43**.

Table 3-43 Scenic Quality – Variety Classes			
	Class A	Class B	Class C
	Distinctive	Common	Minimal
Landform	More than 60 percent slopes that are dissected, uneven; sharp exposed ridges or large, dominant features.	Consists of 30 to 60 percent slopes that are moderately dissected or rolling.	Consists of 0 to 30 percent slopes that exhibit little variety. No dissection and no dominant features.
Rock Form	Features stand out on landform. Unusual or outstanding avalanche chutes, talus slopes, outcrops, or similar features in size, shape, and location	Features obvious but do not stand out. Common but not outstanding avalanche chutes, talus slopes, boulders, and rock outcrops.	Small to non-existent features. No avalanche chutes, talus slopes, boulders, and outcrops
Vegetation	High degree of patterns in vegetation. Large old-growth timber, unusual or outstanding diversity in plant species.	Continuous vegetation covered with interspersed patterns. Mature but not outstanding old growth. Common diversity in plant species.	Continuous vegetation cover with little or no pattern. No understory, overstory, or ground cover.
Water Forms, Lakes	Landform is 50 acres or larger. Areas smaller than 50 acres with one or more of the following: (1) unusual or outstanding shoreline configuration, (2) reflects major features, (3) islands, (4) Class A shoreline vegetation or rock forms.	Landform is 5 to 50 acres. Some shoreline irregularity. Minor reflections only. Class B shoreline vegetation.	Less than 5 acres. No irregularity or reflection.
Water Forms, Streams	Drainage with numerous or unusual changing flow characteristics, falls, rapids, pools, and meanders, or large volume	Drainage, with common meandering and flow characteristics.	Intermittent streams or small perennial streams with little or no fluctuation in flow or falls, rapids, or meandering.

As shown on **Figure 3-14**, landscapes within the study area are considered Class B, Common, in their variety class and level of scenic quality. Landscapes near the major transportation corridors tend to be minimal in scenic quality (Class C). The U.S. Highway 160 transportation corridor is considered minimal in scenic quality (Class C), likely a result of the residential and commercial alteration of the landscape. The area south and southeast of Bayfield is also considered minimal, as the scenic quality has been altered by residential, agricultural, and industrial uses.

The only Class A (distinctive) scenic quality area is near Severn Peak and Wickenson Mountain, the northeast portion of the study area. This area consists of mountaintops of more than 8,000 feet in elevation and is situated above rolling uplands and along steep ridges. The vegetative types include ponderosa pine, spruce, fir, and other high-elevation vegetation cover.

3.4.5 Landscape Viewshed Sensitivity

Landscape viewshed sensitivity is the extent to which features are noticeable or apparent in the landscape.

3.4.5.1 Evaluation of Landscape Viewshed Sensitivity

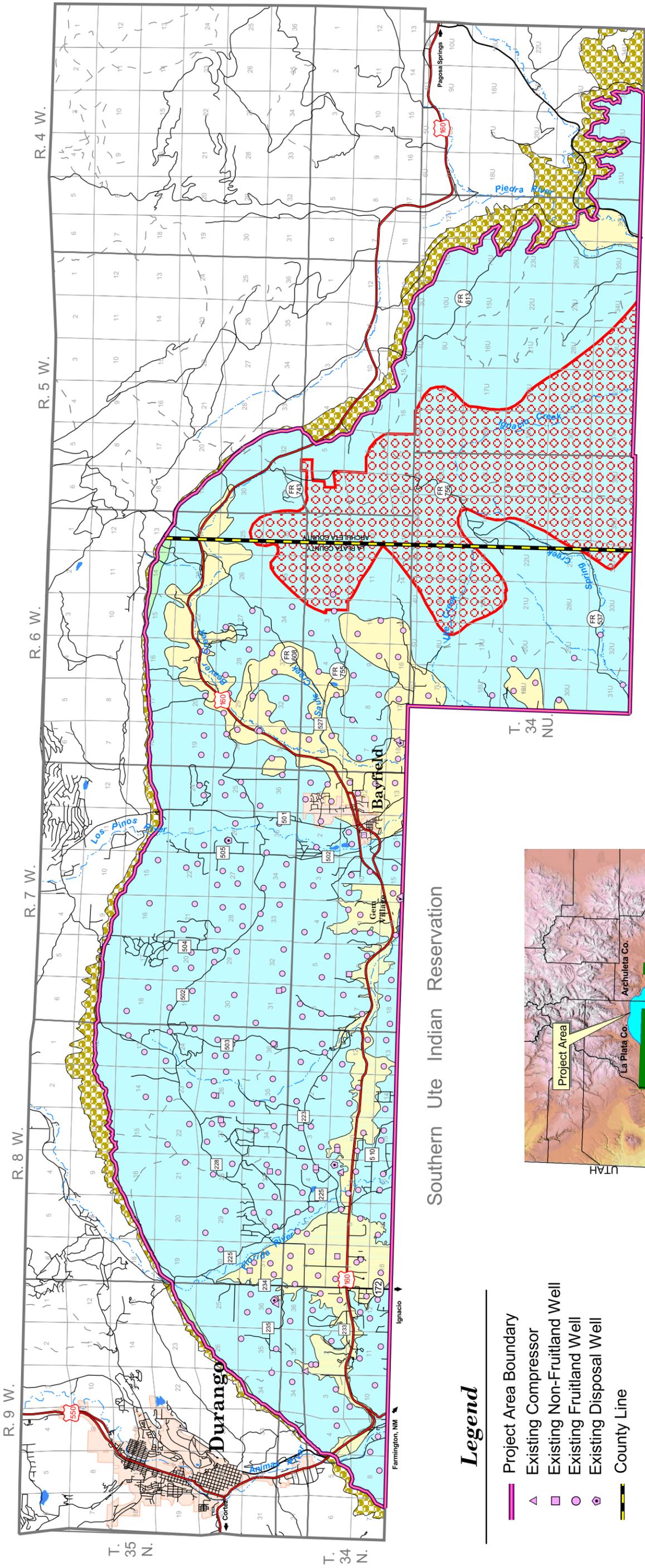
Distance and screening profiled by topography are two aspects considered in evaluating the landscape viewshed. Three sensitivity levels are employed, each identifying a different level of user concern for the visual environment. They include:

- Level 1 – High Sensitivity
- Level 2 – Average Sensitivity
- Level 3 – Low Sensitivity

Areas with a high degree of sensitivity are scenic byways or major areas of interest in national parks, wilderness or recreation areas, historic sites, or botanical sites. Low-sensitivity areas are often set aside primarily for administrative uses. Additionally, the level of concern, duration, and volume of use are also factors in assigning sensitivity. For instance, people who have “major concern” may be driving for pleasure, hiking scenic trails, or camping in primary use areas, whereas those with “minor concern” may express aesthetic concern involved with daily commuted driving (Handbook 462, FS undated).

The degree of sensitivity to the visual environment is extremely difficult to quantify, as it is a matter of personal preference. Sensitivity levels are assigned primarily by considering the viewpoint of visitors, as opposed to permanent residents, who are traveling through the forest on developed roads and trails; are using areas such as campgrounds and visitor centers, or are recreating at lakes, streams, and other water bodies (Handbook 462, FS undated). However, based on the urban interface for residents near federal lands, the affected environment attempts to incorporate the level of importance for both residents and visitors.

Sensitive viewpoints were identified within three representative categories of land use, consisting of recreation/open space, transportation corridors, and residential (shown in **Figure 3-15**). In addition, dispersed residential areas, which the counties generally define as agricultural areas, will also be included as a land use designation. These sensitive viewpoints were identified as representative visual and noise receptors within each land use category through discussions with La Plata County planners. Polygons that depict representative land use areas were digitized on a topographical map. As shown in **Figure 3-15**, the polygons indicate sensitive receptors where representative photographs of existing oil and gas development were taken in different distance zones.

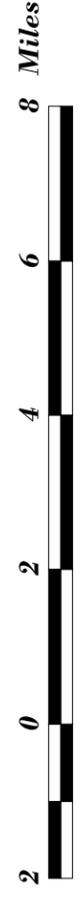
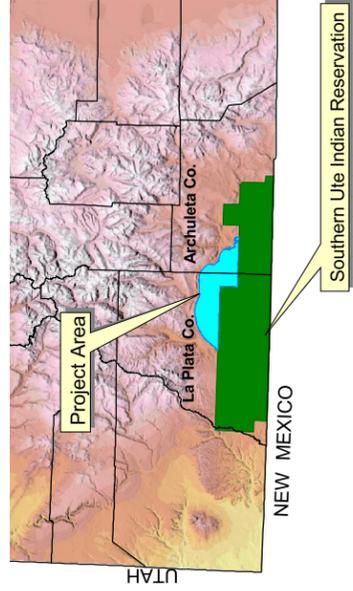


Southern Ute Indian Reservation

Legend

- Project Area Boundary
- Existing Compressor
- Existing Non-Fruitland Well
- Existing Fruitland Well
- Existing Disposal Well
- County Line
- U.S. Highway
- Primary Road
- Secondary Road
- Trail
- Lake/Reservoir
- Stream/River
- Municipal Area
- Fruitland Formation Outcrop
- Proposed HD Mountain Roadless Area

- Visual Variety Class (Using USFS VMS)
- Class A - Distinctive
 - Class B - Common
 - Class C - Minimal



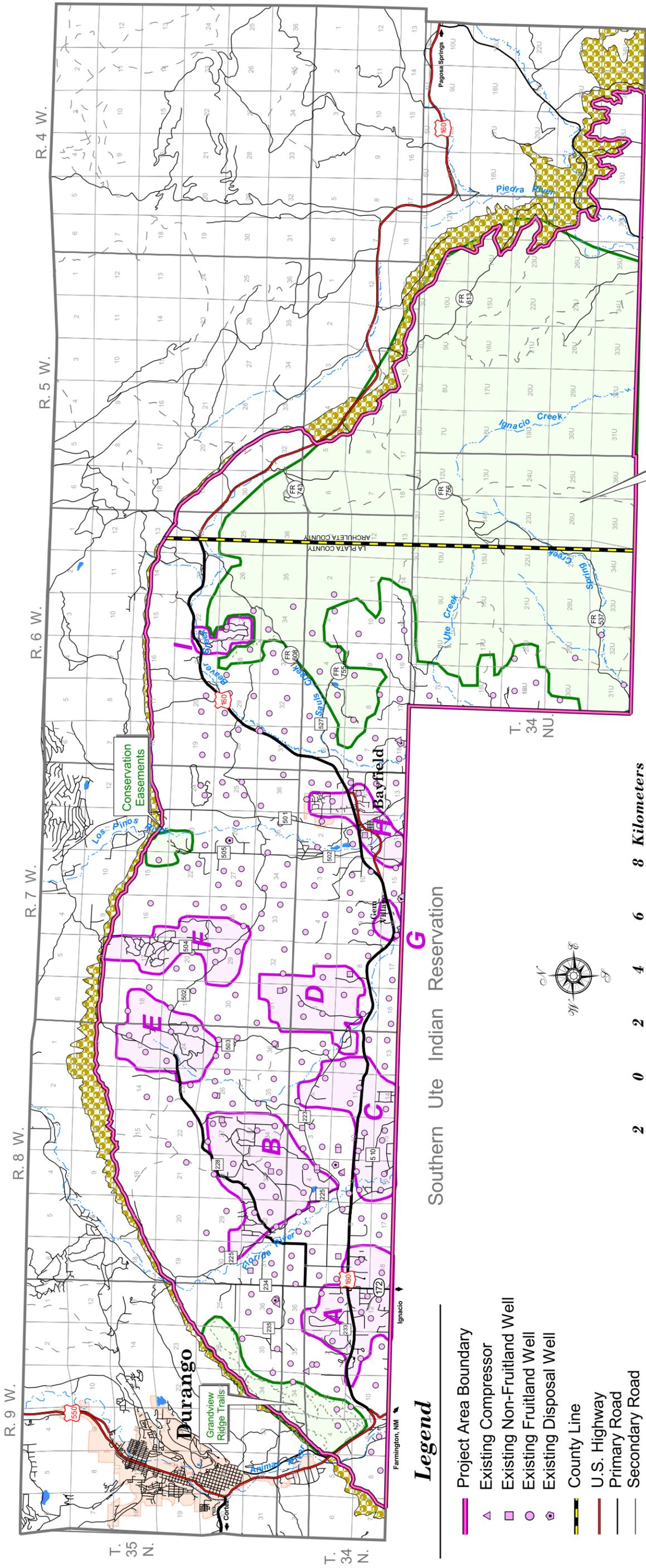
La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data.

Existing wells extracted from COGCC well database, and edited by the BLM & USFS.

Scenic attractiveness data provide by the USFS.

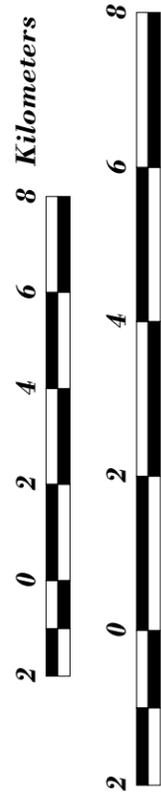
Transverse Mercator Projection
1927 North American Datum
Zone 13

LA PLATA COUNTY IMPACT REPORT	
FIGURE 3-14	
SCENIC QUALITY	
ANALYSIS AREA:	LA PLATA & ARCHULETA COUNTIES, COLORADO
Date:	06/15/02
ArcView File:	C:\994-sam\jan\CFR.apr
Prepared By:	JG

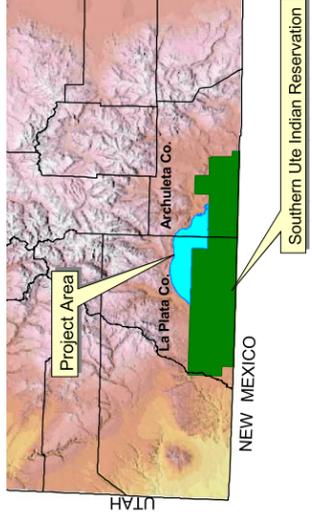


Legend

- Project Area Boundary
- ▲ Existing Compressor
- Existing Non-Fruitland Well
- Existing Fruitland Well
- Existing Disposal Well
- County Line
- U.S. Highway
- Primary Road
- Secondary Road
- Trail
- Lake/Reservoir
- Stream/River
- Municipal Area
- Fruitland Formation Outcrop
- Residential Land Use
- Recreation/Open Area



GENERAL LAND USE CATEGORIES	IDENTIFIED REPRESENTATIVE RECEPTOR AREAS FOR VISUAL AND NOISE ANALYSIS			
	RESIDENTIAL Subdivisions High Density	TRANSPORTATION Major Arterial	RECREATION/OPEN SPACE High Use Area	OTHER LAND USE DESIGNATIONS Special Facilities
24 Hour Noise Thresholds	H	H-WY-150	Transverse Ridge	E
Scenic Views/Views Score				
Fruitland	H	H-WY-150	Transverse Ridge	E
Midground	H	H-WY-150	Transverse Ridge	E
Background	H	H-WY-150	Transverse Ridge	E



La Plata County transportation data provided by the La Plata County Transportation Study, 1998. Hydrologic and Archuleta County transportation features extracted from 1:100,000 USGS SDTS data.

Existing wells extracted from COGCC well database. Land use categories developed through discussions with the BLM and USFS.

*Transverse Mercator Projection
1927 North American Datum
Zone 13*

LA PLATA COUNTY IMPACT REPORT

FIGURE 3-15

REPRESENTATIVE RECEPTORS FOR VISUALS & NOISE ANALYSIS

ANALYSIS AREA: LA PLATA & ARCHULETA COUNTIES, COLORADO

Date: 06/15/02

ArcView File: C:\994-sanjuan\CIR.apr

Prepared By: JG