

In accordance with CEQ regulations for implementing NEPA codified in 40 CFR 1502.15, the Affected Environment sections discuss the existing conditions of the human and natural environment that could be impacted, beneficially or adversely, by the proposed alternatives. Baseline data were collected by reviewing existing documentation, consulting with various individuals and agencies, and conducting field inventories for some of the resources.

3.1 LAND USE

Most of the land within the project corridor is classified as agricultural or rural residential. Concentrations of higher density, mixed development exist in three general locations: Grandview, particularly on US 160 from the CR 232 (west) intersection to the SH 172/CR 234 intersection, Gem Village, and Bayfield.

Although most of the land along the corridor is privately owned, the ROW does pass through approximately 2.0 miles of land administered by the BLM. This BLM land is located in two separate locations: one 0.25-mile section is located in Grandview; and the second 1.75-mile section is located approximately 5.0 miles west of Bayfield and extends west along the ROW (Figure 3.1.1, BLM Parcels). The Grandview property is classified by the BLM as “disposal” property that may pass out of federal ownership through sale, exchange, or similar conveyance.

The BLM manages these lands according to the guidelines contained in the *San Juan/San Miguel Resource Management Plan* (BLM 1985) and the *Grandview Ridge Coordinated Resource Management Plan* (BLM 2000). These lands are primarily used for grazing; however, there are also several ROWs, including the US 160 ROW, which the BLM granted to CDOT for construction of US 160 (BLM authorization COC 02801). The current US 160 ROW on BLM lands measures 300 feet in total width.

3.1.1 Land Use Plans

Local land use plans and development trends could potentially affect the future growth and use of land along the US 160 project corridor. Future land use plans are used to provide a baseline from which impacts from the project can be determined.

La Plata County completed and adopted land use plans for planning districts within the county (see Figure 3.1.2, La Plata County Planning Districts). The *Florida Mesa District Land Use Plan* (La Plata County 1998) covers the area along the western half of the highway corridor, and the *Bayfield District Land Use Plan* (La Plata County 1997) addresses future land use along the eastern half. The *Florida Road District Land Use Plan* (La Plata County 1996a) and the *Vallecito District Land Use Plan* (La Plata County 1996b), both of which cover an area north of the highway corridor, and the Southeast La Plata District, south of the highway corridor, are included in the analysis because land uses in these areas affect traffic volumes within the highway corridor. To date, La Plata County has not prepared a district land use plan for the Southeast La Plata District.

These land use plans specify land use categories for each planning district such as mixed use, office/light commercial, and agricultural/rural residential. Defined within each of these categories are the allowable land uses such as retail businesses, mobile home parks, single-family or multi-family residences, warehouses and schools, as well as residential density

restrictions. La Plata County has prepared a comprehensive plan, which was adopted in December 2001 that links the various district plans together to form a countywide perspective.

3.1.1.1 Land Use in La Plata County

The population of La Plata County has increased substantially from 1980 to 2000, resulting in additional residential and commercial development. The 2000 US Census recorded a population of 43,941, compared to 32,284 for the 1990 US Census and 27,195 for the 1980 US Census. The average annual rate of growth from 1990 to 2000 was 3.6 percent; the average annual growth rate from 1980 to 2000 was 3.1 percent. According to the CDS (CDS 2005), this robust growth rate is expected to slow slightly, with La Plata County's population projected to increase to 68,156 by 2020 and to 74,464 by 2025, resulting in an annual average growth rate of about 2.8 percent. However, if the growth that occurred during the 1990s were to continue for an additional 20 years, the population of La Plata County would grow to more than 78,000 by 2020.

Although some of the increased population would probably be housed in subdivisions not yet created, many new residences would be built on existing lots that have already been subdivided or would be built on vacant agricultural parcels. La Plata County has a large inventory of such parcels – approximately 10,300, which should be more than enough to accommodate CDS - projected population growth through 2020. Approximately 8,000 vacant lots are located within existing subdivisions. If a single-family residence, with an average household size of 2.5 people, were built on each of these parcels, nearly 26,000 people could be accommodated.

Community expansion throughout La Plata County would be influenced by recent development trends; land use plans of eight planning districts (four of which are located in eastern La Plata County), and development proposals currently in the discussion and approval phases. As part of the analysis performed for the *La Plata County Comprehensive County Traffic Study 1999* (La Plata County 1999), projected population growth through 2020 was allocated throughout the county to several hundred road segments. A “most probable” scenario for number of housing units and population in 2020 on each road segment was developed based on residential densities allowed by district plans, recent development trends, proposals for new development, and an analysis of build-out potential on parcels that access each road segment. Table 3.1.1, *Distribution of La Plata County Housing Units and Population by Planning District – 1997 and 2020*, summarizes the projected distribution of La Plata County housing units and population in 2020 by planning district. The numbers have been adjusted slightly from the *La Plata Comprehensive County Traffic Study 1999* (La Plata County 1999) figures based on recent development proposals and revised CDS projections.

**Table 3.1.1
Distribution of La Plata County Housing Units
and Population by Planning District – 1997 and 2020**

Planning District	1997		2020	
	# Housing Units ¹	Population ²	# Housing Units	Population ³
Florida Road	1,038	2,512	1,875	4,349
Florida Mesa	1,995	5,985	4,754	11,030
Bayfield	1,612	4,336	4,068	10,251
Vallecito	183	492	309	778
Southeast La Plata	1,203	3,609	2,392	6,602
Durango	6,395	15,476	9,288	21,549
Subtotal for Districts in project vicinity	12,426	32,410	22,686	54,559
Animas Valley	1,831	4,431	2,833	6,573
Junction Creek	249	603	406	941
West Durango	978	2,367	1,725	4,002
Fort Lewis Mesa	485	1,377	794	2,081
COUNTY TOTALS	15,969	41,188	28,444	68,156

¹ Existing number of residential structures based on assessor’s data and/or field counts.

² Number of persons per household based on 1990 US Census: 2.42 for Durango Division (includes part of the Durango, Florida Road, Florida Mesa, and Southeast La Plata Planning Districts), 2.84 for Durango Southwest Division (includes parts of the Florida Mesa and Southeast La Plata Planning Districts), 2.69 for Bayfield Division (includes parts of the Florida Mesa, Bayfield, town of Bayfield, and Southeast La Plata Planning Districts), and 3.0 for Ignacio Division (includes parts of the Florida Mesa, Bayfield, and Southeast La Plata Planning Districts).

³ Number of persons per household based on 2000 US Census: 2.32 for Durango Division, 2.62 for Durango Southwest Division, 2.52 for Bayfield Division, and 2.76 for Ignacio Division.

Number

Future commercial growth is projected to occur within or adjacent to the three municipalities – Durango, Bayfield, and Ignacio – with the exception of continued development near the Durango-La Plata County Airport. Urbanizing areas adjacent to these communities, including the Grandview area, are likely to be annexed by these municipalities as new commercial and higher density residential development occurs. As described in more detail in Section 3.1.2, Land Use Plans Within and Adjacent to the Highway Corridor, the area in the vicinity of Mercy Medical Center in Grandview was annexed by the City of Durango in 2004. A 70-acre parcel adjacent to Ignacio, the site of proposed new residential development, was annexed by the town of Ignacio in 2004. Also, new commercial and residential development was annexed by the town of Bayfield during the past several years. The present mix of economic sectors, dominated by the retail trade and service sectors, is expected to remain relatively stable during the next 20 years. Coalbed methane extraction is included in the present mix of economic sectors and is discussed in more detail in Section 3.3, Socioeconomics. New square footage for commercial development is likely to expand in proportion to increased population, as well.

3.1.2 Land Use Plans Within and Adjacent to the Highway Corridor

The City of Durango adopted the *Grandview Area Plan* in 2004 (City of Durango 2004). The plan, begun in 2001, was revised several times; most notably to reflect plans of the Southern Ute Tribe Growth Fund, which purchased several large parcels in 2002. The Southern Ute Tribe Growth Fund donated land to relocate Mercy Medical Center. Hospital construction is underway as of March 2005 and the center is scheduled to open by summer 2006. The City of Durango annexed the area in the vicinity of the new hospital in 2004.

The *Grandview Area Plan* calls for the following land use elements:

- 5,467 dwelling units, including 1,127 low density, 3,416 medium density/multi-use, and 924 mixed use
- 233 acres of multi-use/mixed use
- 111 acres of mixed commercial/light industrial
- 130 acres of commercial
- 154 acres of public facilities/schools/hospital
- 327 acres for parks/open space/conservation

In January 2004, the City of Durango adopted an area plan for Ewing Mesa, a large tract of undeveloped land about 1 mile north of the US 160/US 550 (south) intersection. The area plan was prompted by a proposal from the existing landowner to build 1,725 housing units on 1,125 acres over the next 20 years. The proposed development would also include a 27-hole golf course, and commercial and medical facilities.

In another project, La Plata County is considering developing a rural water system that would serve much of eastern La Plata County with potable water, which would be piped from Vallecito Reservoir. The US 160 project corridor east to Bayfield is part of the proposed service area. The City of Durango has already made commitments to provide water to the hospital area.

As delineated in the *Florida Mesa District Land Use Plan* (La Plata County 1998), a suburban density residential area with a maximum density of two units per acre, extends about 1.0 mile east of the SH 172/CR 234 intersection with US 160. From this location east to Gem Village, the majority of the land is classified as agricultural/rural residential with a density of 10 to 20 acres per unit, except for an area classified as suburban density residential on the south side of US 160 near the Florida River.

A proposal for a 584-unit residential development about 1.0 mile east of the Florida River on the north side of US 160 has been presented to the La Plata County Planning Department staff. Before this project can proceed through the county planning process, the *Florida Mesa District Land Use Plan* (La Plata County 1998) must be amended to allow a higher residential density in this area. The La Plata County Planning Commission has approved a change to the text of the district plan that would allow a higher density sufficient to accommodate this proposed development.

Gem Village is classified as mixed use, as is a small area at the US 160/US 160B (west) intersection. Between these two mixed-use areas, the land is classified as suburban density residential and perimeter residential, a category that applies to current mixed residential and rural

areas near the service area of the town of Bayfield. Allowable density within the perimeter residential classification is one unit per 5 to 35 acres.

Between the US 160/US 160B (west) intersection and the US 160/CR 501 intersection, the land south of the highway is classified as suburban density residential or perimeter residential. The area north of the highway is designated as agricultural residential, which, according to the *Bayfield District Land Use Plan* (La Plata County 1997), has an allowable density of 10 to 35 acres per unit. The area from the US 160/CR 501 intersection to the eastern end of the project corridor is mostly within the town of Bayfield, and the area adjacent to the highway corridor is classified as mixed-use, commercial, or medium density residential.

The town of Bayfield has grown on the north side of US 160 since the present highway alignment bypassed downtown Bayfield in the 1960s. Most future residential and commercial growth is likely to occur on the north side, thereby continuing to divide the town into two sections. A new business park, the Bayfield Center, opened in 2002, north of US 160 on the east side of CR 501. Some businesses located in the vicinity of Colorado Drive and North Mountain View Drive plan to relocate at Bayfield Center. The *Town of Bayfield Pedestrian and Bicyclist Connections Master Plan* (BRW 1998) proposes future trail connections between the north and south sides of the highway.

Other land use plans that could have an impact on traffic on US 160 in the project area include the *Florida Road District Land Use Plan* (La Plata County 1996a) and the *Vallecito District Land Use Plan* (La Plata County 1996b), both of which cover an area north of the project corridor. Most of the residential densities specified in these plans are rural low densities, with the exception of the area north of Vallecito Reservoir, which is served by central water and sewer. Much of this area has been developed, but there is a proposal for additional resort-type development on a large vacant parcel.

Future growth within these two planning districts is not likely to have a great impact in this project corridor relative to expected traffic increases from other locations. Major shopping and cultural destinations will continue to be located in Durango and Bayfield, at the western and eastern ends, respectively, of the project corridor. Most traffic originating in these two planning districts will funnel to Durango on CR 240 and to Bayfield via CR 501. These routes will also be used for destinations west and east of the project corridor on US 160. However, the relocated Mercy Medical Center and new commercial and residential development in the Grandview area could increase traffic from the north via CR 234.

The BLM lands in the project corridor are managed in accordance with the San Juan/San Miguel Resource Management Plan (BLM 1985) and the Grandview Ridge Coordinated Resource Management Plan (BLM 2000). In general, the San Juan/San Miguel Resource Management Plan seeks to balance competing demands in the San Juan and Uncompahgre Basin Resource Areas by providing goods and services while protecting important and sensitive environmental values. It provides guidelines for managing:

- Grazing allotments, such as the Mahan Allotment located on the BLM lands in the Dry Creek and Gem Village section
- Wildlife habitat, with specific goals for deer, elk, and pronghorn antelope
- Threatened and endangered species
- Aquatic and riparian habitat

- Wilderness areas, special recreation management areas, and cultural resources considering areas of critical environmental concern
- Oil and gas leasing
- Land disposal
- Timber extraction
- Water quality
- Off-road vehicle use

The Grandview Ridge Coordinated Resource Management Plan (BLM 2000) was developed for a 1,600-acre parcel of land known as Grandview Ridge (also known as Ewing Mesa) located near the city of Durango. This plan was developed by the BLM in response to growing demands for recreational opportunities, as well as mineral and oil and gas development in this area. These demands are being fueled by population growth and residential development in the area that surrounds Grandview Ridge. The plan seeks to provide the BLM with an approach for managing the resources on these lands to prevent irreversible environmental, social, and cultural impacts. It provides guidelines for managing:

- Wildlife and wildlife habitat, with specific goals for deer and elk winter range
- Sand and gravel resources
- Oil and gas resources
- Recreation, including development of trails and impacts of motorized and off-highway vehicles
- Livestock grazing, which is prohibited
- Land disposal/exchange
- Cultural resources

3.2 FARMLAND

The Natural Resources Conservation Service (NRCS) has established four different classifications of farmlands: prime farmland, unique farmland, and farmlands of statewide or local importance. Of these, only prime farmland and farmlands of statewide importance occur within the study area.

Prime farmland is defined as:

“...land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a

favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks" (CEQ 2005).

Farmland of statewide importance is defined as:

“...land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable” (CEQ 2005).

Irrigated farmland within the project corridor is classified as farmland of statewide importance.

The Farmland Protection Policy Act (FPPA) of 1981, as amended, was intended to minimize the extent to which federal activities contribute to the conversion of agricultural land to non-agricultural uses. The FPPA also stipulates that federal programs be compatible with state and local efforts to protect farmland. The NRCS is the coordinating agency for the FPPA. The US 160 highway improvement project would be partially funded from federal dollars, which makes it a federal activity subject to FPPA.

NRCS uses a land evaluation and site assessment system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level.

The assessment is completed on form AD-1006, Farmland Conversion Impact Rating. The sponsoring agency completes the site assessment portion of the AD-1006, which assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural use. Form AD-1006 was completed for the US 160 project and sent to the NRCS office in Durango on July 14, 2003, for certification (see Appendix F, Form AD-1006). The NRCS re-certified form AD-1006 on March 15, 2005 (Lynn 2005a).

The NRCS map identifies one area of prime farmland (1.7 acres) within the project corridor. It is located in the Bayfield section on the north side of US 160, starting at the US 160/CR 501 intersection in Bayfield and extending east for approximately 2,500 feet. Some of this land has already been converted to urban/residential use, and all of it has been subdivided for future development.

La Plata County has 339,831 acres of irrigated cropland and pasture (NRCS 2001). Irrigated farmland exists in several locations throughout the project corridor. In the Grandview section, irrigated farmland is found on top of Farmington Hill and on the east side of the SH 172/CR 234 intersection with US 160. The Florida Mesa and Valley section has the largest amount of irrigated farmland in the project corridor. Irrigated farmland exists on both sides of US 160 from the SH 172/CR 234 intersection east to the crest of the hill leading down to the Florida River valley. Farmland in the Florida River valley is no longer irrigated within the project corridor. In the Dry Creek and Gem Village section, irrigated farmland exists in scattered locations along Dry Creek, east of the Florida River to Gem Village, and on the south side of Gem Village. As

the corridor continues east toward the Los Pinos River and the town of Bayfield, irrigated farmland exists in scattered locations along US 160 to the end of the project east of Bayfield.

3.3 SOCIOECONOMICS

This section addresses the socioeconomic analysis conducted to evaluate social and economic impacts as a result of the proposed project. For purposes of the socioeconomic analysis, the region of influence is La Plata County and includes the following special districts: Durango School District, Bayfield School District, South Durango Sanitation District, Loma Linda Sanitation District, Bayfield Sanitation District, Southwest Water Conservancy, Florida Water Conservancy, Animas Fire Prevention, Florida Mosquito Control, Upper Pine River Fire District, Pine River Library, and Pine River Cemetery.

3.3.1 Social Resources

The 2000 US Census recorded a population of 43,941 in La Plata County, and CDS projects that La Plata County's population would increase to 68,156 in 2020 (CDS 2005). According to the 2000 US Census, Caucasians constituted 87.3 percent of the La Plata County population, American Indian and Alaskan Native accounted for 5.8 percent, African American accounted for 0.3 percent, Asian accounted for 0.4 percent, Native Hawaiian and Other Pacific Islander accounted for 0.1 percent, "other" race accounted for 3.9 percent, and two or more "other" races accounted for 2.3 percent. Persons of Hispanic origin (of any race) accounted for 10.4 percent of the population. (Census numbers may not add up to 100 percent because, according to the US Census Bureau, Hispanic origin is not a race, and persons of Hispanic origin may be of any race.)

CDS (2005) estimated there were 19,768 housing units in La Plata County in 1997, including seasonal units. As indicated in Table 3.1.1, Distribution of La Plata County Housing Units and Population by Planning District – 1997 and 2020, there were 15,969 housing units with year-round occupants in 1997, and the average household size was 2.53 persons for units occupied year-round. According to the 2000 US Census, there were 20,765 housing units in La Plata County, of which 13,021 (62.7 percent) were conventional single-family units; 3,444 (16.6 percent) were mobile homes; 4,128 (19.9 percent) were housing units located in multi-family structures; and 172 (0.8 percent) were boats, recreational vehicles, or vans.

Year-round housing units in La Plata County are expected to total nearly 28,500 by 2020, reflecting projected population growth (Table 3.1.1, Distribution of La Plata County Housing Units and Population Planning District – 1997 and 2020). However, the number of new seasonal housing units will probably increase more dramatically, reflecting a national trend whereby retirees purchase second homes in areas with scenic and recreational amenities. If the proposed 584-unit residential development approximately 1.0 mile east of the Florida River, which would include a golf course, is approved and built, many of the units would likely serve as second homes. Likewise, a proposed major expansion of housing at Durango Mountain Resort (Purgatory Ski Area) is targeted toward attracting new seasonal residents.

There are also various overlapping service and taxation districts within the US 160 project corridor. La Plata County collects taxes for three funds throughout the county: general, road and bridge, and social services. The Durango School District covers the western part of the corridor, extending east to approximately the 35000 block of US 160 and the Bayfield School District

covers the eastern part of the corridor. The South Durango Sanitation District provides sewer service in the Grandview area, while the Loma Linda Sanitation District serves properties in the vicinity of the SH 172/CR 234 intersection with US 160. The Bayfield Sanitation District serves the area east of Gem Village. There are no central sewers between the SH 172/CR 234 intersection with US 160 and Gem Village.

Municipal water is provided to parcels at the eastern end of the highway corridor by the town of Bayfield. Drinking water sources for the town of Bayfield are: (1) an infiltration gallery in the Los Pinos River (approximately 1.0 mile upstream of US 160), and (2) an emergency intake located on Schroeder Ditch (approximately 3,300 feet upstream of US 160). The City of Durango would serve future annexed areas, which could eventually include the US 160 project corridor east to the vicinity of SH 172/CR 234 intersection. Other parts of the corridor could receive water from a rural water system under consideration by La Plata County, which has plans to serve much of eastern La Plata County. Other special districts serving properties along the highway corridor include Southwest Water Conservancy, Florida Water Conservancy, Animas Fire Prevention, Florida Mosquito Control, Upper Pine River Fire District, Pine River Library, and Pine River Cemetery.

There are three areas along the US 160 project corridor where the existing highway bisects communities: Grandview, Gem Village, and Bayfield. All other sections of the corridor are rural. Community cohesion for these communities is based on data from business owners, mobile home park owners, and the physical layout of the communities. Community cohesion of these communities is described below.

Grandview is a mix of single-family residences, mobile homes, mobile home parks, commercial and industrial uses, and vacant lots. All of these types of land uses exist on both sides of the highway. The heavily traveled highway, with a ROW generally between 250 and 300 feet wide, acts as a physical and psychological barrier between the north and south sides of US 160. With present traffic volumes, particularly during peak periods, it is difficult, even dangerous, to cross the highway on foot or in a vehicle. Grandview, which is currently part of unincorporated La Plata County, does not have any schools, facilities, or social gathering locations that provide a cohesive bond between the north and south sides of the highway.

Construction in 2005 of an additional westbound lane as well as a continuous center turn lane on US 160 in Grandview will not change this situation, as the additional eastbound lane and traffic using the turn lane will make crossing the highway even more difficult. The signalization of the US 160/CR 233 (west) intersection, also constructed in 2005, will offer vehicles and pedestrians a US 160 crossing in Grandview. However, the majority of the future residential and commercial development in Grandview will occur north of US 160. The current limited connectivity of residential accesses south of US 160 directly to CR 233 will require up to a mile of out-of-direction travel to cross US 160. These two factors make it unlikely that the signalized intersection will increase Grandview community cohesion.

The *Grandview Area Plan* provides for various public facilities, including schools, a hospital, and parks and trails. It is possible that a more coherent community will evolve, even with a major highway bisecting Grandview. It is likely that the city of Durango will annex all or most of Grandview within the next 5 to 10 years. The area in the vicinity of the new Mercy Medical Center was annexed in 2004.

By contrast, Gem Village has more of a “downtown” feel, including a saloon, a country store, and a farm equipment dealer. The roadway is narrower here than in Grandview, as it is two lanes wide, with frontage roads on the north and south sides included in the highway ROW. The posted speed limit decreases to 50 mph through the 0.5-mile-long community, and small lots line the frontage roads, occupied by a mix of single-family residences, retail establishments, service garages, offices, and storage facilities. Because of social gathering locations such as the saloon and the country store, which provide a connection between residences north and south of the highway, Gem Village is considered to be a cohesive community.

Located less than 2.0 miles west of downtown Bayfield, Gem Village has closer links with Bayfield than with Durango. Although the planning area defined in the *Town of Bayfield Comprehensive Plan 1996* (Vandergrift et al. 1996) does not include Gem Village, the town of Bayfield has proposed to La Plata County that Bayfield’s growth boundary be extended to include Gem Village. It is possible that the town of Bayfield could annex Gem Village within the 20-year planning period for the US 160 improvements, thus making existing ties between the two communities more formal.

Although US 160 forms a formidable physical and visual barrier between the north and south sides of the town of Bayfield, there are numerous facilities and institutions that bind the community together. Schools, parks, and churches are located on both sides of town. Downtown Bayfield, situated south of the highway, with the town hall, restaurants, shops, and offices, frequently draws residents of newer sections of Bayfield located north of US 160, according to comments received at public meetings. Likewise, the supermarket, bank, library, and retail establishments along the frontage road north of US 160 attract residents from the south side. The new business park on CR 501 north of US 160 also attracts residents who live south of US 160.

The *1996 Comprehensive Plan* (Vandergrift et al. 1996) recognizes that improving physical linkages between the north and south sides of town would enhance community cohesion. The plan recommends an underpass near Eight Corners, and the *Town of Bayfield Pedestrian and Bicyclist Connections Master Plan* (BRW 1998) identifies future trail connections between the north and south sides of the highway at CR 501 and Mountain View Drive. At the latter site, the plan calls for a 10-foot-wide concrete path under US 160.

Demographic data from the 2000 US Census, as well as personal interviews, provided information on ethnicity, income, and other characteristics of the population likely to be directly affected by US 160 improvements. Owners of mobile home parks that would be affected by one or more alternatives were interviewed in February 2003 to determine the approximate number of tenants that are members of minority groups, low income, or who have special needs.

Businesses that would not be relocated may experience indirect impacts caused by changed access and visibility from the highway. To obtain data related to indirect impacts, a questionnaire was developed and numerous businesses along the highway corridor were interviewed.

To acquire additional socioeconomic data, several public agencies and nonprofit organizations were contacted, including La Plata County Planning Department; La Plata County Department of Social Services; Community Connections, Inc.; the Durango Opportunity Bus; and the Region 9 Economic Development District of Southwest Colorado, Inc. (REDDSC). Data provided by these entities are summarized below:

- The US Census and the state of Colorado provided data on minority populations and low-income households.
- The clients of the La Plata County Department of Social Services include individuals on food stamps, the elderly, day care centers, and low-income people in transition from welfare to work. Approximately 23 of the department’s clients live in the vicinity of proposed highway improvements.
- Community Connections, Inc. provides services to individuals with special needs, including the mentally handicapped. However, none of this organization’s clients live in the project corridor.
- The Durango Opportunity Bus provides service to individuals who are eligible under the ADA. Two Opportunity Bus clients live within the project corridor.
- The REDDSC Executive Director was unaware of any minority businesses located in the Grandview or Gem Village areas.

CDOT has held meetings with local communities, including specific meetings with the Narrow Gauge and Cropley mobile home park residents, the Florida River Farms Homeowners Association, and the Florida Mesa Planning District. These outreach efforts, including those in Spanish, have provided information on community issues. More information on these efforts can be found in Section 3.3.3.3, Community Outreach.

3.3.2 Economic Resources

According to CDS, estimated per capita income in La Plata County in 2000 was \$26,517 compared to \$32,434 for the state of Colorado (2005). According to the 2000 US Census, 11.7 percent of La Plata County’s population was below the poverty level, compared to 9.3 percent for the state of Colorado. Estimated employment in La Plata County in 2000 was 30,697; while the county’s unemployment rate was 3.76 percent (Colorado Department of Labor and Employment 2003). The number of individuals employed by economic sector in La Plata County in 2000, according to the Colorado Department of Labor and Employment, is shown in Table 3.3.1, La Plata County Labor by Economic Sector – 2000.

**Table 3.3.1
La Plata County Labor by Economic Sector – 2000**

Economic Sector	Number of Employees
Agricultural products and services	1,544
Construction	3,226
Finance, insurance, and real estate	1,917
Government	3,907
Manufacturing	1,016
Mining (including oil and gas)	320
Services	10,632
Transportation, communications, and utilities	954
Wholesale and retail	6,971

**Table 3.3.1
La Plata County Labor by Economic Sector – 2000**

Economic Sector	Number of Employees
Other	210
TOTAL	30,697

Source: Colorado Department of Labor and Employment 2003.

According to CDS (2005), total revenue received by La Plata County in 2000 was \$36,206,324, which included \$9,948,011 in property tax revenue, and \$9,403,815 in sales and use tax revenue. Total taxable assessed value was \$1,163,142,000.

According to the Chamber of Commerce, tourism is likely to continue as the dominant economic force during the next 20 years, with retail and service sectors providing the majority of the employment (Maynard 2003). Although coal bed methane extraction contributes significant property tax revenues to La Plata County – approximately 48 percent in 2004 (La Plata County 2004) – the number of employees engaged in this activity is small compared to the retail and service sectors. According to the Colorado Department of Labor and Employment, the number of employees engaged in oil and gas extraction in La Plata County during the third quarter of 2004 (the latest data available) totaled only 197 (Colorado Department of Labor and Employment 2005).

With projected community expansion and increased tourism, highways with adequate capacity are needed to support sustained economic growth. Without improvements to the major transportation arteries, including US 160, traffic congestion could reduce La Plata County’s attractiveness as a tourist destination.

3.3.3 Environmental Justice

Environmental Justice (EJ) is a term used to describe the process that was followed to determine whether minority and/or low-income populations might experience disproportionately high and adverse impacts by the proposed improvements to US 160.

3.3.3.1 Protection of Minority and Low-income Populations

On February 11, 1994, President Clinton signed Executive Order (EO) 12898, “Federal Actions to Address Environmental Justice to Minority and Low Income Populations.” The EO focuses federal attention on the environmental and human health conditions of minority and low-income populations, promotes nondiscrimination in federal programs affecting human health and the environment, and provides minority and low-income populations access and opportunity to participate in matters relating to the environment. The EO requires that each federal agency shall, to the greatest extent allowed by law, administer and implement its program, policies, and activities that affect human health or the environment as to identify and avoid disproportionately high and adverse effects on minority and low-income populations. The DOT issued an order in 1997 (US DOT Order 5610.02), followed by the FHWA in 1998 (FHWA Order 6640.23). Both these orders relate directly to addressing EJ activities and responsibilities for transportation projects. Minority and low-income populations are defined as follows:

- **Minority** refers to persons who are Black (having origins in any of the black racial group of Africa or African American); Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); Asian (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or Native American Indian and Alaskan (having origins in any of the original people of North America maintaining cultural identification through tribal affiliation or community recognition).
- **Low-income** refers to household income at or below the Department of Health and Human Services (HHS) poverty guidelines. FHWA guidance allows for adopting a higher threshold for low-income as long as the higher threshold is not selectively implemented and is inclusive of all persons at or below the HHS poverty guidelines. In Colorado the Community Development Block Grant (CDBG) thresholds are typically used to identify low-income populations because it is generally more inclusive than HHS values. As of 2005, the HHS guideline for a family of four is currently \$19,950. The 2000 CDBG threshold used for this project ranges from \$20,080 to \$32,367 at the county level; it is calculated based on 50 percent of the area median income (AMI) for very low-income households, and 80 percent for low-income households, which are standard indicators for families eligible for federal/state housing assistance.

The three fundamental principles of Environmental Justice are: 1) to avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations; 2) to ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and 3) to prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

3.3.3.2 Methodology for Identifying Minority and Low-Income Populations

Year 2000 US Census data were used to obtain minority population information, and the 2000 CDBG threshold was used to identify people at low-income levels in the project corridor. Use of 2000 CDBG data (instead of 2005) provided greater consistency for identifying low-income populations based on the use of the most recent census data (2000). Demographic data from the 2000 US Census were supplemented by interviews to describe the ethnic, income, and other characteristics of the population likely to be directly affected by proposed US 160 improvements. Public agencies and nonprofit organizations were contacted, including the La Plata County Planning Department, La Plata County Department of Social Services, Meals on Wheels, Habitat for Humanity of La Plata County, the REDDSC, Housing Solutions of the Southwest, and Community Connections, Inc. Interviews of the mobile home park owners in the US 160 corridor were held in 2003 with an update of information in 2005 to gather specific information about the character of the mobile home parks. Additional information from the mobile home park owners included data on vacancies, rental rates and the ability of these facilities to absorb residences that may be displaced by highway improvements. The project team also performed an observational and written survey of businesses along the project corridor to attempt to confirm collected data. This information is considered to be an estimate, as individuals and households may move, and income status may change. Data used in this analysis were based on census data, county records, and estimates provided by mobile park owners.

Agency contacts and information collected at public meetings revealed that the most densely populated neighborhoods along the project corridor where people would most likely be affected by the project were the mobile home parks within the study area of the US 160 corridor. Because the census data are analyzed in blocks larger than the project corridor, CDOT focused on using the information provided by the above-mentioned sources. Individuals outside of mobile home parks that may be of minority and/or low-income status may also be impacted by the project, but specific data on these individuals were not available.

3.3.3.3 Community Outreach

CDOT initiated an outreach program for minority and low-income residents during project scoping and alternative development to ensure that residents had the opportunity to participate in the public process. Mobile home park owners and owners of small businesses, including minority-owned businesses, were surveyed about how the project could affect them. Bilingual flyers announcing the EIS scoping meeting in March 2003 were distributed door-to-door at the smaller mobile home parks and were posted in the mailbox area at the larger parks and at a nearby restaurant. The mailing list was updated to ensure all mobile home park residents were on the distribution list so they received all project information. In addition, there was a Spanish language interpreter at the scoping meeting.

At the March 2003 public meeting a request for a neighborhood meeting was made by a resident of a mobile home park and a subsequent meeting was held by CDOT on May 2, 2003, at the Narrow Gauge Mobile Home Park. Thirteen residents of Narrow Gauge and Cropley mobile home parks attended the meeting. In response to the input of residents from the Narrow Gauge and Cropley mobile home parks, sections along the alignment were re-designed to reduce impacts to these mobile home parks and improve their access. CDOT also met with residents in the Florida River Farms subdivision on May 29, 2003 to discuss concerns regarding improvements to the CR 222/223 (west) intersection with US 160. Eighteen residents attended this meeting. At this meeting, residents expressed concerns about the relocation of the CR 222/223 (west) intersection being close to their neighborhood, noise from the intersection, and wildlife collisions related to animal movement across US 160 along Florida River. The residents at this meeting expressed a strong preference for relocating the CR 222/223 (west) intersection to the east of Florida River. Input from citizens at this meeting influenced the preferred alternative, which relocates the CR 222/223 (west) to the east of Florida River and includes a wildlife crossing at the Florida River. In addition to these meetings, at least 11 other meetings were held with the public during the alternative development process. These general outreach efforts are described further in Chapter 6, Affected Environment.

3.3.3.4 Affected Environment

Minority Populations

The 2000 US census and other sources indicated that minorities reside within the US 160 corridor. Published census data, including at the census block level (some of which is suppressed at the block level by the Census Bureau to protect confidentiality) is inadequate to provide a profile of minority populations within the project corridor. Table 3.3.2, Racial Makeup Percentages in Colorado, La Plata County, and Census Blocks in the US 160 Project Corridor in

2000, presents the racial makeup of the state, county, and parts of La Plata County near the project corridor. Figure 3.3.1, Census Tracts and Block Groups, presents the boundaries of the census tracts associated with the project corridor.

**Table 3.3.2
Racial Makeup Percentages in Colorado, La Plata County, and
Census Blocks in the US 160 Project Corridor in 2000**

Race	State of Colorado	La Plata County	Block Group 2, Census Tract 9706	Block Group 3, Census Tract 9706	Block Group 4, Census Tract 9706	Block Group 4, Census Tract 9707.02
Caucasian	82.8	87.3	97.8	90.6	96.1	89.3
Hispanic origin	17.1	10.4	6.4	13.9	5.6	10.3
American Indian and Alaskan Native	1.0	5.8	1.0	2.0	0	2.0
Asian	2.2	0.4	0	0	0.6	0
African American	3.8	0.3	0	0.5	0	0
Native Hawaiian and Other Pacific Islander	0.1	0.1	0	0	0	0
Some other race	7.2	3.9	2.2	3.4	1.6	5.0
Two or more races	2.8	2.3	1.3	3.4	1.7	3.6

Source: Data from the 2000 US Census.

Note: The numbers do not add up to 100 percent because the US Census Bureau does not recognize Hispanic origin as a race, and persons of Hispanic origin can be of any race.

The data gathered for this project indicate members of minority groups occupied an estimated 34 percent of these mobile home park households. The countywide minority population is about 21 percent. (See also Table 3.3.4, Data for Mobile Home Parks Potentially Impacted by US 160 Improvements.)

Low-Income Populations

2000 census data and interviews were used to identify the income characteristics in the area. Published census data, including the census block level (some of which is suppressed at the block level by the Census Bureau to protect confidentiality) is not detailed enough to provide a profile of low-income populations within the project corridor. Table 3.3.3, Persons in Poverty and the Median Income in 2000, lists the percentages of people at or below the poverty threshold and the median income for the year 2000. These block groups were selected because they encompass areas that are partially or totally within the US 160 project corridor.

**Table 3.3.3
Persons in Poverty and the Median Income in 2000**

Location	Persons Below Poverty (%)	Median Household Income (\$)
State of Colorado	9.3	47,203
La Plata County	8.5	40,159
Block Group 2, Census Tract 9706	5.8	46,750
Block Group 3, Census Tract 9706	10.6	31,310
Block Group 4, Census Tract 9706	8.3	46,250
Block Group 4, Census Tract 9707.02	9.5	37,931

Source: Data from the 2000 US Census.

For comparison, information pertaining to low-income populations for the project corridor and La Plata County is compared to data for the State of Colorado in Table 3.3.3, Persons in Poverty and Median Income in 2000 (US Census Bureau 2000). Although there were fewer persons in La Plata County below the state median poverty level, Block Group 3 in Census Tract 9706, and Block Group 4 in Census Tract 9707.02 had higher percentages of people in poverty than the county and the state.

To identify a low-income threshold for this project, the project team used the CDBG value of 50 percent of the AMI. The 2000 low-income thresholds for a family of four for La Plata County, based on 50 percent AMI, is \$20,080.

Additional socioeconomic data were provided by the La Plata County Department of Social Services (2003). The clients of the La Plata County Department of Social Services include individuals on food stamps, the elderly, day care centers, and low-income people in transition from welfare to work. The data collected by the La Plata County Department of Social Services indicate that an estimated 23 of the department’s clients live in the vicinity of the project corridor, mostly in the Grandview area.

The data gathered indicate that approximately 54 percent of the mobile home households are low-income (Table 3.3.4, Data for Mobile Home Parks Potentially Impacted by US 160 Improvements), compared to approximately 23 percent of households earning \$20,000 or less throughout La Plata County, according to the 2000 census.

Affordable Housing

There is a general shortage of affordable housing in La Plata County. According to Housing Solutions of the Southwest, a social services agency operating in southwest Colorado, as many as 40 percent of La Plata County renter households pay more than 30 percent of their monthly incomes for housing, one criteria used by federal and state housing programs to determine eligibility for housing assistance. Given the present and likely future dominance of retail trade and service sectors with typical low-wage jobs, providing a sufficient number of affordable housing units during the next 20 years will challenge local and state housing resources and programs.

Public/private partnerships have recently expanded the supply of affordable housing. Southwest Horizon Ranch, consisting of 61 two- and three-bedroom single-family homes, located near the

US 160 project corridor off SH 172, was completed in 2000 under the sponsorship of Housing Solutions of the Southwest. This development provides rental homes for eligible households. Also, Mercy Housing owns and operates Merced de las Animas, located at the north end of Durango. The complex has 50 affordable townhouses with rents ranging from \$357 per month for a one-bedroom unit, to \$835 per month for a three-bedroom unit. Mercy Housing opened another 46-unit complex, Valle de Merced, located near Fort Lewis College, in 2004.

Several major affordable housing projects are in the planning or conceptual stages, as well. Mercy Housing plans to build 80 townhouses in Bayfield, and 75 to 100 units in Grandview in conjunction with the relocation of Mercy Medical Center, which is scheduled to open in 2006. Housing Solutions of the Southwest has proposed a 52-townhome development, called Fox Farm, in Bayfield that would provide ownership units for individuals and families with incomes less than the La Plata County median income. With a grant from the state of Colorado, the town of Ignacio has purchased 70 vacant acres west of town. One of the conditions of the grant is to include affordable housing when the land is developed.

The proposed new housing projects would help to alleviate the shortage of affordable housing. The waiting lists for affordable units as of March 2005 indicate that the need is still great. The waiting list for Southwest Horizon Ranch was approximately 21 households. There are about 130 families on the overall waiting list at Housing Solutions of the Southwest for affordable housing in La Plata County, including Southwest Horizon Ranch. Merced de las Animas had a waiting list of 25, and the Durango Housing Corporation, which owns 97 units, had about 20 households on its waiting list.

In addition to the above-mentioned low-cost housing options, mobile home parks provide the only other option for low-cost housing in the project corridor. According to the 2000 US Census, there were 3,444 mobile homes in La Plata County, which represents 16.6 percent of the total housing stock. Two hundred and eighty-one mobile homes, or 4.8 percent of the housing stock is located within the city of Durango. According to the *La Plata County Comprehensive Traffic Study* (La Plata County 1999), there were 41 mobile home parks or subdivisions within La Plata County containing 1,286 mobile homes. However, a mobile home park in South Durango was recently replaced with a multi-family development, displacing about 25 mobile homes. This, however, was offset by the addition of a new mobile home park recently opened in Bayfield containing 37 mobile home sites.

Most of the current 41 mobile home parks or subdivisions are concentrated in urban areas within and near the city of Durango, the town of Bayfield, and the town of Ignacio. Most of the approximately 2,150 mobile homes that are not located within established mobile parks and subdivisions are scattered on rural parcels throughout La Plata County.

Mobile home parks within or near the US 160 project corridor include seven in the Grandview area, two approximately 1 mile east of the Florida River, and three within the town of Bayfield. There are seven mobile home parks that are within the US 160 project corridor that could be affected by this project:

- Homestead Mobile Home Park
- Cedar Meadows Mobile Home Park
- Mountain Vista Mobile Home Park

- Lilly Belle Mobile Home Park
- Narrow Gauge Mobile Home Park
- Cropley Mobile Home Park
- Green Acres Mobile Home Park

All of these mobile home parks, except Green Acres, are located in the unincorporated part of La Plata County. The Homestead, Cedar Meadows, Mountain Vista, and Lilly Belle mobile home parks are located in the area that Durango is considering for annexation. Typically, mobile home parks in the corridor are owned by individual landowners that rent out pads for individuals that own mobile homes, or rent out an existing mobile home already located on a pad. Data on the existing conditions for these seven facilities are provided in Table 3.3.4, Data for Mobile Home Parks Potentially Impacted by US 160 Improvements.

**Table 3.3.4
Data for Mobile Home Parks Potentially Impacted by US 160 Improvements**

Name	Total # MH Spaces	# Vacant Pads	# Minority Households (Individuals)	Monthly MH Pad Rent	Monthly MH Rent	# Low Income Households
Homestead	7	0	3 (9)	\$275	\$550-\$850	2
Cedar Meadows	13	1	3 (8)	\$240-\$275	\$500-\$700	7
Mountain Vista	22 ^a	3	7 (16)	NA	\$365-\$525	14
Lilly Belle	14 ^b	0	2 (6)	\$320	NA	unknown
Narrow Gauge	62	4	30 (70)	\$235-\$260	NA	30
Cropley	9	0	1(1)	NA	\$450-\$550	9
Green Acres	10	4	1(1)	\$150	NA	4

Source: Personal communication with mobile home park owners, 2003 and 2005.

^aMountain Vista has 20 mobile homes, one house, and a converted shower house.

^bLilly Belle has 13 mobile homes and 1 house.

MH = mobile home

NA = not applicable

= number

Each of the mobile home parks with the exception of Green Acres has highway frontage access to the main lanes of US 160; Green Acres has frontage access to US 160B, the business route through Bayfield. Consolidated driveways are permitted for each mobile home park that access directly to US 160 or US 160B at a single location. Residents are allowed unrestricted turning movements (left- and right-hand turns) from their access point onto US 160 and US 160B. Proposed alternatives would reroute US 160 accesses to collector roads that direct traffic toward intersections and interchanges, ~~or designated turnarounds (e.g., Narrow Gauge)~~ spaced at approximately 1-mile intervals. Unrestricted turning movements, including U-turns, would be allowed at these points.

A recent project in Grandview added a westbound auxiliary lane (see Section 2.2.1 No Action Alternative, for a description of recent safety projects). Included in this project was a noise wall to mitigate the noise impact. The noise wall was constructed adjacent to the Mountain Vista mobile home park. With this exception, none of the other mobile home park neighborhoods currently approach or exceed noise abatement criteria that warrant noise mitigation.

The mobile home park owners are not aware of community cohesiveness within the parks nor are they aware of family ties within the same park. Most residents have service sector jobs. Some residents work at Wal-Mart and others are unemployed and receive public assistance. Most of the employed residents of the impacted mobile home parks rely on privately owned vehicles to travel to work. The 2003 survey of 35 business owners in the project corridor indicate one business employed two mobile home park residents. There are no known special employment centers or special services specifically targeted to residents of these or any other mobile home parks in La Plata County.

3.4 RECREATION

National Forest

US 160 provides access to numerous recreational activities and recreation sites within the San Juan National Forest. The 1.87-million-acre forest is an important destination for recreationists in Colorado. Year-round recreational activities include hiking, fishing/ice fishing, ice climbing, snowmobiling, cross-country/downhill skiing, mountain/road biking, kayaking, camping, and hunting.

BLM Lands

Two BLM parcels occur in the project corridor. Due to its location and poor access, the BLM land in the Grandview section is not generally used for recreation. The BLM parcel in the Dry Creek and Gem Village section is primarily used for cattle grazing. However, it provides opportunities for recreational activities such as hunting, wood gathering, and hiking.

Parks

The only existing formal recreation resources adjacent to the expanded highway ROW are the Little Pine River Park, a community park located in Bayfield, and the Durango East KOA Campground, a privately owned campground.

The City of Durango has developed an open space and recreation plan, which has identified the Grandview area as one of six possible sites for a regional park. The proposed development associated with the relocation of Mercy Medical Center includes a park as well as several school sites with ball fields at the northeastern part of the site. Plans also call for a network of trails within the development that would connect to nearby trails.

3.5 AIR QUALITY

“Air pollution” is a general term that refers to one or more substances that degrade the quality of the atmosphere and environment. Individual air pollutants degrade the environment by reducing visibility, damaging property, reducing the productivity or vigor of crops and natural vegetation, and by adversely affecting human and animal health. Regulations for air pollutant emissions exist to protect human health and welfare, and the environment.

The U.S. EPA is charged with developing and enforcing regulations that govern air quality in accordance with the 1970 Federal Clean Air Act (CAA). In Colorado, EPA delegates authority

to the Colorado Air Quality Control Commission (CAQCC). The lead air quality planning agency for the project region is the Colorado Department of Public Health and Environment (CDPHE). CDPHE develops the region’s air quality strategies as well as specific programs to reduce emissions.

The CAA established National Ambient Air Quality Standards (NAAQS) designed to protect public health. Six criteria air pollutants have been identified by EPA as being of concern nationwide: carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than ten microns in diameter (PM₁₀), and lead (Pb). The state of Colorado has adopted the federal NAAQS standards for regulatory purposes.

The pollutants that are most relevant for the US 160 air quality impact analysis are those that can be traced principally to motor vehicles and construction activities. In the study area, ambient concentrations of CO and O₃ are predominantly influenced by motor vehicle activity. Ozone is not emitted directly from vehicles but is formed from the photochemical reaction of other pollutants, namely NO₂ and volatile organic compounds (VOCs). Emissions of hydrocarbons (HC), NO₂, and PM₁₀ come from both mobile and stationary sources. Emissions of SO₂ and Pb are associated mainly with stationary sources.

Criteria pollutants measured in La Plata County at monitoring station 080677003, as well as their corresponding NAAQS, are shown in Table 3.5.1, 2003 Criteria Pollutants Measured in La Plata County.

**Table 3.5.1
2003 Criteria Pollutants Measured in La Plata County**

Criteria Pollutant	CO		NO ₂	O ₃		SO ₂	
Period	1-hr	8-hr	Annual	1-hr	8-hr	24-hr	Annual
Standard (ppm)	35	9	0.053	0.12	0.08	0.14	0.03
La Plata County (ppm)	---	---	0.009	0.074	0.062	---	---
Criteria Pollutant	PM _{2.5}		PM ₁₀		Pb		
Period	24-hr	Annual	24-hr	Annual	Quarterly average		
Standard (µg/m ³)	65	15	150	50	1.5		
La Plata County (µg/m ³)	14	6.3	72	37	---		

Source: EPA AirData Database.

ppm - parts per million

µg/m³ - micrograms per cubic meter

PM_{2.5} – particulate matter with an aerometric diameter less than 2.5 microns

Currently, the US 160 project corridor region is in attainment for all EPA criteria pollutants. EPA guidance stipulates CO “Hot-Spot” modeling is required for road improvement projects that (1) are expected to result in intersections with a LOS of D or worse, or (2) are in non-attainment areas. The US 160 project corridor does not meet either of these criteria. Therefore, a CO “Hot-Spot” modeling analysis was not conducted.

The DEIS for the North San Juan Basin (NSJB) Coal Bed Methane (CBM) (BLM 2004) shows that concentrations of ozone are increasing as a result of oil and gas development. Because VOCs and NO_x (NO₂ and/or NO₃) are precursors to ozone, and the project is in an attainment area, the impact analysis will focus on these two compounds.

Mobile Source Air Toxics

In addition to the NAAQS, EPA is also charged with regulating air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. [See document No. EPA420-R-00-023 (December 2000).]

EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. [See document No. EPA400-F-92-004 (August 1994).] In 2001, EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources [66 FR 17229 (March 29, 2001)]. This rule was issued under the authority in Section 202 of the Clean Air Act, and the rule's preamble provides the following summary information regarding the effects and control of MSATs:

Today's action addresses emissions of hazardous air pollutants (HAPs) from motor vehicles and their fuels. Hazardous air pollutants refer to a range of compounds that are known or suspected to have serious health or environmental impacts. Motor vehicles are significant contributors to national emissions of several hazardous air pollutants, notably benzene, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel particulate matter and diesel exhaust organic gases.

In today's action, we list 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects. Our MSAT list includes various VOCs and metals, as well as diesel particulate matter and diesel exhaust organic gases (collectively DPM + DEOG). The selection methodology we used to develop this MSAT list, which may be used to add compounds to or remove compounds from the list in the future as new information becomes available, is also described. In today's action we also examine the mobile source contribution to national inventories of these emissions and the impacts of existing and newly promulgated mobile source control programs, including our reformulated gasoline (RFG) program, our national low emission vehicle (NLEV) standards, our Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and our proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 1990 and 2020, we project these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 67 to 76 percent, and will reduce on-highway diesel PM emissions by 90 percent.

In the 2001 rulemaking, EPA identified six priority MSATs: acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein, and 1, 3 butadiene (66 FR 17230). EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at

<http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Under the proposed revised Carcinogen Risk Assessment Guidelines (U.S. EPA 1996), **benzene** is characterized as a known human carcinogen.
- Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA 1999), the potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- Under EPA's 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA 1999), **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Using U.S. EPA's revised draft 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA 1999), **diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.

As noted, EPA is the lead federal government agency responsible for the establishment of national air quality standards, national guidance, and guidelines for the uniform and scientifically reliable study of air pollutants. To date, neither National Ambient Air Quality Standards for MSATs nor national project level guidelines or guidance to study MSATs under various climatic and geographic situations have been developed. Such limitations make the study of MSAT concentrations, exposures, and health impacts difficult and uncertain. Thus, accurate and reliable estimates of actual human health or environmental impacts from transportation projects and mobile source air toxics are not scientifically possible at this time.

EPA also has not established toxicity factors for diesel particulate matter, although one study asserts that this pollutant accounts for a large portion of MSAT health risk in certain situations, using a toxicity factor that is unique to California.

The NSJB CBM DEIS estimated that emissions of formaldehyde would be increasing due to exhaust emissions from existing natural gas fired compression and small head engines. For this reason, additional analysis was performed on formaldehyde.

3.6 TRAFFIC NOISE ANALYSIS

Existing noise levels were analyzed and future noise levels modeled to quantify possible noise impacts as a result of improvements to US 160. The results aid in the determination of project compliance with state and federal standards for noise. This section presents existing conditions.

Future conditions and noise level results are presented in Section 4.6, Traffic Noise Analysis. The complete noise analysis is included in Appendix B, Traffic Noise Analysis.

Traffic Noise Methodology

The noise analysis was performed in accordance with the standards outlined in the CDOT *Noise Analysis and Abatement Guidelines* (CDOT 2002b). Noise levels were modeled using the CDOT Noise Prediction Software entitled, “The Technology Group Highway Noise Analysis Software Library,” which is based on FHWA’s noise prediction model STAMINA 2.0/OPTIMA (Colorado version) which includes the Colorado vehicle emission levels as approved in 1995.

Traffic noise is most commonly measured in A-weighted decibels (dBA). The dBA scale corresponds to the way the human ear perceives the magnitude of sounds at different frequencies. Also, since traffic passing vehicles generates noise and traffic volumes that constantly fluctuate, a unit of measurement called the A-equivalent level, or equivalent continuous noise level [L(eq)], has been developed to characterize traffic noise impacts. The L(eq) is a summation of the individual sound energies from passing vehicles over a given period of time, usually an hour [equivalent continuous use noise level per hour L(eq/h)], and is expressed as dBA.

Noise Abatement Guidelines

The FHWA Noise Abatement Criteria (NAC) defines noise levels, which, if approached or exceeded, require noise abatement consideration. The NAC that apply are activity Category B (residences, schools, churches, parks), and activity Category C (for the purposes of this study, mostly commercial areas).

The impact levels for this study, as stipulated by CDOT, are 66.0 dBA for an NAC B, and 71.0 dBA for an NAC C, and were used as ultimate threshold levels for noise abatement consideration. Table 3.6.1, CDOT Noise Abatement Criteria, describes the CDOT NAC values for various land use categories.

**Table 3.6.1
CDOT Noise Abatement Criteria**

Activity Category	L(eq/h) dBA*	Description of Activity Category
A	56 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (exterior)	Picnic area, recreational areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	None	Undeveloped lands.
E	51 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: CDOT 2002b.

*Hourly A-weighted sound level in decibels, reflecting a 1 dBA “approach” value below 23 CFR 772 values.

The guidelines above also state that noise abatement should be considered when noise levels “substantially exceed the existing noise levels.” This criterion is defined as increases in the L(eq) of 10.0 dBA or more above existing noise levels.

Noise Model Validation

Noise measurements were taken at 12 locations along US 160 in September 1999. Additionally, measurements were collected along SH 172 south of US 160 and along CR 521 in Bayfield. These field data, including the natural rolling topography, receptor locations, roadway alignments, and existing barriers were used to code and validate the noise models.

Traffic Noise Modeling

Once validated, the existing noise model provided the basis for the development of the 2025 No Action Alternative and the 2025 action alternative noise models. The modeled receptor sites were placed primarily in residential areas where residents could be exposed to high noise levels, such as backyards, front porches, and patios; modeled sites were set at a height of 5 feet above ground. Existing noise levels for all receptors are shown in Appendix B, Traffic Noise Analysis. Noise level results are discussed in Section 4.6, Traffic Noise Analysis.

3.7 WETLANDS

Wetlands are those areas that are inundated or saturated with water at a frequency or duration sufficient to support a prevalence of vegetation typically adapted to saturated soil conditions. Many wetlands are protected under the CWA (Section 404) as waters of the U.S. and “special aquatic sites,” and are under the jurisdiction of the USACE for Section 404 permitting. Isolated and irrigation-induced wetlands may not be protected by Section 404 subject to the USACE determination.

Executive Order 11990 directs all federal agencies to adopt a no net loss of wetlands policy and avoid, if possible, adverse impacts to wetlands and to enhance the natural and beneficial values of wetlands. It is CDOT policy to avoid impacts to wetlands where possible, minimize impacts, and mitigate unavoidable impacts for all wetlands regardless of jurisdictional status.

Wetlands were delineated in the field in 1999 using USACE guidelines that require positive evidence of wetland hydrology, hydrophytic vegetation, and hydric (wet) soils (Environmental Laboratory 1987). The standard survey corridor was 300 feet on each side of the existing highway centerline; however, the project corridor was expanded in a number of areas to address realignment and intersection alternatives. Wetland boundaries were mapped on 1:1,200 (1 inch equals 100 feet) scale aerial photographs in the field, and the field maps were digitized and incorporated into an ARC/Info computer database for analysis and display. A field review was conducted by USACE on September 24, 2002, and a letter was received on November 26, 2002, generally concurring with the estimate of wetlands and other waters of the U.S. depicted in the *Durango to Bayfield Corridor Revised Draft Wetland Delineation Report* (URS 2002). Due to the size of the study corridor and the long-term nature of the proposed project, wetland boundaries and jurisdictional status will require verification and USACE approval prior to construction of individual projects. ~~were not verified during the field review.~~ **According to USACE policy, wetland delineations are valid for five years** Design changes following approval of the delineation caused project boundaries to extend outside of the wetland delineation study

area, and several wetland impact areas were estimated from aerial photographs and field observations in nearby areas (wetlands G-1, G-2, G-3, B-1, and B-2), and have not been delineated in the field or reviewed by USACE. These specific wetlands will be re-delineated during final design and verified by the USACE as part of the Section 404 permitting of individual projects.

An individual Section 404 Permit will be required for this project. USACE is a cooperating agency in this EIS and will use the EIS to support its Section 404(b)(1) Alternatives Analysis, a precursor to the preparation of the Section 404 Permit. ~~Detailed delineation in accordance with USACE standards and subsequent USACE field verification will not be completed prior to~~ Section 404 permitting of individual project phases will be accomplished based on the USACE accepted Wetland Delineation Report. Because a Section 404 Permit will be authorized for the entire project in conjunction with signing of the ROD and in advance of any construction, wetland ~~boundaries- delineations and jurisdictional status~~ will be ~~redelineated and~~ verified as construction projects are developed and any changes in impacts will be addressed in a Section 404 Permit modification.amendment

The distribution of wetlands in the project corridor is shown in Figures 3.7.1 through 3.7.13. Wetlands delineated within the project corridor totaled approximately 104 acres (Table 3.7.1, Summary of Wetlands in US 160 Project Corridor). More detailed information about the wetland study is provided in Appendix C, Table C-1, Wetland Impacts for US 160 Project Corridor.

**Table 3.7.1
Summary of Wetlands in US 160 Project Corridor**

Highway Sections	Jurisdictional Wetlands*		Non-Jurisdictional Wetlands*		Major Wetland Types
	No.	Acres	No.	Acres	
Grandview	44	29.7	40	3.5	Irrigation ditch, wet valley, wet floodplain, hillside seep, stream fringe, pond fringe
Florida Mesa and Valley	21	2.6	41	2.7	Hillside seep, old river channel, irrigation ditch, wet valley
Dry Creek and Gem Village	59	30.9	57	3.2	Wet valley, wet floodplain, stream fringe, irrigation ditch, ditch seep
Bayfield	28	26.4	52	4.5	Wet valley, wet floodplain, hillside seep, roadside ditch, irrigation ditch, ditch seep
TOTAL	152	89.6	190	13.9	

*USACE has not verified jurisdictional status or wetland boundaries.

Wetlands occur throughout the project corridor, with their distribution closely linked to high groundwater, seeps/springs, waterways, soils, and topography. Irrigated agricultural areas with many small wetlands occur on Florida Mesa and east of Bayfield. Wetlands are also common in the valleys of perennial streams, including Wilson Gulch, Florida River valley, Dry Creek, and Los Pinos River valley. The largest wetlands occur in broad valleys where there is high groundwater, such as Upper Dry Creek and between Gem Village and Bayfield.

3.7.1 Wetland Types

Several major types of wetlands were identified in the project corridor, based on geomorphic characteristics and source of hydrology. Field data sheets initially identified certain wetlands as fens, which are considered high value resources based on their uniqueness due to extensive periods required for their development. Subsequent laboratory analyses of soils for organic content did not support the classification of these areas as fens, which are not present within the project corridor.

Wet Valley

Wet valley wetlands occur on slightly sloping terrain. These are areas of high groundwater that are not located along streams or irrigation ditches. Most of these wetlands are jurisdictional because they are connected to perennial drainages, primarily Dry Creek. This is the most abundant wetland type in the project corridor, representing approximately 67 percent of the total wetland area. Large wet valley wetlands are present in Wilson Gulch (“Artesian valley”) (Figure 3.7.3), Dry Creek (Figure 3.7.9), the Tributary valley of Dry Creek east of Gem Village (Figure 3.7.11), and in the Bayfield area (Figure 3.7.12).

Wet valley wetlands are classified as palustrine emergent wetlands (wet meadow and marsh vegetation) (Cowardin 1979). Small patches of shrubs or trees occur in some of the wetlands (palustrine scrub-shrub). Soils are mostly clay, clay loam, or loamy clay, and some of the valley wetlands are NRCS-listed hydric soils in portions of Upper Wilson Gulch and Upper Dry Creek.

Wet Floodplain

Wet floodplain wetlands occupy narrow floodplains, typically 5 to 100 feet wide. Although a perennial or intermittent stream is present, the main source of wetland hydrology appears to be alluvial groundwater rather than overbank flooding. Soils are saturated throughout much of the growing season. All of these wetlands are jurisdictional.

These wetlands are the second most abundant type, representing approximately 14 percent of the total wetland area. They occur along Wilson Gulch (Figure 3.7.3), Long Hollow (Figure 3.7.6), Dry Creek (Figure 3.7.9), and various unnamed streams. They are typically a mixture of palustrine scrub-shrub and palustrine emergent (wet meadow or marsh) vegetation. Riparian woodland dominated by narrow leaf cottonwood (*Populus angustifolia*) is present on portions of Wilson Gulch; although they shade the wetland, the trees are typically rooted in adjacent non-wetland areas. Springs are present in some areas, and beaver dams are present in two areas (wetlands 3-1a and 3-1d).

Hillside Seep

Hillside seep wetlands occur primarily on the north side of Farmington Hill (Figure 3.7.3), on the west side of the Florida River valley (Figure 3.7.6), and on the east side of the Los Pinos River valley (Figure 3.7.12). They are areas of groundwater discharge on moderate to steep slopes and have a mixture of wet meadow and marsh palustrine emergent vegetation, with palustrine scrub-shrub dominated by sandbar willow (*Salix exigua*) in some areas. They represent less than 3.0 percent of the wetland area along US 160 and most are jurisdictional, except for small isolated seeps.

Stream Fringe

Stream fringe wetlands occur along portions of Wilson Gulch, Dry Creek, Los Pinos River, and on some smaller streams. They are mostly within the ordinary high water mark of the streams and receive water mainly from surface flows. They represent approximately 2.0 percent of the wetlands in the project corridor. All of the identified stream fringe wetlands are considered to be jurisdictional. They include both palustrine scrub-shrub and palustrine emergent vegetation and sometimes have a forested canopy rooted mostly outside of the wetlands.

Old River Channel

Old river channel wetlands occur in depressions on the floodplains of the Florida River valley (Figure 3.7.6) and Los Pinos River valley (Figure 3.7.12). The source of hydrology may be ponding of surface water or alluvial groundwater. They are all within wooded riparian habitat, but the trees (narrow leaf cottonwood) are mostly rooted outside the wetland. They are classified as palustrine scrub-shrub or palustrine emergent (Cowardin 1979). They represent approximately 0.5 percent of the total wetlands in the project corridor, and all of these wetlands are jurisdictional.

Irrigation Ditch

Irrigation ditch wetlands occur within or along irrigation ditches. They are found in all portions of the project corridor, but are most common on Florida Mesa, Upper Dry Creek, and east of Bayfield. Irrigation ditch wetlands are typically narrow and linear and represent approximately 5.0 percent of the total wetlands area in the project corridor. Most irrigation ditch wetlands are non-jurisdictional. However, 15 are considered jurisdictional because they are connected to jurisdictional wetlands or other waters of the U.S. ~~they are associated with natural wetlands or appear to have a natural source of wetland hydrology.~~ They are classified as palustrine scrub-shrub or palustrine emergent (Cowardin 1979). The vegetation is dominated by sandbar willow, marsh emergent species within the ditch, or wet meadow species on the banks.

Ditch Seep

Ditch seep wetlands occur down slope from irrigation ditches, and seepage or surface water flows from the irrigation ditch are the main source of water. They represent approximately 3.0 percent of the total wetlands in the project corridor, and the vegetation consists mostly of palustrine emergent (wet meadow and marsh) species. These wetlands are non-jurisdictional.

Roadside Ditch

Roadside ditch wetlands occur in excavated depressions along roads and highways. They may receive water from highway runoff or from other sources. Most roadside ditches are in upland areas and are considered non-jurisdictional because they are isolated. Roadside ditch wetlands represent less than 3.0 percent of the total wetlands in the project corridor. The vegetation includes palustrine scrub-shrub (willow shrub) and palustrine emergent (wet meadow and marsh).

Pond Fringe

Pond fringe wetlands occur on the edges of artificial ponds in uplands or in natural drainages. The main source of water is the adjacent open water. These wetlands represent less than 2.0 percent of the total wetlands in the project corridor. Approximately one-half are considered to be non-jurisdictional because the ponds are isolated in upland areas or received their hydrology from irrigation. The vegetation consists mostly of palustrine emergent (wet meadow and marsh) species.

3.7.2 Vegetation

The wetlands within the project corridor are mostly dominated by palustrine emergent herbaceous vegetation associated with wet meadows and marshes and/or palustrine scrub-shrub vegetation consisting mostly of willow shrub. The species present are typical of foothill and lower elevation wetlands. Most of the species occur throughout the length of the project corridor, since the elevation does not vary much along the US 160 project corridor. The main factors affecting species composition are degree of wetness, presence/absence of shrubs, type and amount of disturbance, and site history. Wetland vegetation in the project corridor includes the following:

- Common wet meadow species include redtop (*Agrostis stolonifera*), foxtail barley (*Hordeum jubatum*), reed canary grass (*Phalaris arundinacea*), water sedge (*Carex aquatilis*), woolly sedge (*Carex lanuginosa*), small-wing sedge (*Carex microptera*), Nebraska sedge (*Carex nebrascensis*), clustered field sedge (*Carex praegracilis*), creeping spikerush (*Eleocharis palustris*), field horsetail (*Equisetum arvense*), Baltic rush (*Juncus balticus*), and other rush (*Juncus* sp.) species. These perennial species are native, except for redtop and reed canary grass. They are classified as obligate, facultative wetland, and facultative species (Reed 1988). Obligate species almost always occur in wetlands (greater than 99 percent probability), facultative wetland species usually occur in wetlands (67 to 99 percent probability), and facultative species have an equal chance of occurring in wetlands or uplands (33 to 66 percent probability).
- Also present in wet meadows are a number of meadow species, including Canada thistle (*Cirsium arvense*), meadow fescue (*Festuca pratensis*), western wheatgrass (*Pascopyrum smithii*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), and white clover (*Trifolium repens*). These perennial species are classified as facultative upland species (Reed 1988), meaning they have less than a 33 percent probability of occurring in wetlands. Western wheatgrass is native, and the others are introduced species. Canada thistle is a noxious weed.
- Common emergent marsh species include beaked sedge (*Carex utriculata*), fowl mannagrass (*Glyceria striata*), reed meadowgrass (*Glyceria grandis*), small fruit bulrush (*Scirpus microcarpus*), cloaked bulrush (*Scirpus pallidus*), softstem bulrush (*Scirpus validus*), broadleaf cattail (*Typha latifolia*), and western water hemlock (*Cicuta douglasii*). Lesser duckweed (*Lemna minor*) and watercress (*Nasturtium officinale*) occur in open water in marshes. These species are perennial and are classified as obligate wetland species (Reed 1988). Watercress is an introduced species, and the others are native.

- Scrub-shrub wetland species include sandbar willow, Pacific willow (*Salix lasiandra*), and yellow willow (*Salix lutea*). These native shrubs are classified as obligate wetland species (Reed 1988).
- Although there are no forested wetlands, some wetlands occur within riparian areas and are heavily shaded by trees growing outside the wetland boundaries. These areas are typically dominated by narrowleaf cottonwood, which is classified as a facultative species.
- Common emergent wetland species associated with disturbance or bare soil include marsh foxtail (*Alopecurus aequalis*), barnyard grass (*Echinochloa crusgalli*), various smartweeds (*Polygonum* spp.), water crowfoot (*Ranunculus gmelinii*), pink water speedwell (*Veronica catenata*), blister buttercup (*Ranunculus scleratus*), yellow cress (*Rorippa* sp.), and curly dock (*Rumex crispus*). These species are a mix of native and introduced, and of annual and perennial species. They are mostly classified as obligate or facultative wetland species (Reed 1988).

3.7.3 Soils

The principal hydric soil indicators observed in soil pits were low chroma (i.e., dull color) and mottles (i.e., scattered concentrations of brighter colors). The NRCS Durango field office lists two soil types observed in the project corridor as hydric: Big Blue clay loam and fluvaquents. Another soil type, Bayfield silty clay loam (seeped) is not included on the NRCS Durango field office list but has hydric characteristics according to the soil survey (NRCS 1982). Big Blue clay loam and Bayfield silty clay loam (seeped) are mostly associated with wet valleys. Fluvaquents (sandy, frequently flooded) occur on the west side of the Los Pinos River valley.

Most of the soils in the project corridor are clay, clay loam, or loamy clay. They are poorly drained when wet. Hydric characteristics, including low chroma and mottles, are widely distributed in and adjacent to irrigated areas, both within and outside of delineated wetlands.

Ustic torriorthents-ustollic haplargids are well-drained soils restricted to the edges of the Wilson Gulch, and the Florida River and Los Pinos River valleys. Large springs and seeps are present in some portions of this soil-mapping unit.

3.7.4 Hydrology

Wetland indicators observed in the field typically included inundation, saturation in the upper 12 inches, and/or drainage patterns. The sources of hydrology included natural stream flows in the valleys, groundwater, and irrigation.

3.7.5 Functions and Values

Wetlands have many functions and values that vary depending on wetland size, type, location, surrounding land use, outlets, vegetation, and other factors. Included in Appendix C, Table C-3, Wetland Functions for US 160 Project Corridor, is a list rating each wetland function according to wetland number based on the Montana Department of Transportation Wetland Field Evaluation Methods (Berglund 1996). The following functions and values of wetlands in the project corridor were rated as high or moderate:

- **Threatened and Endangered Species Habitat** – The few wetlands within or adjacent to riparian woodland were high for this function because of the presence of wintering bald eagles. One shrub wetland where a southwestern willow flycatcher was observed was high for this function. Other wetlands that have suitable habitat for southwestern willow flycatcher, but where this species has not been observed, were considered to be moderate for this function. Future designation of critical habitat by the USFWS for the southwestern willow flycatcher will warrant consideration of suitable habitat as high value for this function.
- **General Wildlife Habitat** – Wetlands within or adjacent to riparian complexes were high for this function. Isolated wetlands with moderate habitat diversity (trees or shrubs) were moderate for this function.
- **General Fish Habitat** – Wetland fringes associated with the Florida, Los Pinos, and Little Los Pinos rivers were rated high for this function. Other wetlands on smaller perennial streams were rated moderate for this function.
- **Sediment and Nutrient Retention** – Beaver ponds and other ponds receiving sediments or nutrients, including sewage lagoons, were high for this function. Other wetlands potentially receiving nutrients or sediments from grazing land, highways, or other sources were rated moderate for this function.
- **Production Export/Food Chain Support** – This function considers size, presence of an outlet, presence of surface water, and habitat diversity. Wetlands adjacent to large streams were rated high for this function. Large wetlands with outlets were rated moderate for this function.
- **Groundwater Discharge/Recharge** – Wetlands with obvious springs or seeps, and other wetlands that appeared to be supported largely by groundwater, were rated high for this function.
- **Uniqueness** – Unique wetlands that are rated high included one wetland with a southwestern willow flycatcher occurrence (wetland 31-10, Figure 3.7.12), a hillside seep on the west side of the Florida River valley (wetland 12-4, Figure 3.7.6), and hillside seeps with travertine-like deposits (wetlands 1b-3 and 1b-6, Figure 3.7.3). Wetlands considered moderate for this function included those associated with larger streams and riparian areas, wet floodplains along perennial streams, large wet valleys with some shrubs or open water, and other large hillside seeps.
- **Recreation/Education Potential** – Wetlands associated with the Florida, Los Pinos, and Little Los Pinos rivers were rated high for this function.
- **Dynamic Water Storage** – Large wet valleys and old stream channels were rated moderate for this function based on their functional values for flood control. When located adjacent to large areas with impermeable surfaces, these wetlands are considered high for this function. Currently, no wetlands meet these criteria.

3.7.6 Other Waters of the US

Other aquatic features are also regulated as waters of the US under Section 404 of the CWA, including intermittent and perennial streams. Perennial and intermittent waters of the US were assessed during field work, based on the presence of water, evidence of scour, defined bed and banks, riparian vegetation, and less than 50 percent upland vegetation cover. Additional resources used to assist in the field work included USGS topographic maps and 1":100' aerial photographs. Five perennial or large intermittent streams occur in the project corridor (Wilson Gulch, Florida River, Dry Creek, Los Pinos River, and Little Los Pinos River), along with a number of smaller intermittent streams.

Wilson Gulch, Dry Creek, part of Little Los Pinos River, and some other intermittent streams were included within the wetland delineation areas because the amount of open water was small compared to the adjoining wetlands. Florida River, lower Dry Creek, Los Pinos River, and part of Little Los Pinos River were mapped separately from adjacent wetlands because the amount of open water was larger. Several non-wetland intermittent streams were also identified and are shown in Figure 3.7.2 and Figures 3.7.6 through 3.7.8. Most of these are unnamed intermittent streams within pinyon-juniper or sagebrush-covered hills or slopes. The only named drainages are Brice Draw and the lower part of Long Hollow.

3.8 WATER RESOURCES

This section describes surface water quality resources that occur in the study area, including floodplains, water quality, and riparian areas. Wetlands are discussed separately in Section 3.7, Wetlands.

The entire project corridor is located within the San Juan River Basin and within the watersheds of two of its principal tributaries, the Animas and Los Pinos rivers. US 160 crosses the watersheds of four perennial streams, listed west to east:

- Wilson Gulch is a tributary of the Animas River. Its watershed extends from the Grandview area to past the US 160/US 550 (south) intersection, a distance of approximately 2.5 miles along the existing US 160 alignment. The existing US 160 alignment closely parallels Wilson Gulch for approximately 3,000 feet and crosses it at the US 160/US 550 (south) intersection. There are several unnamed intermittent tributaries in the Grandview area, which are crossed by US 160 or county roads.
- The Florida River also is a tributary of the Animas River. The watershed includes approximately 6.0 miles of the existing alignment, mostly on Florida Mesa and the Florida River valley. The existing US 160 alignment crosses the Florida River at one location. Major tributaries that are crossed include Long Hollow east of the Florida River, and Cottonwood Gulch, Lone Pine Creek, and Pine Gulch on Florida Mesa.
- Dry Creek is a tributary of the Los Pinos River. Its watershed covers approximately 5.5 miles of the eastern half of the US 160 project corridor. The existing US 160 alignment crosses Dry Creek once. Major tributaries crossed by the highway include Hartman Creek and an unnamed stream east of Gem Village.
- The Los Pinos River is a tributary of the San Juan River. Its watershed covers the eastern 2.0 miles of the US 160 project corridor around Bayfield. The existing US 160 alignment

crosses the Los Pinos and Little Los Pinos rivers and unnamed tributaries in the Los Pinos River valley.

3.8.1 Floodplains

Portions of the project are within the base (100-year) floodplain. Therefore, this project must comply with Executive Order 11988, *Floodplain Management*. Executive Order 11988 seeks to:

- Minimize flood impacts on human safety, health, and welfare
- Avoid adverse impacts of floodplain developments
- Avoid floodplain development when practicable alternatives exist

To comply with Executive Order 11988, Federal Emergency Management Agency (FEMA) floodplain regulations (40 CFR Part 9) would be followed.

A location hydraulic study is also required as part of 23 CFR 650.

The 100-year floodplain is present in the Wilson Gulch, Florida River, and Los Pinos River basins. These three floodplain areas are shown in Figures 3.8.1 through 3.8.3. There are no FEMA maps defining the floodplain boundaries for the Florida River or Wilson Gulch within the project corridor. The boundaries were estimated based on hydraulic modeling for the bridge crossings.

For the Los Pinos River, the 100-year floodplain is defined in the Flood Insurance Rate Maps (FIRM), Community Panel Numbers 0800970551B and 0800970553B, dated December 15, 1981. FEMA did not include the town of Bayfield in the floodplain mapping, so it is not included in the FIRM. The 100-year floodplain boundary shown in Figure 3.8.3, Los Pinos River 100-year Floodplain, is based on hydraulic modeling for the proposed modification of the US 160 bridge and is more extensive than the FIRM boundary.

3.8.2 Water Quality

As described earlier, US 160 crosses the watersheds of four perennial streams: Wilson Gulch, Florida River, Dry Creek, and Los Pinos River. The Colorado state water quality classifications for these streams (CDPHE-WQCC 2002) are as follows:

- Los Pinos and Florida rivers
 - Aquatic Life Cold 1
 - Recreation 1a
 - Water Supply
 - Agriculture
- Wilson Gulch
 - Aquatic Life Cold 2
 - Recreation 1a

- Water Supply
- Agriculture
- Dry Creek and all other tributaries to the Los Pinos and Florida rivers
 - Aquatic Life Cold 2
 - Recreation 1a
 - Agriculture

These classifications are defined by the Colorado Water Quality Control Commission (WQCC) as follows (CDPHE-WQCC 2002):

- **Cold Water Aquatic Life Class 1** – Waters capable of sustaining a wide variety of cold water biota, including sensitive species.
- **Cold Water Aquatic Life Class 2** – Waters not capable of sustaining a wide variety of aquatic life, due to physical habitat, water levels or flows, or uncorrectable water quality conditions.
- **Recreation Class 1a** – Waters in which primary contact uses have been documented or are assumed to be present. A primary contact use indicates that surface waters are suitable or intended to become suitable for recreational activities in or on the water when the ingestion of small quantities of water is likely to occur.
- **Water Supply** – Waters suitable for potable water supplies after standard treatment.
- **Agriculture** – Waters suitable for irrigation of crops and watering livestock.

None of the stream segments in the study area are identified as impaired (CDPHE 1999b). Table 3.8.1, USGS Gaging Station Data for US 160 Project Corridor, shows the limited stream flow and water quality data available from US Geological Survey (USGS) gaging stations on Wilson Gulch and the Los Pinos and Florida rivers. However, none of the stations are located immediately upstream or downstream of US 160, and only station 09353800 on the Los Pinos River has ~~none of the stations have~~ real-time data available (USGS-2003 2006).

**Table 3.8.1
USGS Gaging Station Data for US 160 Project Corridor**

River	USGS Station	Relative to US 160	Stream Flow	Water Quality
Wilson Gulch	09362550	3 miles upstream	Yes	Basic* (1995-2002)
Florida River	09363050	5 miles upstream	Yes	Basic* (1967-1982)
Florida River	09363200	10 miles downstream	Yes	Basic* (1956-1983)
Los Pinos River	09353500	8 miles upstream	Yes	Basic* (1927-1986)
Los Pinos River	09353800	6 miles downstream	Yes	Basic* (1999-2002)

Source: USGS 2003.

* “Basic” indicates the type of data collected (e.g., physical parameters such as temperature, pH, dissolved oxygen, etc.). Some sites also include some inorganic and metals data.

The San Juan Basin generally has high water quality except for some segments affected by mine waste and some segments with high concentrations of suspended solids and total dissolved solids.

Standard CDOT winter maintenance practices on US 160 include road plowing, sanding, and application of deicing chemicals. Sand and chemical deicers may eventually make its way to surface waters, contributing to stream sediment load and increased salt and heavy metal concentrations. The area that may be affected the most under existing conditions is lower Wilson Gulch, where the highway closely parallels the stream and in some areas is separated from it only by a steep and narrow slope, which is barren in some areas.

3.9 VEGETATION

This section describes the types and occurrence of vegetation communities in the US 160 project corridor. Natural plant communities include riparian, wetlands, sagebrush, and pinyon-juniper woodland. Other plant communities resulting from human activity include irrigated agricultural land and developed areas. Information on plant communities was obtained during the wetland delineation and other field studies, and from aerial photographs and maps. The distribution of plant communities in the project corridor is shown in Figure 3.9.1, Native Plant Communities Wildlife Habitats.

Riparian

Riparian plant communities are those developed in response to favorable soil moisture, organic carbon, and nutrients plus microclimatic regimes caused by streams and rivers. The riparian ecosystem is considered valuable for providing wildlife and fisheries habitat, maintaining water quality, stabilizing stream banks, providing flood control, and enhancing scenic and aesthetic values.

Some riparian areas are wetlands, but not all wetlands are in riparian areas. The two principal riparian plant communities in the US 160 project corridor are riparian woodland and riparian shrubland. Riparian woodland is dominated by narrowleaf cottonwood (*Populus angustifolia*). Understory vegetation includes shrubs such as wild rose (*Rosa woodsii*), hawthorn (*Crataegus* sp.), and alder (*Alnus incana*); and herbs and grasses such as orchard grass (*Dactylus glomerata*), Kentucky bluegrass (*Poa pratensis*), redtop (*Agrostis stolonifera*), burdock (*Arctium minus*), dandelion (*Taraxacum officinale*), and dogbane (*Apocynum cannabinum*).

Most riparian woodlands in the study area have understories that are dominated by non-native species, including some noxious weeds. Riparian woodlands along the Florida and Los Pinos rivers contain small areas of wetlands in depressions. Riparian woodlands occur along lower Wilson Gulch, the Florida River, Long Hollow, and on the west side of the Los Pinos River valley. All of these woodlands occur on stream floodplains. Linear cottonwood stands also are present along some irrigation ditches, but are not considered to be riparian areas.

Riparian shrubland is dominated by sandbar willow (*Salix exigua*) and other willow species. Many areas dominated by these species are wetlands, but riparian shrub often extends outside the wetland boundary, especially where there is a gradual change in elevation from wetland to upland. Riparian shrubland also may persist in areas where there has been a loss of wetland hydrology. Non-wetland riparian shrub is most extensive along portions of Dry Creek south and west of Gem Village.

Wetlands

Wetlands are those areas that are inundated or saturated with water at or near the surface of the soil for a sufficient duration during the growing season to develop characteristic soils and vegetation. Most wetlands in the study area feature emergent meadows dominated by grasses and sedges, but smaller areas of marsh vegetation and scrub-shrub wetlands also occur. Wetlands are described in detail in Section 3.7, Wetlands.

Pinyon-juniper Woodland

Pinyon pine (*Pinus edulis*) and juniper (*Juniperus osteosperma*, *J. scopulorum*) woodland dominate hilly areas throughout the project corridor, including the slopes of Farmington Hill, the hills between Long Hollow and Dry Creek, and the hills on each side of the Dry Creek valley. Canopy cover is variable, ranging from less than 5 to 70 percent. This vegetation type includes a diverse understory of shrubs, forbs, and grasses; however, much of the ground surface is typically bare. Shrub species found in this habitat include big sagebrush (*Artemisia tridentata*) mountain mahogany (*Cercocarpus montanus*), and squaw-apple (*Peraphyllum ramosissimum*). Some areas, especially north-facing slopes, are dominated by a mixture of Gambel oak (*Quercus gambellii*), pinyon pines, and pinyon-junipers. Forbs and succulent species include knotweed (*Polygonum* spp.), fleabane daisy (*Erigeron* spp.), banana yucca (*Yucca baccata*), pricklypear (*Opuntia* spp.), plateau cholla (*Opuntia whipplei*) and claret cup cactus (*Echinocereus triglochidiatus*). Common grasses in this community are blue grama (*Bouteloua gracilis*), Indian ricegrass (*Oryzopsis hymenoides*), mutton grass (*Poa fendleriana*) and western wheatgrass (*Elymus smithii*). Pinyon pines and junipers can live for hundreds of years.

Sagebrush Shrubland

Sagebrush shrubland is somewhat limited in distribution within the project corridor, but historically occupied most of the lands that were subsequently converted to agriculture. Sagebrush shrubland occurs primarily in the hills between the Florida River and Dry Creek, and occupies the valleys and areas with gentler slopes, while pinyon pines and pinyon-junipers occupy the steeper slopes. In addition to big sagebrush, common shrub species include rubber rabbitbrush (*Chrysothamnus nauseosus*), broom snakeweed (*Gutierrezia sarothrae*), and antelope bitterbrush (*Purshia tridentata*). A large number of grasses and forbs are common in open areas, including squirreltail (*Elymus elymoides*), western wheatgrass, blue grama, Indian ricegrass, sand dropseed (*Sporobolus cryptandrus*), prairie junegrass (*Koeleria macrantha*), penstemon (*Penstemon* spp.), hairy goldenaster (*Heterotheca villosa*), and alyssum (*Alyssum* sp.).

Agricultural Lands

These areas primarily consist of irrigated and sub-irrigated hay meadows and pastures, dominated by introduced pasture grasses and grass/alfalfa mixtures.

Developed Areas

These areas include houses, businesses, areas of pavement, yards, corrals and areas of sparse or disturbed vegetation resulting from human activities. They are located primarily in Grandview, Gem Village, and Bayfield.

3.10 NOXIOUS WEEDS

Noxious weeds are plant species that have been officially designated as such by the state of Colorado and/or individual counties. Noxious weeds are not native to Colorado and have negative impacts on crops, native plant communities, livestock, and/or the management of natural or agricultural systems. Management of noxious weeds is required under Federal Executive Order 13112 - *Invasive Species, Federal Noxious Weed Act* (7 USC 2801), State of Colorado Executive Order D 006 99 - *Development and Implementation of Noxious Weed Management Programs*, and the *Colorado Noxious Weed Act* (Colorado Regulatory Statutes (CRS) Title 35, Article 5.5).

Table 3.10.1, Noxious Weeds Present in La Plata County and the US 160 Project Corridor, presents a list of noxious weeds managed by La Plata County and other state-listed noxious weeds observed along US 160. The information in Table 3.10.1 was derived by reviewing the Colorado Noxious Weeds Species Lists (8 Colorado Code of Regulations (CCR) 1203-19, *Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act*), the BLM National List of Invasive Weed Species of Concern (BLM 2005), and consulting with the La Plata County Weed Office (Cook 2005; La Plata County Weed Office 2005). A focused weed inventory has not been conducted, but several noxious weed species were observed during other field studies in the project corridor, especially the wetland delineation (URS 2002). In addition, observations of noxious weeds were provided by the La Plata County weed supervisor and a CDOT map of noxious weeds for the project corridor (CDOT 2005b).

**Table 3.10.1
Noxious Weeds Present in La Plata County and the US 160 Project Corridor**

Plant Name	Species	Colorado Noxious Weed Species List (A, B, and C)*	BLM List	Observed in Study Area
La Plata County Noxious Weed List				
Black Henbane	<i>Hyoscyamus niger</i>	B	X	-
Chamomile	<i>Anthemis</i> spp.	-	X	-
Curly Dock	<i>Rumex crispus</i>	-	-	X
Dyer’s Woad	<i>Isatis tinctoria</i>	A	X	-
Hoary Cress, whitetop	<i>Cardaria draba</i>	B	X	X
Houndstongue	<i>Cynoglossum officinale</i>	B	-	X
Knapweed, diffuse	<i>Centaurea (Acosta) diffusa</i>	B	X	X
Knapweed, Russian	<i>Acroptilon repens</i>	B	X	X
Knapweed, spotted	<i>Centaurea maculosa</i>	B	X	-
Leafy Spurge	<i>Euphorbia esula</i>	B	X	-
Oxeye Daisy	<i>Chrysanthemum leucanthemum</i>	B	X	-
Starthistle, yellow	<i>Centaurea solstitialis</i>	A	X	-
Sulfur Cinquefoil	<i>Potentilla recta</i>	B	X	-
Thistle, Canada	<i>Cirsium arvense</i>	B	X	X
Toadflax, Dalmation	<i>Linaria dalmatica</i>	B	X	-
Toadflax, yellow	<i>Linaria vulgaris</i>	B	X	-
Water Hemlock	<i>Cicuta douglasii</i>	-	-	-

**Table 3.10.1
Noxious Weeds Present in La Plata County and the US 160 Project Corridor**

Plant Name	Species	Colorado Noxious Weed Species List (A, B, and C)*	BLM List	Observed in Study Area
Established Weeds in La Plata County				
Absinth Wormwood	<i>Artemisia absinthium</i>	B	-	-
Cheatgrass	<i>Bromus tectorum</i>	C	X	X
Common Burdock	<i>Arctium minus</i>	C	X	X
Common Mullein	<i>Verbascum thapsus</i>	C	-	X
Field Bindweed	<i>Convolvulus arvensis</i>	C	X	-
Jointed Goatgrass	<i>Aegilops cylindrica</i>	C	X	-
Perennial Pepperweed	<i>Lepidium latifolium</i>	B	X	-
Poison Hemlock	<i>Conium maculatum</i>	C	X	-
Russian Olive	<i>Elaeagnus angustifolia</i>	B	X	-
Saltcedar	<i>Tamarix ramosissima</i>	B	X	-
Scentless Chamomile	<i>Matricaria perforata</i>	B	-	-
Thistle, musk	<i>Carduus nutans</i>	B	X	X
Thistle, Scotch	<i>Onopordum acanthium</i>	B	X	X
Volunteer Rye	<i>Secale cereale</i>	-	-	-
Invasive Ornamentals in La Plata County				
Bouncingbet	<i>Saponaria officinalis</i>	B	X	-
Chicory	<i>Cichorium intybus</i>	C	X	-
Common Tansy	<i>Tanacetum vulgare</i>	B	X	-
Dame's Rocket	<i>Hesperis matronalis</i>	B	X	-
Myrtle Spurge	<i>Euphorbia myrsinites</i>	A	X	-
Purple Loosestrife	<i>Lythrum salicaria</i>	A	X	-
Potential Invaders in La Plata County				
African Rue	<i>Peganum harmala</i>	A	X	-
Camelthorn	<i>Alhagi pseudalhagi</i>	A	X	-
Knapweed, meadow	<i>Centaurea pratensis</i>	A	X	-
Knapweed, squarrose	<i>Centaurea virgata</i>	A	-	-
Mediterranean Sage	<i>Salvia aethiopsis</i>	A	X	-
Orange Hawkweed	<i>Hieracium aurantiacum</i>	B	X	-
Plumeless Thistle	<i>Carduus acanthoides</i>	B	X	-
Rush Skeletonweed	<i>Chondrilla juncea</i>	A	X	-
Sericea Lespedeza	<i>Lespedeza cuneata</i>	A	-	-
St. Johnswort	<i>Hypericum perforatum</i>	-	X	-

Source: Colorado Department of Agriculture, 2004, Colorado Noxious Weed Species List, BLM National List of Invasive Weed Species of Concern (<http://www.co.blm.gov/botany/invasiweed.htm>), and La Plata County Weed Office (<http://co.laplata.co.us/weeds/index.htm>).

* A = List A noxious weeds are species designated for eradication.

B = List B noxious weeds are species for which state noxious weed management plans would be developed and implemented to stop the continued spread of these species.

C = List C noxious weeds are species for which state noxious weed management plans would be developed and implemented to support the efforts of local governing bodies to facilitate more effective integrated weed management for these species on private and public lands.

Note: County list includes some species on more than one list.

3.11 WILDLIFE AND FISHERIES

This section describes the occurrence and distribution of wildlife and fisheries in the US 160 project corridor. The study area for wildlife and fisheries consists of approximately a 0.25-mile corridor from either side of the centerline of US 160. Wildlife habitats were mapped based on aerial photography and site observation. Information on the occurrence and distribution of wildlife and fisheries in the project corridor were obtained from federal and state agencies, including USFWS, BLM, Colorado Natural Heritage Program (CNHP), and CDOW, as well as published and unpublished literature and online sources including the Natural Diversity Information Source (NDIS).

All major groups of wildlife species occur within the US 160 project corridor, including ungulates, carnivores, small mammals (e.g., insectivores, rodents, lagomorphs, voles, bats), migratory songbirds, reptiles, and amphibians. Species within these groups are generally associated with one or more of the plant communities within the project corridor. Table 3.11.1, Acres of Wildlife Habitats in Study Area and Percentage of Total Area, shows the four major natural vegetation communities in the US 160 project corridor, as well as approximate acres of each type and percentage of each community of the total land in the project corridor.

**Table 3.11.1
Acres of Wildlife Habitats in Study Area and Percentage of Total Area**

Vegetation Community	Acres	Percentage of Wildlife Habitat Study Area
Pinyon pine and pinyon-juniper woodland (<i>Pinus edulis/Juniperus</i> spp.)	920	25
Sagebrush shrubland (<i>Artemisia tridentata</i> and <i>Chrysothamnus</i> spp.)	240	7
Riparian woodland and shrub (cottonwood [<i>Populus</i> spp.] and willow <i>Salix</i> spp.)	107	3
Wetlands (<i>Carex</i> spp, <i>Juncus</i> spp, and wetland grasses)	176	5
Other (irrigated farmland, residential etc.)	N/A	60

N/A Not Applicable

The distribution of wildlife habitats in the project corridor is shown in Table 3.11.1, Acres of Wildlife Habitats in Study Area and Percentage of Total Area. Other land uses within the project corridor include residential, commercial, irrigated agricultural, and fallow agricultural land. Although wildlife may use these areas to some extent, other land uses are not managed for wildlife and are therefore not considered in the analysis of wildlife impacts. Wildlife that are known or likely to occur in the US 160 project corridor are discussed below.

Ungulates

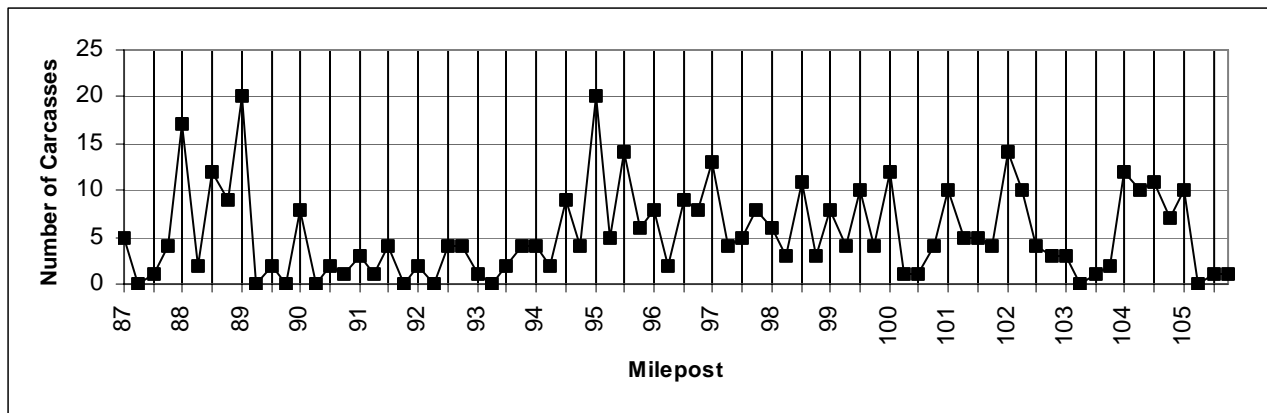
Mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*) are the only species of ungulates known to occur within the US 160 project corridor. Both species are considered economically important game species and use all four of the major wildlife habitats in the project corridor. CDOW manages the deer and elk population levels in the region. The elk population in the San Juan/La Plata Game Management Unit has been reduced by increased hunting licenses to bring the population down to the CDOW management objective level of 13,000 individuals.

Flather reported that mule deer populations are declining in the western U.S. and deer in the Rocky Mountain Region declined by 11 percent between 1985 and 1993 (Flather et al. 1999). However, CDOW reported the number of individuals in the San Juan deer herd, which inhabit the project corridor, has slowly increased since 1980 (CDOW 2003). The 2003 post-hunt herd count indicated an increase in the mule deer population over the past 11 years, with approximately 23,300 individuals counted. The deer population has been very slowly increasing since 1980; however, recent drought conditions as well as high fawn mortality and low fawning have slowed the rate of increase.

Both elk and deer require a variety of habitats to meet seasonal needs (i.e., forage, bed sites, and thermocover) and require access to migration routes from summer to winter ranges and to calving and fawning areas. Mule deer migration ranges may be regional or local within a few miles; herds return to the same summer and winter range each year. The project corridor bisects a major migration route for wintering elk and deer. Migratory elk and deer move into the project corridor from their northern summer range as early as late September and, depending on weather conditions, stay into April.

CDOW has identified both the north and south sides of the project corridor as severe winter range and winter concentration areas for deer and elk (NDIS 2005). Winter range is parallel to the severe winter range and winter concentration areas (Figures 3.11.1 and 3.11.2). Winter range is considered a critical resource for deer and elk throughout the region. Winter concentration areas are defined as areas where deer and elk densities are at least 200 percent greater than the surrounding winter range during an average of 5 out of 10 winters, from the first heavy snowfall until spring green-up. Severe winter range is defined as the part of the range where 90 percent of deer or elk individuals are located when annual snow pack is at its maximum and/or temperatures are at their lowest in 2 out of 10 worst winters.

Mule deer and elk attempting to cross US 160 are frequently killed by collisions with vehicles. CDOT has collected data since March 2002 at MPs along US 160 where road-killed animals were found. High numbers of deer are killed by collisions with vehicles; collisions with elk are much less frequent than deer. As discussed in Chapter 1, Purpose and Need, 27 percent of vehicle accidents in the project corridor reported by the Colorado State Patrol were due to animal collisions. This has created safety hazards for drivers on US 160, especially between the Florida River and Bayfield. The following graph shows the number of road-killed deer and elk found along US 160 by MP based on data collected by CDOT from March 18, 2002, through March 1, 2005. MPs 88.00 to 92.84 correspond to the Grandview section, MPs 92.84 to 94.15 to the Florida Mesa and Valley section, MPs 94.15 to 101.57 to the Dry Creek and Gem Village section, and MPs 101.57 to 104.20 correspond to the Bayfield section.



Source: CDOT 2005a

Carnivores

Several species of carnivores are known to occur or may potentially occur within the project corridor. They include black bears (*Ursus americanus*), mountain lions (*Felis concolor*), bobcats (*Lynx rufus*), coyote (*Canis latrans*), gray foxes (*Urocyon cinereoargenteus*), ringtail cats (*Bassariscus astutus*), raccoons (*Procyon lotor*), spotted skunks (*Spilogale gracilis*), and long-tailed weasels (*Mustela frenata nevadensis*).

Black bears are found throughout western Colorado, and habitat is often dependent on seasonal food availability. Generally, bears inhabit montane shrublands and sub-alpine forests but also prefer areas with oakbrush, which are found along the US 160 project corridor interspersed within pinyon-juniper woodland. No summer or winter range is located in the US 160 project corridor and the area is not considered a black bear movement corridor; however, black bears are occasionally killed by vehicle collisions when attempting to cross US 160 (CDOT 2005a; NDIS 2005). Optimal bear habitat is north of the project corridor. Black bears do forage within the US 160 project corridor in the fall, especially during years of successful acorn production in the pinyon-juniper dominated plant community (Carron 2003; NDIS 2005).

Coyotes are probably the most widespread carnivore and can be found in rough country with abundant shrub cover. Mountain lions and bobcats are most common in rough, broken foothills within shrublands and pinyon-juniper woodlands. Both species are primarily nocturnal or crepuscular (i.e., active at dusk and dawn), require sufficient cover and space for stalking prey, and prefer areas free from human disturbance.

In Colorado, raccoons are most common along riparian corridors and are extremely adapted to human activity. Long-tailed weasels utilize all habitat types with abundant prey such as deer mice, chipmunks, pocket gophers, prairie dogs, rabbits, birds, and reptiles (Fitzgerald et al. 1994). Gray foxes, ringtail cats, and western spotted skunks primarily inhabit rocky terrain of semi-desert and montane shrublands, mixed conifer-oakbrush, and pinyon-juniper woodlands. In addition, gray foxes also inhabit un-utilized borders of agricultural areas (Fitzgerald et al. 1994).

Small Mammals

A variety of small- and medium-sized mammals are likely or known to occur in the project corridor. Even though these are small mammals, they are linked in complex ways to the

ecosystem, providing seed dispersal and germination of plants, as well as supporting predator populations. Small mammals likely to be found in the US 160 project corridor include various mice in the genus *Peromyscus*, plains pocket mice (*Perognathus flavescens*), rock squirrels (*Spermophilus variegatus*), Gunnison’s prairie dogs (*Cynomys gunnisoni*), and black-tailed jackrabbits (*Lepus californicus*).

Mice species in the genus *Peromyscus* are the most ubiquitous small mammals in North America (Baker 1968). Canyon mice (*P. crinitus*) and pinyon mice (*P. truei*) are two rodent species that inhabit semi-desert shrublands and pinyon-juniper woodlands. Of these two species, the pinyon mouse is closely tied to pinyon-juniper woodlands because its main diet consists of juniper seeds and cones/berries (Yancy and Jones 1999). Deer mice (*P. maniculatus*) are found throughout Colorado in almost all habitats except wetlands.

Black-tailed jackrabbits are common inhabitants of semi-desert shrublands, and during the winter months, sagebrush is an important browse species (Fitzgerald et al. 1994). In southwestern Colorado, plains pocket mice and rock squirrels generally occur in pinyon-juniper woodlands. Gunnison’s prairie dogs are found in open shrublands of southwestern and south-central Colorado at elevations from 6,000 to 12,000 feet (Fitzgerald et al. 1994). Several Gunnison’s prairie dog colonies have been documented along the US 160 project corridor (Kloster 2003a).

Many bats may occur in the project corridor including the little brown myotis (*Myotis lucifugus*) and the western big brown bat (*Eptesicus fuscus*; Adams 2003). Other bats that are considered to be declining by various agencies and organizations such as USFWS, BLM, CDOW, and CNHP are discussed in Section 3.12.1.2, Other Sensitive Species.

Raptors

The riparian and pinyon-juniper woodland habitats within the project corridor provide nesting habitat and winter roosts for several species of raptors. Table 3.11.2, Raptor Species Known or Likely to be Present in the US 160 Project Corridor, lists the raptor species that may occur within the project corridor as migratory, breeding, and/or winter residents.

**Table 3.11.2
Raptor Species Known or Likely to be Present in the US 160 Project Corridor**

Species	Scientific Name	Species	Scientific Name
Bald eagle	<i>Haliaeetus leucocephalus</i>	Sharp-shinned hawk	<i>Accipiter striatus</i>
Golden eagle	<i>Aquila chryaetos</i>	Cooper’s hawk	<i>Accipiter cooperii</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>	American kestrel	<i>Falco sparverius</i>
Ferruginous hawk	<i>Buteo regalis</i>	American peregrine falcon	<i>Falco peregrinus anatum</i>
Swainson’s hawk	<i>Buteo swainsoni</i>	Great horned owl	<i>Bubo virginianus</i>

Source: Andrews and Righter 1992; Kingery 1998.

Bald eagles, peregrine falcons, ferruginous hawks, and burrowing owls are discussed in Section 3.12, Threatened, Endangered, and Sensitive Species.

Red-tailed hawks are likely the most common raptor within the project corridor. Unlike ferruginous hawks, which prey mainly on prairie dogs, red-tailed hawks are generalists and prey on a variety of insect and mammalian species. Red-tailed hawks inhabit virtually every habitat

in Colorado, though pinyon-juniper and riparian woodland appear to be important nesting habitats (Preston 1999a). Two nests, likely red-tailed hawk, were observed in 1999; one in riparian woodland and one in an agricultural meadow with a few cottonwood trees.

Other raptors known to nest in pinyon-juniper woodlands in the project corridor are Cooper's hawks and sharp-shinned hawks. Both these species prey mainly on birds and hunt in dense woodland (Andrews and Righter 1992).

Swainson's hawks are generally associated with grasslands, agricultural fields, and riparian woodlands and have been documented in the project vicinity (Preston 1999b; Andrews and Righter 1992). American kestrels are common in agricultural areas, grasslands, riparian forest edges, and urban areas and occur throughout Colorado (NDIS 2005). Great-horned owls occur in Colorado year-round in riparian woodland and agricultural areas (Andrews and Righter 1992).

Migratory Songbirds

Up to 100 passerine (i.e., migratory songbird) species occur in the project corridor during nesting, migration, and/or winter. Riparian habitats are critical to migratory songbirds for one or more of these life stages, and in southwestern Colorado, the greatest diversity of bird species occur in riparian woodland habitat. In terms of songbird diversity, after riparian woodland, pinyon-juniper woodland supports a greater diversity of migratory songbirds than sagebrush shrubland due to the varied structure of the canopy and understory in the pinyon-juniper habitat.

Based on available literature, the following species may be nesting or wintering within the project corridor: gray gnatcatcher (*Polioptila caerulea*), scrub jay (*Aphelocoma coerulescens*), pinyon jay (*Gymnorhinus cyanocephalus*), sage thrasher (*Oreoscoptes montanus*), black-billed magpie (*Pica pica*), bushtit (*Psaltriparus minimus*), and chipping sparrow (*Spizella passerina*) (Kingery 1998).

Reptiles and Amphibians

The riparian habitats located within the project corridor are particularly important to amphibians because they require moist environments. Some amphibian species that may inhabit the project corridor include New Mexico spadefoot (*Scaphiopus multiplicatus*), Woodhouse's toad (*Bufo woodhousii*), western chorus frog (*Pseudacris triseriata*), and northern leopard frog (*Rana pipiens*). New Mexico spadefoot and northern leopard frog are discussed in Section 3.12.2, Other Sensitive Species.

There are several lizard and snake species that may occur within the project corridor, including collared lizard (*Crotaphytus collaris*), short-horned lizard (*Phrynosoma douglassii*), eastern fence lizard (*Sceloporus undulates*), sagebrush lizard (*Sceloporus graciosus*), bull snake (*Pituophis melanoleucus*), western terrestrial garter snake (*Thamnophis elegans*), and the western rattlesnake (*Crotalus viridis*) (Hammerson 1999). One turtle species, painted turtle (*Chrysemys picta*), may occur in streams, rivers, and marshy wetlands within the project corridor (NDIS 2005). Pinyon-juniper woodlands provide habitat for most of these reptile species that may be present in the project corridor. However, reptiles, especially snakes, may occupy a number of different habitat types.

Fisheries

There are two perennial rivers (Florida and Los Pinos rivers) and two intermittent streams (Wilson Gulch and Dry Creek) within the project corridor. The Florida and Los Pinos rivers support limited fisheries and fish spawning. Wilson Gulch and Dry Creek probably do not support a fishery because of their intermittent nature, excessive high temperatures, and siltation. Dry Creek is heavily influenced by withdrawals for irrigation and return irrigation flows.

No recent stream surveys have been conducted within the project corridor. In 1976, CDOW conducted a stream survey in the Florida River at the US 160 bridge and found two major game fish present, brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*). Although these species spawn within these rivers, CDOW stocks trout annually to supplement populations. In addition, four other species of fish: white suckers (*Catostomus commersoni*), fathead minnows (*Pimephales promelas*), mottled sculpins (*Cottus bairdi*), and speckled dace (*Rhinichthys osculus*) were sampled in the 1976 survey.

In 1992, CDOW conducted a stream survey on the Little Pine River to the south of US 160. Rainbow and brown trout were caught during this survey, as well as another game species, green sunfish (*Lepomis cyanellus*). Non-game species caught included white suckers, mottled sculpins, speckled dace, and black bullheads (*Ictalurus melas*).

3.12 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

This section describes the occurrence and distribution of threatened, endangered, and sensitive species within the project corridor. Sensitive species include those listed by CDOW as special concern, BLM as sensitive, USFWS as Birds of Conservation Concern (BCC) and/or species considered rare or vulnerable by CNHP. Threatened and endangered species are protected under the Endangered Species Act (ESA) or Colorado state law, while sensitive species receive no formal protection but are still considered when assessing impacts. Letters from the BLM, the USFS, CDOW, and the USFWS listing threatened and endangered species likely to occur in the project corridor are included in Appendix D, General Correspondence. The occurrence and status of federal- and state-listed threatened and endangered species in the project corridor are listed in Table 3.12.1, Federal and State Threatened or Endangered Species Occurrence in the US 160 Project Corridor.

**Table 3.12.1
Federal and State Threatened or Endangered Species
Occurrence in the US 160 Project Corridor**

Species	Status	Potential for Occurrence	Comments
Mammals			
Canada lynx <i>Lynx canadensis</i>	LT	Not present	Inhabit contiguous areas of spruce/fir forests; no suitable habitat along US 160. Lynx reintroduced into region by CDOW in 1999 and 2000.
River otter <i>Lutra canadensis</i>	SE	Present	Abundant in Los Pinos River.
Black-footed ferret <i>Mustela nigripes</i>	LE, SE	Not present	Historically inhabit prairie dog colonies in southwestern Colorado; no suitable habitat as no prairie dog colonies of sufficient size to support the species.

**Table 3.12.1
Federal and State Threatened or Endangered Species
Occurrence in the US 160 Project Corridor**

Species	Status	Potential for Occurrence	Comments
Birds			
Bald eagle <i>Haliaeetus leucocephalus</i>	LT, ST	Present	Winter habitat, occasionally nests in region.
Gunnison sage grouse <i>Centrocercus minimus</i>	FC	Not present	Historic range (prior to 1950) in La Plata County; marginal habitat in project corridor.
Mexican spotted owl <i>Strix occidentalis lucida</i>	LT, ST	Unlikely	Marginal winter habitat.
Southwestern willow flycatcher <i>Empidonax traillii</i>	LE, SE	Present	Breeding activity observed in 1998 and 2002 at one survey location near Bayfield.
Western burrowing owl <i>Athene cunicularia hypugaea</i>	ST	May occur	Potential breeding habitat in Gunnison's prairie dog towns occurring along US 160.
Yellow-billed Cuckoo <i>Coccyzus americanus occidentalis</i>	FC	May occur	Suitable habitat in cottonwood-willow dominated riparian areas on Florida and Los Pinos rivers.
Fish			
Colorado pikeminnow (squawfish) <i>Ptychocheilus lucius</i>	LE, ST	Not present	Inhabit large rivers, pools, eddies, and other areas adjacent to the main current flows and feed in main channel. Rivers in project corridor are too shallow to provide suitable habitat and are far upstream of known habitat. Water depletions to Animas, Florida, or Los Pinos rivers would be detrimental to pikeminnow and razorback sucker inhabiting waters downstream of these rivers in the San Juan River Basin.
Razorback sucker <i>Xyrauchen texanus</i>	LE, SE	Not present	See Colorado pikeminnow (above).
Amphibians			
Boreal toad (mountain toad) <i>Bufo boreas boreas</i>	FC, SE	Not present	Inhabit damp areas of lodgepole pine or spruce-fir forest habitat from 7,500 to 12,000 feet in elevation; documented in riparian habitats dominated by willow in lower elevations (USFWS 1997). The project corridor is below the elevation range of the species; no known breeding sites in project corridor.
Invertebrates			
Uncompahgre fritillary butterfly <i>Boloria acrocnema</i>	FE	Not present	Snow willow (<i>Salix nivalis</i>) patches in high-elevation alpine meadows at 10,000 to 14,000 feet in the San Juan Mountains. No suitable habitat in the project corridor.
Plants			
Knowlton's cactus <i>Pediocactus knowltonii</i>	LE	Not present	Alluvial deposits forming rolling gravelly hills in pinyon-juniper and sagebrush habitats (Spackman et al. 1997; New Mexico Native Plant Protection Advisory Committee 1984). Suitable habitat is present in the project corridor but the species was not observed in the project corridor during 1998 field surveys.

**Table 3.12.1
Federal and State Threatened or Endangered Species
Occurrence in the US 160 Project Corridor**

Species	Status	Potential for Occurrence	Comments
Mancos milkvetch <i>Astragalus humillimus</i>	LE	Not present	Sandstone ledges or mesa tops, in cracks or sandy pockets at 5,500 to 5,850 feet in elevation (Spackman et al. 1997; New Mexico Native Plant Protection Advisory Committee 1984). Project area is above known elevation range.
Mesa Verde cactus <i>Sclerocactus mesae-verdae</i>	LT	Not present	Sparsely vegetated shale or adobe clay badlands at 4,000 to 5,000 feet in elevation (Spackman et al. 1997; New Mexico Native Plant Protection Advisory Committee 1984). Project area is above known elevation range and no suitable habitat.
Sleeping Ute Milkvetch <i>Astragalus tortipes</i>	FC	Not present	Smoky Hills Layer of the Mancos Formation, on the Ute Mountain Indian Reservation. Mixed desert shrub on gravels derived from volcanic intrusion. Suitable habitat is not present.
<u>Pagosa skyrocket</u> <u><i>Ipomopsis polyantha</i></u>	<u>FC</u>	<u>Not present</u>	<u>Found exclusively on surface exposures of the Mancos Formation between 6,800 and 7,300 feet elevation. No suitable habitat in project area.</u>

Status:

- FC = candidate for listing by federal government
- LE = listed as endangered by federal government
- LT = listed as threatened by federal government
- SE = listed as endangered by state of Colorado
- ST = listed as threatened by state of Colorado

3.12.1 Threatened and Endangered Species

Federal- and State-Listed Threatened, Endangered, and Candidate Species

Species listed by USFWS and the State of Colorado are shown in Table 3.12.1, Federal and State Threatened and Endangered Species Occurrence in the US 160 Project Corridor. Species known or likely to occur within the US 160 project corridor, or that may be affected indirectly by project activities, are described in more detail in this section. A number of species that lack suitable habitat in the project corridor or are otherwise unlikely to occur are not discussed further, including the Canada lynx, black-footed ferret, Gunnison sage grouse, Colorado pike minnow, razorback sucker, boreal toad, Uncompahgre fritillary butterfly, Mancos milkvetch, Mesa Verde cactus, and sleeping Ute milkvetch.

River Otter

River otter are social, aquatic mustelids that inhabit high-quality permanent water with minimum water flows of 10 cubic feet per second (cfs). River otters inhabit a variety of riparian habitats dominated by willows (*Salix* sp.), cottonwoods (*Populus* sp.), and spruce (*Picea* sp.), as well as other riparian-associated vegetation. Otters do not hibernate and are diurnal in winter but more nocturnal in summer (Fitzgerald et al. 1994). River otters were nearly extirpated in Colorado in the early 20th century due to trapping, agricultural activities, water pollution, and development. CDOW started a reintroduction program in 1976 to reestablish breeding populations in several

Colorado drainages. Since that time, more than 100 otters have been reintroduced to several Colorado rivers, and otter populations are reestablishing in many areas, including southwestern Colorado. River otters do occur in the project corridor; they have been observed in the upper Florida River and are abundant in the Los Pinos River. Otter populations in the Animas River are considered marginal; most observations occur from the north end of Durango to Electra Lake, outside the project corridor (Kloster 2003a).

Bald Eagle

Bald eagles most often occur near reservoirs and rivers, and are found near prairie dog colonies in winter (Andrews and Righter 1992). The project corridor is within bald eagle winter range (Figure 3.12.1, Bald Eagle and Southwestern Willow Flycatcher Habitat). Bald eagle nests have not been observed in or near the US 160 project corridor, although nesting has been documented along the Animas and Los Pinos rivers south of the project corridor in the Southern Ute Indian Reservation. Winter concentration occurs along the Animas (including US 550 in the Grandview section), Florida, and Los Pinos River valleys, and the Los Pinos River is a winter forage area (CDOW 1996; Kloster 2003b; NDIS 2005).

Bald eagles mainly subsist on fish and carrion but are opportunistic feeders during winter, often relying on waterfowl, rabbits, and prairie dogs. Roosts are used for sleeping and protection from winter storms. Eagles usually leave the roost to hunt early in the morning and return in the evening. However, roosts may be used all day during severe weather conditions. Roosts may be used by individuals or small to large groups of birds, and a communal roost is defined as a tree or group of trees used by 15 or more eagles (CNHP 2003).

There are no known communal roost sites along the highway corridor, but known winter roost/perch trees are present near the Florida Canal and at the Florida and Los Pinos rivers, which are used most years (CDOW 1998; Kloster 2003b).

Mexican Spotted Owl

Mexican spotted owls inhabit large steep canyons with old-growth mixed conifer forests and shady, cool canyons with pinyon-juniper and old-growth Douglas fir. These habitats do not occur along the US 160 project corridor. However, Mexican spotted owls use a wider variety of forest habitats for foraging than for nesting (USFWS 2001) and may utilize peripheries of the project corridor for this purpose. Mexican spotted owls mainly prey on small- and medium-sized rodents, but may also consume bats, birds, reptiles, and insects. The nearest known nesting location is southwest of the US 160 project corridor at Mesa Verde National Park.

Western Burrowing Owl

Western burrowing owls nest in underground burrows and are generally associated with prairie dog towns. Several small Gunnison's prairie dog colonies occur in the US 160 project corridor that would provide suitable nesting habitat for burrowing owls, although the species was not observed during field reconnaissance. Burrowing owls prey on insects, rodents, and small birds (Jones 1998).

Southwestern Willow Flycatcher

The southwestern willow flycatcher is one of five subspecies of the willow flycatcher (*Empidonax traillii*). Southwestern willow flycatchers nest primarily in willows along streams. These birds favor riparian thickets in the foothills and willow-dominated open valleys, usually distant from trees. Additionally, they often prefer shrubbery with two or three layers of shrub height. The presence of water around the willows increases the forage basis by producing an abundance of insects (Sedgwick 1998; Andrews and Righter 1992). Individuals are present in breeding territories by mid-May and nests are built and eggs laid in late May and early June. Young fledge the nest by early to mid-July and migrate to the wintering grounds in Mexico, Central America, and possibly northern South America by September (Sedgwick 2000).

Southwestern willow flycatchers were observed during presence/absence surveys conducted along the US 160 project corridor in 1998, 1999, and 2002. One southwestern willow flycatcher was observed on two occasions during project corridor surveys in 1998 near the proposed right-of-way (ROW) in riparian shrub along an unnamed stream on the Los Pinos River floodplain. No southwestern willow flycatchers were observed in the 1999 survey (Sugnet 1998).

In 2002, 21 sites were identified as suitable habitat and surveyed along the entire length of the project corridor (Figure 3.12.1, Bald Eagle and Southwestern Willow Flycatcher Habitat). The determination of suitable habitat is based on information provided by USFWS regarding minimum patch size dimensions for willow carrs (i.e., patches) capable of supporting nesting southwestern willow flycatchers. Willow carrs measuring 30 feet in width and length, and 6 feet in height are considered suitable habitat for these birds. However, linear patches wider than 15 feet that cover at least 900 square feet should also be considered potential southwestern willow flycatcher habitat (Sugnet 2001).

One southwestern willow flycatcher was observed multiple times during the 2002 surveys in the same survey area that the species was observed in 1998 surveys in the Bayfield section. The presence of a southwestern willow flycatcher during the breeding season in July indicates that the willow patch may be the bird's breeding territory, although it is unknown whether a mating pair occupies the territory.

Yellow-billed Cuckoo

This species breeds in large areas of lowland, riparian cottonwood-willow habitats, and urban areas with tall trees (Andrews and Righter 1992). The subspecies requires suitable habitat patches of at least 35 acres of dense riparian forest with a 50 percent canopy cover (Brown et al. 1999). Populations in the western US have declined due mainly to habitat loss in breeding areas.

Although Yellow-billed cuckoo has been recorded in the area, no breeding birds are known to currently occupy habitat along the US 160 project corridor (Andrews and Righter 1992, Carter 1998). Suitable habitat exists along the Florida and Los Pinos rivers; therefore, the Yellow-billed cuckoo may occur in the project corridor.

3.12.2 Other Sensitive Species

Other species that have special status are listed by the state of Colorado as special concern, by BLM as sensitive, by the USFWS as BCC or by CNHP as rare or imperiled.

The State of Colorado species of special concern and CNHP rare or imperiled species included in these lists that have potential to occur in the US 160 project corridor are shown and discussed in Table 3.12.2, Other Sensitive Species Occurrence in the US 160 Project Corridor.

**Table 3.12.2
Other Sensitive Species Occurrence in the US 160 Project Corridor**

Species	Status	Potential for Occurrence	Comments
Bats			
Big free-tailed bat <i>Nyctinomops macrotis</i>	G5/S1	Possible	Associated with pinyon-juniper woodland and sagebrush shrubland. Night roosts on cliff faces; day roosts on buildings or tree cavities.
Brazilian free-tailed bat <i>Tadarida brasiliensis</i>	CDOW, G5/S1	Possible	Occur in low-elevation pinyon-juniper woodlands, arid grasslands, and semi-desert shrublands. Roosts in abandoned mines, caves, and attics.
Fringed myotis <i>Myotis thysanodes</i>	G4G5/S3	Likely	Inhabits pinyon-juniper woodlands and shrublands to 8,000 feet in elevation. May occur in suitable habitat in project corridor.
Townsend’s big-eared bat <i>Plecotus townsendii</i>	SC, G4T4/S2	Likely	Inhabits semi-desert shrublands, pinyon-juniper woodlands, and open montane forests up to 9,500 feet in elevation.
Birds			
American peregrine falcon <i>Falco peregrinus</i>	SC, G4T3/S2B	Likely	Project area contains winter and foraging habitat.
Ferruginous hawk <i>Buteo regalis</i>	SC, G4/S3B S4N	Possible	Habitat mostly unsuitable. May be present in winter.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	SC, G4T3/S1B	Unlikely	Habitat unsuitable; occasional spring or fall migrants but no breeding or resident birds.
White-faced ibis <i>Plegadis chihi</i>	G5/S2B	Unlikely	May occur only as rare spring/fall migrant in wet meadows and marshy wetlands.
Amphibians			
New Mexico spadefoot toad <i>Scaphiopus multiplicatus</i>	SC	Probable	Suitable habitat present and within known range.
Northern leopard frog <i>Rana pipiens</i>	SC, G5/S3	Probable	Suitable habitat present and within known range.
Plants			
Arboles milkvetch <i>Astragalus oocalysis</i>	G4, S2S3	Possible	Not found during surveys but suitable habitat present and within known range.
Aztec milkvetch <i>Astragalus proximus</i>	G4, S2	Possible	Not found during surveys but suitable habitat present and within known range.
Green sedge <i>Carex viridula</i> (= <i>C. oederi</i> spp <i>viridula</i>)	G5, S1	Possible <u>Unlikely</u>	Suitable habitat may be present. Was observed near project corridor in Little Pine River Park in 2000. Not observed within BLM land in project area during surveys.
Naturita milkvetch <i>Astragalus naturitensis</i>	G2G3, S2S3	Unlikely <u>Not present</u>	Habitat generally suitable but outside known range; not found during surveys.
Pagosa phlox <i>Phlox caryophylla</i>	G4, S2	Possible	Not found during surveys but suitable habitat present and within known range.

**Table 3.12.2
Other Sensitive Species Occurrence in the US 160 Project Corridor**

Species	Status	Potential for Occurrence	Comments
Philadelphia fleabane <i>Erigeron philedelphicus</i>	G5, S1	Possible	Suitable habitat present.
San Rafael milkveteh <i>Astragalus rafaelsensis</i>	G3, S1	Unlikely	Habitat generally suitable but outside known range; not found during surveys.
Showy collomia <i>Collomia grandiflora</i>	G5, S1	Possible	Not found during surveys but suitable habitat present and within known range.
Wood lily <i>Lilium philadelphicum</i>	G5, S3	Unlikely	Not found during wetland surveys.

Status:

SC = Colorado Division of Wildlife Special Concern

CDOW = Colorado Division of Wildlife, Wildlife Resource Information Source Species

Colorado Natural Heritage Program Rankings:

G/S1 = critically imperiled globally/in state because of rarity or some factor of its biology making it especially vulnerable to extinction

G/S2 = imperiled globally/in state because of rarity or other factors making it very vulnerable to extinction

G/S3 = vulnerable through its range or found locally in a restricted range

G/S4 = apparently secure globally/in state, though it might be quite rare in parts of its range

G/S5 = demonstrably secure globally/in state, though it might be quite rare in parts of its range

S#B = refers to the breeding season imperilment of elements that are not permanent residents

G#T# = trinomial rank (T) is used for subspecies or varieties. These taxa are ranked on the same criteria as G1-G5.

Big Free-tailed Bat

Big free-tailed bats inhabit pinyon-juniper woodland and sagebrush shrubland habitats in rough, rocky areas (Adams 2003). High cliffs are used as nocturnal roosts, while buildings or tree cavities are used for day roosts. Only five scattered records exist from Mesa, Otero, El Paso, Gunnison, and Weld counties, with the northernmost from Greeley (Fitzgerald et al. 1994). The species may occur in the project corridor during foraging or day roosting only.

Brazilian Free-tailed Bat

Brazilian free-tailed bats occur in pinyon-juniper woodlands, arid grasslands, and semi-desert shrublands and generally roost in caves, mines, rock fissures, or buildings (Fitzgerald et al. 1994). Brazilian free-tailed bats may occur in suitable habitats within the project corridor.

Fringed Myotis

Within the project corridor, fringed myotis inhabit pinyon-juniper woodland and oak shrub up to 8,000 feet in elevation (Adams 2003). Fringed myotis may occur in suitable habitat in the project corridor.

Townsend's Big-eared Bat

Townsend's big-eared bats inhabit semi-desert shrublands, pinyon-juniper woodlands, and open montane forests up to 9,500 feet in elevation (Adams 2003). The species is likely to occur in suitable habitats in the project corridor.

American Peregrine Falcon

Peregrine falcons nest primarily among cliffs and forage over adjacent coniferous and riparian forests, and to a lesser extent, over other habitats (Andrews and Righter 1992). No suitable nesting habitat occurs within the project corridor. However, active aeries, bird nests located on cliffs or mountaintops, are located west of the Animas River near Perins Peak. Since there is adequate habitat and suitable prey base for peregrine falcons, it is likely that they may use the project corridor for foraging. The project corridor may also be used occasionally as hunting habitat by migrating peregrine falcons.

Ferruginous Hawk

Ferruginous hawks are not known to nest along the US 160 project corridor; the habitat and relatively high level of human activity makes most of it unsuitable for the species. Ferruginous hawks may hunt over unpopulated portions of the project corridor in winter or during migration.

Western Snowy Plover

~~This small shorebird is a rare fall migrant in La Plata County (Andrews and Righter 1992). They utilize alkali flats around reservoirs and sandy shorelines. Although the bird has been documented to occur in the project corridor, its occurrence is rare. Western snowy plover may occur in the project corridor during fall migration, although suitable habitat is not found along US 160.~~

White-faced Ibis

~~White-faced ibis may be present in the project corridor during spring and fall migration in wet meadows and marshy wetland edges; however, the project corridor is not within a known migration corridor or range (Andrews and Righter 1992).~~

New Mexico Spadefoot

The New Mexico spadefoot inhabits sagebrush, semi-desert shrublands, and the floodplains of streams in southwestern Colorado. Typically, the spadefoot only enters water (i.e., temporary ponds and muddy pools) during the breeding season and spends most of its time buried in the soil (Hammerson 1999). No surveys have been conducted for the spadefoot within the project corridor; however, there is potential habitat.

Northern Leopard Frog

The northern leopard frog typically inhabits the banks and shallow areas of marshes, ponds, and streams, but may also occur in irrigation ditches and wet meadows. Leopard frogs are usually observed near permanent water; however, they can and do, at times, roam far from water on rainy nights (Hammerson 1999). No surveys have been conducted for the leopard frog within the project corridor; however, there is suitable habitat at a number of locations within the project corridor.

Sensitive Plant Species

Nine sensitive plant species may occur in the project corridor, although their presence is not confirmed. The following species were not found in the project corridor during field surveys completed in 1998. However, the surveys did indicate that suitable habitat is present and that they may occur.

- Arboles milkvetch has been recorded at a number of locations in the project vicinity, including a 1917 observation at Bayfield. Its preferred habitat is seleniferous (i.e., containing selenium) soils, especially disturbed areas in pinyon-juniper and ponderosa pine/oak (CNHP 1996). Arboles milkvetch is endemic (i.e., restricted) to this region.
- Aztec milkvetch occurs on mesas, bluffs, and low hills in sandy, often alkaline clay soils, among junipers or sometimes sagebrush, at 5,400 to 7,300 feet elevation (Spackman et al. 1997). This species is also endemic.
- Green sedge is a circumboreal species that may occur on wet sandy or saline soils (Hurd et al. 1998). It was observed just south of the project corridor in Little Pine River Park in 2000.
- Pagosa phlox is found on low slopes and flats in pinyon-juniper woodlands and sagebrush at 6,500 to 7,500 feet elevation (CNHP 1996; New Mexico Native Plants Protection Advisory Committee 1984). This species is also endemic.
- Philadelphia fleabane occurs in meadows or disturbed moist sites (CNHP 1996). It is a widely distributed species.
- Naturita milkvetch grows in sandstone mesas, ledges, crevices, and slopes in pinyon-juniper woodlands at 5,000 to 7,000 feet (Spackman et al. 1997). It is not known to occur in La Plata County.
- San Rafael milkvetch lives in gullied hills, washes, and talus under cliffs in seleniferous clayey, silty, or sandy soils at 4,400 to 6,500 feet (Spackman et al. 1997). It is not known to occur in La Plata County.
- Showy collomia grows in dry, open or lightly wooded places from low to moderate elevations. This species has a wide distribution outside Colorado.
- Wood lily lives in moist woods, thickets, and wet meadows (Spackman et al. 1997). It was found at Bayfield in 1917 (CNHP 1996), but the population is likely to be completely destroyed. It was not found during wetland delineation studies. It is a widely distributed species.

BLM Sensitive Species

The USFWS identifies BCC, which consists of species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2002). The BLM uses these species to analyze impacts to breeding birds on their lands. The BLM Sensitive Species in Table 3.12.3, BLM San Juan Field Office Sensitive Species and Birds of Conservation Concern, and USFWS BCC Species are listed for the San Juan Region. These species and their potential to occur on the two BLM land parcels within the project area are shown in Table 3.12.3.

Table 3.12.3
BLM San Juan Field Office Sensitive Species and Birds of Conservation Concern

Species	Status	Potential for Occurrence in BLM Property	Comments
Mammals			
Allen's big-eared bat <i>Idionycteris phyllotis</i>	BLM	Not present Unlikely	No suitable habitat. Occurs in piñon-juniper woodlands, mines, and caves. <u>The species is not known to occur in La Plata County (NDIS 2006), but could be present based on habitat affinities.</u>
Big free-tailed bat <i>Nyctinomops macrotis</i>	BLM	Possible	Associated with pinyon-juniper woodland and sagebrush shrubland. Night roosts on cliff faces; day roosts on buildings or tree cavities.
Fringed myotis <i>Myotis thysanodes</i>	BLM	Likely	Inhabits pinyon-juniper woodlands and shrublands to 8,000 feet in elevation. May occur in suitable habitat in project corridor.
Spotted bat <i>Euderma maculatum</i>	BLM	Not present Unlikely	Associated with P pinyon-juniper, shrub desert, and riparian habitats. <u>The species is not known to occur in La Plata County (NDIS 2006), but could be present based on habitat affinities.</u> Species distribution not in project area.
Townsend's big-eared bat <i>Plecotus townsendii</i>	BLM	Likely	Inhabits semi-desert shrublands, pinyon-juniper woodlands, and open montane forests up to 9,500 feet in elevation.
Yuma myotis <i>Myotis yumanensis</i>	BLM	Possible	Inhabits riparian areas in western Colorado. Marginally suitable habitat on BLM land parcels.
Birds			
American peregrine falcon <i>Falco peregrinus anatum</i>	BLM, BCC	Possible	Project area contains foraging and winter habitat. Likely as forager only.
Black swift <i>Cypseloides niger</i>	BCC	Not present	Habitat unsuitable; nests on cliffs near waterfalls.
Black tern <i>Chlidonias niger</i>	BLM	Not present	Emergent wetlands. Not known to occur in vicinity of project area.
Columbian sharp-tailed grouse <i>Tympanuchus phasianellus</i>	BLM	Not present	Oak/serviceberry shrubland, sagebrush, aspen forests, and irrigated pasture. Not known to occur near project area.
Black-throated gray warbler <i>Dendroica nigrescens</i>	BCC	Unlikely	May occur in pinyon juniper woodland, but no known nesting in vicinity of project area.
Burrowing owl <i>Athene cunicularia hypugaea</i>	BCC	Unlikely	Potential breeding habitat in Gunnison's prairie dog towns if present on BLM parcels.
Ferruginous hawk <i>Buteo regalis</i>	BLM, BCC	Possible	Habitat mostly unsuitable. May be present in winter.
Flammulated owl <i>Otus flammeolus</i>	BCC	Unlikely Not present	No suitable nesting habitat. Primarily inhabit ponderosa pine and aspen woodland. May occur as forager only.
Golden eagle <i>Aquila chrysaetos</i>	BCC	Unlikely	Habitat <u>in project area</u> unsuitable <u>for nesting</u> . n Nest sites usually <u>located</u> on cliffs. May occur as forager only.
Grace's warbler <i>Dendroica graciae</i>	BCC	Unlikely Not present	No suitable nesting habitat; nests in ponderosa pine woodland.
Gray vireo <i>Vireo vicinior</i>	BCC	Possible	Suitable habitat. Primarily inhabits pinyon-juniper woodland. No known nesting in vicinity of project area.
Gunnison sage-grouse <i>Centrocercus minimus</i>	BLM, BCC	Not present	Sagebrush grasslands. No known populations in vicinity of project area.
Lewis's woodpecker <i>Melanerpes lewis</i>	BCC	Possible	Suitable habitat. Primarily inhabits lowland riparian woodland, also pinyon-juniper woodland.
Northern goshawk <i>Accipiter gentilis</i>	BLM	Not present	No suitable habitat. Occurs in ponderosa pine, aspen, mixed-conifer, and spruce-fir forests.

Table 3.12.3
BLM San Juan Field Office Sensitive Species and Birds of Conservation Concern

Species	Status	Potential for Occurrence in BLM Property	Comments
Northern harrier <i>Circus cyaneus</i>	BCC	Unlikely	Inhabits grassland, agricultural land, and marshes. Some areas of suitable habitat in wetland areas with cattails. No known nesting in project vicinity.
Pinyon jay <i>Gymnorhinus cyanocephalus</i>	BCC	Possible	May occur; suitable pinyon-juniper woodland habitat but no known nesting in vicinity of project area.
Prairie falcon <i>Falco mexicanus</i>	BCC	Unlikely	Nests on cliffs or canyon walls. Possible as forager only.
Sage sparrow <i>Amphispiza belli</i>	BCC	Unlikely	Sagebrush shrubland habitat present but no nesting records in La Plata County.
Short-eared owl <i>Asio flammeus</i>	BCC	Unlikely	Habitat mostly unsuitable, primarily grassland species. No known nesting in vicinity of project area.
Swainson's hawk <i>Buteo swainsoni</i>	BCC	Unlikely	Habitat mostly unsuitable; inhabits grasslands, desert, and agricultural areas. Not known to nest in project vicinity.
Virginia's warbler <i>Vermivora virginiae</i>	BCC	Likely	Suitable habitat present. Species occurs in a variety of habitats including foothills shrubland and pinyon-juniper woodland.
White-faced ibis <i>Plegadis chihi</i>	BLM	Unlikely <u>Not present</u>	No suitable wet meadows or reservoir shorelines in project area. May occur only as rare spring/fall migrant in wet meadows and marshy wetlands.
Williamson's sapsucker <i>Sphyrapicus throideus</i>	BCC	Unlikely <u>Not present</u>	Unsuitable habitat. Occurs in coniferous and upland deciduous habitats generally in association with aspens.
Wilson's phalarope <i>Phalaropus tricolor</i>	BCC	Unlikely <u>Not present</u>	Potentially occurs during summer in wetland areas. No nesting records in La Plata County. Possible as forager only.
Yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	BLM, BCC	Unlikely	Occurs in riparian woodland. No suitable habitats on BLM lands in project area.
Reptiles			
Desert spiny lizard <i>Sceloporus magister</i>	BLM	Not present	Shrubby banks and sparsely vegetated rocky areas near streams or arroyos. No records in La Plata County.
Longnose leopard lizard <i>Gambelia wislizenii</i>	BLM	Not present	Inhabits greasewood/sagebrush habitats in or near canyons. No records from La Plata County.
Fish			
Bluehead sucker <i>Catostomus discobolus</i>	BLM	Not present	Found only in Colorado River basin. No rivers on BLM land parcels.
Colorado River cutthroat trout <i>Oncorhynchus clarki pleuriticus</i>	BLM	Not present	Same as bluehead sucker (above).
Flannelmouth sucker <i>Catostomus latipinnis</i>	BLM	Not present	Same as bluehead sucker (above).
Roundtail chub <i>Gila robusta</i>	BLM	Not present	Same as bluehead sucker (above).
Plants			
San Rafael milkvetch <i>Astragalus rafaensis</i>	BLM	Unlikely	Habitat generally suitable but outside known range; not found during surveys.
<u>Jones Blue Star <i>Amsonia jonesii</i></u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Cronquist milkvetch <i>Astragalus cronquistii</i></u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>

Table 3.12.3
BLM San Juan Field Office Sensitive Species and Birds of Conservation Concern

Species	Status	Potential for Occurrence in BLM Property	Comments
<u>Naturita milkvetch</u> <u>Astragalus naturitensis</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Green sedge</u> <u>Carex viridula</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Rollins cryptanth</u> <u>Cryptantha rollinsii</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Slender rock-brake</u> <u>Cryptogramma stelleri</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Kachina daisy</u> <u>Erigeron kachinensis</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Comb Wash buckwheat</u> <u>Eriogonum clavellatum</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Altai cottongrass</u> <u>Eriophorum altaicum var. neogaeum</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Pagosa bladderpod</u> <u>Lesquerella pruinosa</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Eastwood monkey-flower</u> <u>Mimulus eastwoodiae</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Paradox breadroot</u> <u>Pediomelum aromaticum</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>
<u>Silver willow</u> <u>Salix candida</u>	<u>BLM</u>	<u>Not present</u>	<u>Habitat generally unsuitable or outside known range; not found during surveys.</u>

Status:

BCC = Bird of Conservation Concern, USFWS

BLM = sensitive species, BLM San Juan Field Office

3.13 HISTORIC PRESERVATION

Historic properties include districts, sites, buildings, structures, and objects that represent past human activities. Significant cultural resources, or historic properties, include those resources that are listed, or are determined eligible for listing, on the NRHP. Criteria for evaluating the significance of historic properties are set forth at 36 CFR 60.4, and are:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) That are associated with the lives of persons significant in our past; or
- (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

- (d) That have yielded, or may be likely to yield, information important in prehistory or history.

Historical sites, such as buildings and ditches, are usually evaluated under the first three criteria, while archaeological sites, if eligible, are usually significant under the fourth criterion.

Section 106 of the National Historic Preservation Act (NHPA), as amended, and its implementing regulations found at 36 CFR 800, require that federal agencies such as FHWA, or state agencies that receive federal assistance, such as CDOT, take into consideration any effects a proposed action may have on significant historic properties. This is accomplished through the Section 106 Consultation Process, which consists of the following steps:

- Initiate the Section 106 process
- Identify and evaluate historic properties
- Assess adverse effects
- Consult to resolve adverse effects

Historic properties within the US 160 project corridor have been identified and evaluated to assess adverse effects. The State Historic Preservation Office (SHPO) concurred with CDOT's effects determination in December 2001.

A literature search and a pedestrian survey were conducted to identify the presence of historic properties in the US 160 project corridor [URS Greiner Woodward Clyde (URSGWC) 2000a, 2000b]. File searches were conducted at the Colorado Historical Society prior to field investigations, and additional literature review was conducted at the Western History Collection of the Denver Public Library, the Stephen H. Hart Library at the Colorado Historical Society, the State Archives, the Colorado Department of Water Resources, the BLM in Durango, the library and archives at Fort Lewis College in Durango, the Durango Public Library, and the La Plata County Assessor's Office. Personal interviews with various individuals and homeowners in the project corridor were also conducted.

The pedestrian survey covered a 300-foot-wide corridor on each side of existing US 160 for approximately 18 miles, totaling about 1,273 acres. The survey was conducted on privately owned land (982 acres), BLM-administered land (79 acres), and CDOT ROW (212 acres). Additional 600-foot-wide segments of alternative alignments were surveyed for approximately 10 miles, totaling 721 acres on private lands. Results of the file searches and field surveys are discussed below.

Altogether, these surveys covered approximately 95 percent of the Preferred Alternatives and other action alternatives proposed for the US 160 project. Access for survey was denied for a small portion of private lands. In addition, due to ongoing input from the public and other considerations, the conceptual design for the project has changed from that which was initially proposed when the fieldwork was undertaken. This modification included a small area north of the US 160/550 interchange design for Alternative G Modified and county roads realignments in both G Modified and F Modified. Although these areas were not part of the initial survey, impacts to historic properties including the Denver & Rio Grande abandoned railroad and Florida Farmers' Ditch were accounted for in the DEIS. Surveys of these lands ~~and compliance with all environmental laws will be~~ were completed ~~prior to publishing the Final EIS.~~ in the fall

of 2005. No additional properties were found in the survey. A letter concurring with this finding was received from SHPO on November 17, 2005 and is included as an addendum to Appendix E.

In accordance with Section 106, the NRHP serves as a nationwide database for historic properties such as archaeological sites, traditional Native American cultural properties, historic districts, buildings, and objects that are significant to prehistory or history at local, state, and national levels. Historic properties were evaluated in the field according to the criteria set forth in 36 CFR 60.4 for eligibility to the NRHP. Those properties listed on the NRHP, or that are officially eligible for the NRHP, are federally protected resources and would be the subject of discussion regarding impacts as a result of improving the US 160 project corridor.

3.13.1 Historic and Archaeological Resources

The file searches conducted at the Colorado Historical Society revealed the presence of two previously recorded historic sites in the US 160 project corridor including a segment of the Denver & Rio Grande Railroad (5LP1131.8) and a residence known locally as the Newland House (5LP2006). The SHPO concurred in July 2000 that the railroad (5LP1131.8) is eligible for the NRHP and the Newland House (5LP2006) is not eligible.

The inventory for historic resources was conducted in November 1998 and field studies were concluded on subsequent trips in May and December 1999, and January and April 2000. Results of the surveys revealed the presence of 28 archaeological and 48 historic sites, including 36 standing structures, nine irrigation ditches, a segment of the Denver & Rio Grande Railroad, segments of the former US 160 roadway, and a cemetery (URSGWC 2000a, 2000b). All of these sites within the US 160 project corridor are located on private land or within CDOT ROW, except for a portion of the segment of the Denver & Rio Grande Railroad that is situated on BLM-administered land.

Nine sites that have been officially determined eligible for the NRHP and one site that needs additional data for an eligibility determination would be impacted by one or more of the proposed alternatives. These include a segment of the Denver & Rio Grande Railroad (5LP1131.8), eight irrigation ditches (5LP5658, 5LP5659, 5LP5661, 5LP5662, 5LP5663, 5LP5664, 5LP5665, 5LP5666) and one archaeological site (5LP5677). These eligible sites are listed in Table 3.13.1, Historic and Archaeological Resources, and described in the paragraphs that follow the table.

**Table 3.13.1
Historic and Archaeological Resources**

Site Number	Site Type	NRHP Evaluation
5LP1131.8 ^a	Denver & Rio Grande Railroad Segment	Eligible
5LP5658	King Ditch	Eligible
5LP5659	Thompson-Epperson Ditch	Eligible
5LP5661	Florida Farmers' Ditch	Eligible
5LP5662	Florida Canal	Eligible
5LP5663	McCluer-Murray Ditch	Eligible
5LP5664	Pioneer Ditch	Eligible
5LP5665	Schroder Irrigating Ditch	Eligible

**Table 3.13.1
Historic and Archaeological Resources**

Site Number	Site Type	NRHP Evaluation
5LP5666	Los Pinos Irrigating Ditch	Eligible
5LP5677	Archaeological Lithic Scatter	Needs testing to determine eligibility

^a Site is partially located on BLM land.

Description of NRHP-Eligible Historic Sites and Unevaluated Archaeological Site

FHWA has determined that the following nine historic properties meet the criteria for the NRHP and that one archaeological site needs testing to determine eligibility, and the SHPO concurs:

- Denver & Rio Grande Railroad (5LP1131.8)** – General William Jackson Palmer dreamed of building a railroad between Denver, Salt Lake City, and Mexico City to take part in the gold and silver mining boom by providing service to the Rocky Mountain mining districts. Most of the original San Juan extension of the Denver & Rio Grande Railroad from Antonito, Colorado to Chama, New Mexico was constructed in 1880, and the line was completed to Durango that same year. The Durango train stopped hauling freight to parts of southern Colorado and northern New Mexico in 1969, and the line between Alamosa and Durango was abandoned. One continuous segment of the Denver & Rio Grande Railroad was recorded during the pedestrian survey, and it is eligible for the NRHP under criterion (a), because it is associated with events that have made a significant contribution to the broad pattern of history.
- Archaeological Lithic Scatter (5LP5677)** – The file searches conducted at the Colorado Historical Society revealed no significant archaeological resources that would be impacted. An intensive pedestrian cultural resources inventory for archaeological resources was conducted in May and December 1999, and field studies were concluded on subsequent trips in January and April 2000. Results of the pedestrian surveys revealed the presence of one archaeological site that needs data before eligibility to the NRHP can be determined. The site, 5LP5677, is a sparse lithic scatter where inferred activities include stone tool manufacture and maintenance. Testing of this site was not possible as the landowner refused access for testing. Following acquisition of the ROW, CDOT would test this site, determine eligibility, and if appropriate, mitigate the site prior to construction. If the site is determined eligible for the NRHP, FHWA and CDOT would consult with the SHPO and Advisory Council on Historic Preservation (ACHP) to develop a MOA on the appropriate resolution of impacts. Available information indicates that 5LP5677 is similar to four other prehistoric sites in the corridor (5LP5674, 5LP5678, 5LP5681, and 5LP6490), all of which were determined not eligible for the NRHP subsequent to testing. Based on the results of archaeological investigations at comparable localities in southwestern Colorado, if this site were determined to be NRHP eligible it would likely be important chiefly because of what can be learned by data recovery and has minimal value for preservation in place.

The following irrigation ditches and one canal were determined eligible under criterion (a), associated with events that have made a significant contribution to the broad pattern of history. These are among the earliest irrigation projects in the area, signaling the advent of irrigated farms and crops in an area previously unsuitable for agriculture.

- **King Ditch (5LP5658)** – Formerly known as the Wood Ditch, the King Ditch was originally owned by William Worrall. Built in May 1881, it originally spanned 13.5 miles. It has had six appropriations for water rights, including two large appropriations in 1900 and 1951. The ditch provided irrigation for the Southern Ute Indian Reservation after May 4, 1899, when the reservation was opened to settlement by Euro-Americans. The ditch was also enlarged after the Vallecito Reservoir was built. Three segments of the ditch cross US 160 and have been altered with culverts and some realignments along the highway.
- **Thompson-Epperson Ditch (5LP5659)** – The Thompson-Epperson Ditch was originally built in 1877 by Herman O. Schultz, C.E. Stillwell, and Earl Smith. It had an original length of 13 miles. There have been several enlargements to the ditch and appropriations of water rights, including the appropriation of the Impson Ditch. The ditch provided irrigation for the Southern Ute Indian Reservation after May 4, 1899, when the reservation was opened to settlement by Euro-Americans. Four segments of the ditch cross US 160 and two have been altered, including realignments and a flume.
- **Florida Farmers' Ditch (5LP5661)** – The Florida Farmers' Ditch was built in 1883 by the Florida Farmers' Ditch Company. It was originally constructed at a length of 3.0 miles. There have been nine appropriations, including various enlargements, dating from 1883 to 1946. Three segments of the ditch cross US 160, of which two have been altered by highway construction, including culverts and realignments.
- **Florida Canal (5LP5662)** – The Florida Canal was built in 1888 by the Florida Mesa Ditch Company. It was previously known as the Florida Mesa Ditch Company Ditch or the Florida Mesa Irrigation Company Ditch. Originally built to a length of 8.0 miles, the ditch was enlarged about eight times through 1910. This segment of the ditch crosses US 160 and has been altered by highway construction with an addition of a culvert.
- **McCluer-Murray Ditch (5LP5663)** – The McCluer-Murray Ditch was built in 1878 by T. J. McCluer and W. J. Forsythe. After the construction of the ditch, the City of Durango took ownership. The ditch was originally 2.0 miles in length. There have been 42 appropriations dating from 1878 to 1904. This segment of the ditch crosses US 160 and has been altered by highway construction with an addition of a culvert.
- **Pioneer Ditch (5LP5664)** – The Pioneer Ditch was built in 1877 by T. J. McCluer, W. J. Forsythe, and John Conway. The ditch was originally constructed to a length of 1.9 miles. There have been various enlargements of the ditch beginning in 1904. This segment of the ditch crosses US 160 and has been altered by highway construction with an addition of a culvert and a diversion flume.
- **Schroder Irrigating Ditch (5LP5665)** – The Schroder Irrigating Ditch was built in 1881 by the Schroder Irrigating Ditch Company. The ditch was originally constructed to a length of 4.25 miles. There have been five appropriations to the ditch from 1881 to 1954, including an enlargement of the ditch to more than 10 miles in 1913, which was claimed by the Pine River-Bayfield Ditch Company. This segment of the ditch crosses US 160 and has been altered by highway construction with an addition of a culvert.
- **Los Pinos Irrigating Ditch (5LP5666)** – The Los Pinos Irrigating Ditch was built in 1878 by the Los Pinos Irrigating Ditch Company. The ditch was originally constructed to a length of 5.25 miles. There has been one appropriation and no enlargements of the ditch. This

segment of the ditch crosses US 160 and has been altered by highway construction with an addition of a culvert.

3.13.2 Native American Consultation

Section 106 of the NHPA (as amended) and the ACHP regulations (36 CFR 800) mandate that federal agencies must involve interested Native American tribes in the planning process for federal undertakings. Consultation with a Native American tribe recognizes the government-to-government relationship between the U.S. government and sovereign tribal groups, and that federal agencies must be sensitive to the fact that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries. Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project would impact cultural resources that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those impacts. By describing the proposed undertaking and the nature of known cultural sites, and consulting with the interested Native American community, CDOT and FHWA strive to effectively protect areas important to Native American people.

Given that the US 160 project corridor is located in proximity to the Southern Ute Indian Reservation and a portion of the Grandview Section Alternative G Modified would cross the external boundary of the reservation, Section 106 consultation was initiated in 2000 with the SUIT. In May 2000, CDOT and FHWA representatives accompanied by a member of the URS Corporation (URS) project team, met with the SUIT Native American Graves Protection and Repatriation Act (NAGPRA) Coordinator to discuss cultural resource issues (Appendix E, Historic Preservation Correspondence). During this meeting:

- CDOT revealed the location of all archaeological sites within the project corridor to the SUIT representative and explained, where feasible, that these sites would not be disturbed during the proposed improvements on US 160 and US 550.
- SUIT expressed concerns about potential medicinal plant locations in the project corridor and agreed to map these areas for CDOT, as necessary.
- SUIT requested a visit to NRHP eligible site 5LP2223, located on the Webb Ranch property within the external boundary of the SUIT reservation. The purpose of the site visit was to facilitate communication about the project between SUIT, the property owner and CDOT, and to lay a foundation for future coordination. The project was realigned and the site avoided so no field visit is now necessary.

Upon determination that an EIS would be prepared, additional tribes with a potential interest in the project were added to the consultation list. In May 2002, CDOT archaeologist and Native American liaison, Daniel A. Jepson, contacted 28 federally recognized tribes, including the SUIT, with an established interest in La Plata County (see Appendix E, Historic Preservation Correspondence, for copies of agency/tribal correspondence).

Tribes invited via letter to participate as consulting parties included the following (the location of the tribal headquarters, by state, follows each listing):

- Acoma Pueblo (New Mexico)
- Cochiti Pueblo (New Mexico)
- Fort Sill Apache Tribe (Oklahoma)
- Hopi Tribe (Arizona)
- Isleta Pueblo (New Mexico)
- Jemez Pueblo (New Mexico)
- Jicarilla Apache Tribe (New Mexico)
- Laguna Pueblo (New Mexico)
- Mescalero Apache Tribe (New Mexico)
- Nambe Pueblo (New Mexico)
- Navajo Nation (Arizona)
- Picuris Pueblo (New Mexico)
- Pojoaque Pueblo (New Mexico)
- San Felipe Pueblo (New Mexico)
- San Ildefonso Pueblo (New Mexico)
- San Juan Pueblo (New Mexico)
- Sandia Pueblo (New Mexico)
- Santa Ana Pueblo (New Mexico)
- Santa Clara Pueblo (New Mexico)
- Santo Domingo Pueblo (New Mexico)
- Southern Ute Indian Tribe (Colorado)
- Taos Pueblo (New Mexico)
- Tesuque Pueblo (New Mexico)
- Ute Mountain Ute Tribe (Colorado)
- Ute Tribe of the Uintah and Ouray Agency (“Northern” Ute) (Utah)
- White Mesa Ute Tribe (Utah)
- Zia Pueblo (New Mexico)
- Zuni Pueblo (New Mexico)

Six tribes responded either in writing or by telephone to the consultation request (Hopi, Southern Ute, Mescalero Apache, Taos Pueblo, Laguna Pueblo, and Isleta Pueblo). Of these six, three (the Hopi Tribe, Laguna Pueblo, and the SUIT) indicated an interest in becoming consulting parties; the remaining three tribes elected not to pursue formal consulting status. The Governor of Isleta Pueblo did, however, request that the tribe be notified should human remains be discovered during any phase of work associated with the project. Neither Taos Pueblo nor the Mescalero Apache Tribe attached any such stipulations in correspondence related to the consultation process. If human remains or other items of potential cultural patrimony are exposed during archaeological investigations or construction activities, the consulting tribes would be notified as part of the legislatively mandated process related to such discoveries and the future disposition of the remains.

The Hopi Tribe requested that the archaeological resources survey report completed for the project be sent for review, a copy of which was forwarded to the Hopi Cultural Preservation Office in June 2002. The Hopi Tribe also stipulated that it wanted to be involved in the review and planning process related to any archaeological excavations proposed for Native American sites eligible for inclusion on the NRHP that cannot be avoided during proposed highway improvements. In January 2003, the survey report and information related to test excavations proposed at five sites along the corridor (5LP5674, 5LP5677, 5LP5678, 5LP5681, 5LP6490) was sent to Laguna Pueblo and the SUIT.

On April 2, 2003, CDOT and FHWA hosted a tribal consultation meeting for the project at the CDOT Region 5 office in Durango. Representatives from the three consulting tribes had initially agreed to attend, but due to last-minute out-of-state travel complications and illness, neither the Laguna Pueblo nor Hopi Tribe was represented at that meeting. The BLM elected not to participate in the meeting, even though the BLM administers property along US 160 and indicated an active interest in the consultation process. Neil Cloud, Cultural Resource Liaison for the SUIT, was the lone tribal member in attendance. An overview of the project, including a discussion of the status and future disposition of NRHP eligible and potentially eligible archaeological sites documented in the project corridor, was provided to Mr. Cloud, followed by a visit to each of the five archaeological sites noted above that would be impacted during the proposed highway improvements. At that time, these five sites were evaluated as potentially eligible for listing on the NRHP contingent on additional research. Test excavations to determine the nature and extent of subsurface cultural remains were proposed for, and with one exception, were subsequently completed in spring 2003. Mr. Cloud stated that, with the exception of the discovery of human remains and associated artifacts, the SUIT had no issues with regard to the proposed test excavations. Although Laguna Pueblo and the Hopi Tribe were not present at the meeting, representatives from both tribes had previously indicated they concurred with the proposed archaeological testing.

The archaeological testing at sites 5LP5674, 5LP5678, 5LP5681, and 5LP6490 revealed the presence of sparse, shallow prehistoric Native American artifactual remains, and these localities were evaluated as not eligible for nomination to the NRHP, a determination with which the SHPO concurred in July 2003. Archaeologists were not provided access to site 5LP5677 by the private landowner, and as such that site remains categorized as “need data” until a test excavation program can be completed and an NRHP eligibility assessment finalized. A summary letter that outlined the April 2, 2003, meeting and preliminary results of the test excavations was sent to the consulting tribes in May 2003. In late July 2003, the three consulting

tribes were again contacted by letter and provided the final test excavation results, as well as a copy of the testing report. Only the Hopi Tribe responded to that submittal. In its July 30, 2003, letter the tribe acknowledged the NRHP evaluations for the tested sites, but did not specifically comment on them. ~~Therefore, given that none of the consulting tribes provided comments to the contrary, FHWA and CDOT assumed the tribes' tacit agreement with the site eligibility determinations.~~ All correspondence related to these actions is located in Appendix E, Historic Preservation Correspondence.

The consulting tribes were provided the opportunity to have an active role in the planning of highway improvements along the US 160 project corridor, especially in the context of known archaeological sites or other places of established cultural or religious significance. By consulting with the interested Native American community regarding cultural resources issues, CDOT and FHWA, in cooperation with the BLM, have fulfilled their obligations in this regard as outlined in the Section 106 and Advisory Council regulations.

3.14 PALEONTOLOGICAL RESOURCES

Paleontological literature and field surveys were performed to identify the presence of any significant paleontological resources within the US 160 project corridor (Britt et al. 1999). The fieldwork was conducted on October 30 and 31, 1998, and covered all outcrops along US 160 in the project corridor. The survey was conducted by walking outcrops, most of which were roadcuts, and looking for fossils both on the surface and in the immediate subsurface. Finer-grained and fossil-bearing geologic units were closely inspected. Poorly preserved leaf and wood compressions in sandstone lenses were relatively common in some outcrops. The best preserved specimens were exposed by excavating fresh matrix (i.e., the rocks or soil surrounding the fossils) and splitting it along bedding planes. The carbon films of leaf and woody compressions were readily visible in freshly exposed vertical sections. The majority of fossils consisted of unidentifiable carbonized wood compressions.

Only the upper part of the upper unnamed member of the Animas Formation is exposed along the highway. The Animas Formation is of particular interest to both geologists and paleontologists because it crosses the boundary between the Cretaceous and Tertiary periods. The Animas Formation is divided into two units, the basal McDermott Member that is overlain by an unnamed upper member second unit of the formation. The McDermott Member consists of a very coarse breccia, volcanic conglomerate, coarse tuffaceous sandstone, shale, and a massive tuff. The inclusions are dominantly andesite and range up to 4.0 to 5.0 feet in diameter.

The upper unnamed member of the Animas Formation is finer grained, consisting mainly of sand and shale. The shale is sandy and tuffaceous with channels of coarse-grained sandstone, which often contain granular and pebble conglomerate. This unit is Paleocene in age based on floral and faunal associations and its relationships with the Nacimiento Formation. All fossils observed and collected as part of the survey came from this unnamed upper member of the Animas Formation (Britt et al. 1999).

Two paleontological localities were identified by this survey. The first locality is located west of Grandview. The most important specimen at this location is a coalified stump that is approximately 6 inches wide and 40 inches high. Based on the preservation of roots, it is thought the stump was preserved in place. Natural molds of leaf compressions were preserved in

medium-grained sandstone ledges that crop out along the top of the hill immediately above the roadcut at this locality. These leaf compressions are not well preserved (Britt et al. 1999).

The second and most prolific locality is east of the Florida River. This locality produced both floral and vertebrate fossils. Plants were found in a resistant sandstone channel near the top of the roadcut along the north side of the highway. At the uppermost level of the sandstone, abundant fruiting structures are preserved, including figs (*Ficus* sp.), *Nordenskiodia* sp., and at least one unidentified taxon (i.e., plant type). The best leaves were recovered from a silty shale at the base of the channel, but due to the nature of the matrix and the fact the test quarry extended less than 3.3 feet into the hill, most leaves are fragmentary.

The fossiliferous channel is up to 6.6 feet thick. This channel is incised into a structureless mudstone containing abundant slickensides. This mudstone is interpreted to be a paleosol because of the aforementioned characters and the fact that it contains fossil roots and only occasional, poorly preserved leaf fragments. The best fossils preserved in this mudstone unit are coalified, three-dimensional branches or roots that are exposed at road level. Most of the mudstone appears to have been heavily disturbed by biological activity. Nonetheless, about 75 identifiable paleobotanical specimens were collected from this locality. These are described in detail in the paleontological survey report (Britt et al. 1999).

A fossil turtle was preserved on the south side of the road, across from the plant locality east of the Florida River. The turtle was positioned east of the deepest part of the paleochannel. Exposed portions of the shell were deeply weathered, and the shell was approximately 4.8 inches wide. The specimen was not collected because of its poor condition and preserved portions extended only a couple of inches further into unweathered matrix (Britt et al. 1999).

3.15 HAZARDOUS WASTE SITES

A Modified Environmental Site Assessment (MESA) was conducted for the US 160 project corridor to determine the potential existence of hazardous materials and hazardous waste in the study area (URSGWC 2000c).

The MESA study area extended from the US 160/US 550 (south) intersection to Bayfield. The MESA procedures and format are specified in the CDOT Statewide Hazardous Waste Services Contract, which complies with American Society for Testing and Materials (ASTM) standards for Phase I Environmental Site Assessments. The MESA was performed with the purpose of providing a professional opinion on the potential current presence of Recognized Environmental Conditions (RECs) in the project corridor, including potential impacts from known problems in the surrounding area. The term "Recognized Environmental Conditions," as defined by ASTM Designation E 1527-00, means:

“the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimus* conditions that generally do not present a material risk of harm to public health or the environment and that generally would

not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimus* are not “Recognized Environmental Conditions.”

A search radius of 0.5 mile from the existing US 160 was used for high-risk facilities such as Superfund sites, leaking underground storage tank (LUST) sites, and landfills. A 0.25-mile search radius was used for low-risk facilities such as underground and aboveground storage tank [UST and aboveground storage tank (AST), respectively] sites, listed hazardous waste generators, and federal and state drinking water sources.

These search radii encompassed all of the alternatives considered in this FEIS. Information on potential hazardous materials or wastes within the search radii were obtained by the following methods:

- Searching records of federal, state, and local databases, including an environmental regulatory agency database search of the study area and adjoining properties that was ordered from VISTA Information Solutions (VISTA) and Satisfi Environmental Information (Satisfi) (VISTA 1999; Satisfi 2005). The VISTA report presents the results of a search of federal and state databases, along with a description of each database. Various databases were searched by VISTA depending on the search radius.
- Review of public record files located at the Colorado Department of Labor and Employment, Division of Oil and Public Safety (OPS).
- Field reconnaissance of the project corridor.
- Interviews with landowners and business owners about the historical use of their property.

The records search identified a number of sites within the specified search distances. These sites generally lie adjacent to the existing US 160 project corridor and were evaluated to determine whether they could present a problem for design or construction activities. The sites were evaluated based on:

- Impact by ROW acquisition
- Potential liability for CDOT in ownership of potential contamination sources or impacts from contamination
- The nature of the documented or potential contamination
- The media/pathway impacted by the documented or potential contamination
- The vertical relationship of the site to the alignment alternatives (i.e., upgradient or downgradient with respect to surface water and groundwater flow direction)
- Proximity to the proposed construction impact area for each alignment alternative

The records search and OPS file review results were supplemented by landowner and business owner telephone interviews to acquire information regarding the historical use of commercial properties within the construction impact areas of the alignment alternatives. A site inspection also was performed to identify possible sources of hazardous wastes (e.g., surface staining or water sheens). The two primary commercial uses of concern along this corridor, based on the demographic setting and history of the area, are:

1. Businesses involved in dispensing fuel and which own and operate ASTs or USTs that may have had fuel releases.
2. Businesses involved with providing a product or service that entails using materials or generating waste products that are hazardous and must be handled and disposed of according to federal, state, and local regulations to avoid a release to soils, surface water, or groundwater on or beneath the property.

3.15.1 Evaluated Sites

The original VISTA regulatory database and record search was completed on December 17, 1999. According to ASTM Standard 1527-00, an Environmental Site Assessment is valid for 180 days from the date it was performed. An additional Satisfi regulatory database search was completed on March 14, 2005.

There were 42 commercial properties evaluated to determine whether commercial activities have contaminated soils, surface water, or groundwater on these properties, and to define the nature and extent of any contamination identified. Of the 42 properties located within the corridor, 12 warranted further investigation. The investigations for two of the properties, KRP Autoworks and Conoco Express, were completed as part of the Eight Corners intersection improvement project along US 160 in the Bayfield section. The remaining nine properties that could require additional investigative activities are listed in Table 3.15.1, US 160 Farmington Hill to Bayfield Hazardous Material and/or Waste Sites. This table is based on site information compiled and presented in the *US Highway 160: Farmington Hill to Bayfield, Final Modified Environmental Site Assessment* (URSGWC 2000c) for the 42 commercial properties. Figure 3.15.1, Modified Environmental Site Assessment Locations Farmington Hill to Bayfield, is a corridor map depicting the location of these nine sites. All nine of these sites are located either within or immediately adjacent to the US 160 existing ROW or an alternative ROW as described in Chapter 2, Alternatives.

**Table 3.15.1
US 160 Farmington Hill to Bayfield Hazardous Material
and/or Waste Sites**

Site Number and Name	Site Inspection	Site Investigation
1. Wilson Gulch Multi-use Commercial Property	✓	✓
2. AA American Auto Sales	✓	✓
3. Grandview Store/Sonoco Service Station	✓	✓
4. Chuck's Diesel Repair	✓	✓
5. Fender Menders	✓	✓
6. Durango East KOA Campground	✓	✓
7. Lon's Auto Salvage/Scrap Metal	✓	✓

**Table 3.15.1
US 160 Farmington Hill to Bayfield Hazardous Material
and/or Waste Sites**

Site Number and Name	Site Inspection	Site Investigation
8. Gem Village Store ROW	✓	✓
9. Phillips 66 (Mini-Merc)	✓	✓

Source: URSGWC 2000c.

✓ = Completed

MESA = Modified Environmental Site Assessment

Site Number:

1. The shared use path commercial property in Wilson Gulch on the south side of US 160 at 27732 US 160 east.
2. AA American Auto Sales, Ryder Truck Rental, and Auto and RV Repair property at 28753 US 160 east.
3. Grandview Store/Sonoco Service Station at 28870 US 160 east.
4. Chuck's Diesel Repair at 29703 US 160 east.
5. Fender Menders property at 21 Valle Escondido Drive.
6. Durango East KOA Campground at 30090 US 160 east, Durango.
7. The auto salvage/scrap metal operations property on the north side of US 160, approximately 3.5 miles west of Gem Village.
8. Includes Gem Village Country Store and Creative Auto Trim located upgradient of ROW for the Gem Village Store Preferred Alternative alignment.
9. Phillips 66 Service Station at 487 Colorado Drive in Bayfield.

Nine properties were analyzed for potential project impacts. These nine properties were further analyzed in the *US 160 Durango to Bayfield Final Site Investigation Sampling and Analysis Plan/Health and Safety Plan*, February 2001 (URSGWC Feb. 2001a), and the *US 160 Durango to Bayfield Final Site Inspection and Geophysical Survey Findings Report*, February 2001 (URSGWC Feb. 2001b). The information from these reports has been incorporated into the discussion of each of the nine properties.

Wilson Gulch Multi-use Commercial Property

The Wilson Gulch Multi-use Commercial Property (Wilson Gulch) is located at 27732 Highway 160 east. A site inspection and investigation occurred at the property in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). This building is more than 25 years old and has had a number of commercial uses including: commercial cabinet and fixture storage for retail sales; restaurant equipment refurbishment; skateboard recreational facility; kayak design and manufacturing; and furniture and cabinet manufacturing including finishing work. Some of these historical activities suggest the potential for solvent contamination of site soils. All drains in the building connect to a French-drain septic system, but the owner has not been able to determine the location.

A site inspection and a geophysical survey were conducted in October 2001 to determine the location of the French drain. As a result of the site inspection and geophysical survey, recommendations were made for collection of subsurface and surface soil and groundwater samples at the property. The *US 160 Durango to Bayfield Site Investigation Report Wilson Gulch (Jones Property-parcel 126)* (URSGWC July 2001) was prepared in July 2001 to plan for sampling at the property. Samples were analyzed and results indicated they were non-detected or below state standards for VOCs, semi-volatile organic compounds (SVOCs), total petroleum

hydrocarbons (TPH), and metals. Based on the comprehensive site investigations performed and the findings from sampling, this site is not a REC.

AA American Auto Sales

AA American Auto Sales is located at 28753 Highway 160 east. This site has been used for automotive maintenance and repair activities since the 1960s. A site inspection and investigation occurred at the property in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). This property contains a floor drain, two leachfields, a stormwater lagoon which was potentially a former sewage lagoon, an AST, and an auto salvage yard. The long history and current elements of the property suggests there is potential for petroleum fuels, used oil, and solvent contamination. No known sampling has occurred at this property to determine potential contamination; therefore, this property is a REC.

Grandview Store/Sonoco Service Station

The Grandview Store/Sonoco Service Station has been operating at 28870 Highway 160 east since the 1950s. A site inspection and investigation occurred at the property in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). Six USTs were located at the property and were removed in 1995 and 1998. During the tank removal, additional excavation and soil sampling was conducted to determine if any contamination was present within the tank vicinity. Contamination was encountered and was attributed to overfill spills and dispenser servicing activities and interpreted to be of very local extent (URSGWC 2000c). A “no further action” letter was issued for the six tanks removed in June 1999.

This facility is currently listed in the LUST database with a closed status (Satisfi 2005). There are currently two USTs on the property that have been relocated to the south portion of the property. During the site investigation a garage door at the back of the building and a small concrete patch were observed in the back area of the store that may have been the former location of a floor drain. This supports the historical use of the property for vehicle maintenance and repair work. Historical vehicle maintenance and repair work substantiated by the site inspection findings could potentially have impacted soil and groundwater downgradient (north) of the building. This site is a REC.

Chuck's Diesel Repair

This facility is located at 29703 Highway 160 east and has been used as a diesel repair shop since the early 1970s, followed by a drilling service storage property, and is currently used by a new lessee. The current lessee is not familiar with previous activities at the facility and has no knowledge regarding the presence of tanks or floor drains on the property. Site inspection and investigation findings of the property in February 2001 indicated the presence of a floor drain running the entire length of the building, soil staining in the rear yard area, and potentially hazardous material, possibly containing asbestos (URSGWC Feb. 2001a; Feb. 2001b). No known sampling has occurred at this property to determine the potential for contamination. Subsurface soil and groundwater may potentially have been impacted from historic site activities; therefore, this site is a REC.

Fender Menders

This property is located at 21 Valle Escondido Drive. The property operated as a service station until the late 1970s when it was destroyed by fire. The property remained vacant until 1994 and a new building was constructed on the old building's concrete slab. The previous owner removed all known tanks on the property, and a septic tank in back, and capped the floor drain that had tied into the septic tank. The tank removal is not listed in the Oil Inspection Survey (OIS) database for out-of-use USTs or LUSTs. A site inspection and investigation, including a geophysical survey, occurred in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). The survey confirmed the tanks had been removed; however, it is unknown if any soil or groundwater in and around the UST removals was inspected for contamination. Based on the lack of information regarding the tank removals, this site is a REC.

Durango East KOA Campground

The Durango East KOA Campground is located at 30090 Highway 160 east. All known USTs were removed from the property in November 1988. However, no information is available from OIS files as to the number of tanks removed, their age, their former location, or the removal activities. A site inspection and investigation, including a geophysical survey occurred in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). The geophysical survey indicated that one or more USTs may be present on the site. Also, a former sewage pond is located on the property. No known sampling has occurred to determine the presence of contamination. Based on the geophysical survey results, site inspection findings, and the site assessment information, this site is a REC.

Lon's Auto Salvage/Scrap Metal

This auto salvage/scrap metal operation company is located north of US 160 approximately 3.5 miles west of Gem Village and occupies approximately 30 acres. There is significant potential for the presence of contamination on the property from the release of fluids during the transportation and handling of damaged vehicles. This potential, combined with the natural slope of the local topography toward the highway, led to a site inspection and investigation in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). Drainages on the property flow along the yard perimeter into a low area between the front (south end) of the yard and US 160. The low-lying area, within US 160 ROW, is the most likely site for the accumulation of contamination from runoff from the site. No known sampling has occurred to determine the presence of contamination. Based on the potential for contamination within the project ROW, this site is a REC.

Gem Village Bypass ROW

Dry Creek and a tributary flow across the south bypass ROW. A number of commercial properties, including the former leaking USTs at Gem Village Store and the Creative Auto Trim property are located less than 0.13 mile upgradient of these drainages. A site inspection of this area occurred in February 2001. It is unknown how historic surface water flow in the proposed ROW segment of these drainages has been impacted by commercial activities. No known sampling has occurred to determine the presence of potential contamination; therefore, the bypass is a REC.

Phillips 66 (Mini-Merc)

Phillips 66 (Mini-Merc) is located at 487 Colorado Drive and was the site of a significant release of petroleum hydrocarbons discovered in 1993. A site inspection and investigation occurred at the property in February 2001 (URSGWC Feb. 2001a; Feb. 2001b). The site is currently under a corrective action plan due to hydrocarbon concentrations detected in groundwater downgradient of the property and beneath US 160 ROW. Any surface runoff or remaining near surface soil contamination from the former leaking USTs could potentially have impacted these drainages and low areas. The property is currently under long-term monitoring with reports being submitted to CDPHE. Based on the history of the site and past contamination issues, this site is a REC.

3.15.2 Additional Issues of Concern

Oil and Gas Facilities

Several oil and gas facilities are located within the CDOT ROW that are of varying sizes. There is a potential for subsurface releases with no observable indications at the facilities. Oil and gas facilities that would be impacted or disturbed by any action alternative constitute a potential REC.

Oil and gas facilities are prevalent along the US 160 project corridor. In the 2000 *US 160: Farmington Hill to Bayfield Final Modified Environmental Site Assessment* (URSGWC 2000c), 17 oil and gas facilities were identified within 0.25 mile of the project area. According to a May 2005 search of the Colorado Oil and Gas Conservation Web site, there are nine oil and gas facilities of varying sizes identified within approximately 300 feet of US 160 in the project corridor (COGCC 2005). These facilities are identified in Table 3.15.2, Oil and Gas Facilities Potentially Impacted by the Project.

**Table 3.15.2
Oil and Gas Facilities Potentially Impacted by the Project**

Owner	Facility Name	Direction from US 160	Township, Range, Section	Location within Project Section
XTO Energy Inc.	05-067-07935 2-9 WD	North <300 feet	T34N R8W Section 9	Grandview
BP America Production Company	05-067-08677 Federal 2-11 Gas Unit 2	South <300 feet	T34N R8W Section 11	Grandview
BP America Production Company	05-067-07546 Tinker 2-9 Gas Unit 1	South <300 feet	T34N R8W Section 9	Florida Mesa and Valley
BP America Production Company	05-067-08704 Tinker Federal Gas Unit 2	South <300 feet	T34N R8W Section 12	Dry Creek and Gem Village
BP America Production Company	05-067-07927 Gearhart Gas Unit C2	North <300 feet	T34N R7W Section 8	Dry Creek and Gem Village
BP America Production Company	05-067-07927 State Gas Com 'CF' 1	South <300 feet	T34N R7W Section 16	Dry Creek and Gem Village
Unknown	05-067-05646 Sitton Gray 1	South <300 feet	T34N R7W Section 15	Bayfield

**Table 3.15.2
Oil and Gas Facilities Potentially Impacted by the Project**

Owner	Facility Name	Direction from US 160	Township, Range, Section	Location within Project Section
BP America Production Company	05-067-08948 Le Platt Gas Unit 2	South <300 feet	T34N R7W Section 11	Bayfield
Unknown	05-067-60013 Ferguson	North <300 feet	T34N R7W Section 12	Bayfield

Utility Stations

There is one electrical substation located within the conceptual ROW within the Bayfield section of the project.

Aboveground Storage Tanks

Prior to ROW acquisition, CDOT will confirm the presence/absence of ASTs. It is possible that one or more other residential property or small business owners within the study area could use an AST for fueling personal or farm vehicles. Smaller ASTs may not be on the list of registered ASTs because, according to state petroleum storage tank regulations, “any AST whose capacity is greater than 600 or less than 39,999 gallons,” is not required to be registered or follow other regulatory requirements. There are no expected impacts from ASTs; therefore, they do not constitute a REC.

Underground Storage Tanks

Prior to ROW acquisition, CDOT will confirm the presence/absence of USTs at properties within the ROW that have not been investigated. Interviews with the property owners and a site reconnaissance will be conducted to check for old fill pipes associated with USTs and leaks or stains associated with USTs. It is possible that USTs are present on one or more of the residential or small business properties for use by owners for fueling personal or farm vehicles. Any potential USTs at these properties constitute a REC.

Transformers/Polychlorinated Biphenyl (PCB) Items

It is expected that pole-mounted and pad-mounted transformers are located along the project corridor and potentially within the area of ROW. Transformers are generally labeled as either PCB-containing or non-PCB-containing. Any transformers containing PCBs that are adjacent to the action alternatives are a potential REC.

Asbestos-Containing Building Materials (ACBM)

Some of the buildings scheduled to be demolished within US 160 ROW potentially contain ACBM. Buildings constructed prior to 1980 have the potential to contain ACBM. An asbestos survey will be performed on buildings scheduled to be demolished to determine whether ACBM is present that would require removal prior to demolition as defined by National Emission Standards for Hazardous Air Pollutants (NESHAP). NESHAP EPA Regulation 40 CFR subpart

M, Part 61 requires that comprehensive inspections be conducted to determine the location and amount of asbestos in a structure prior to renovation or demolition activities that may disturb the material. Buildings that contain ACBM are potential RECs.

Lead-Based Paint

Light poles, signals, and other structure material, such as bridge girders, have the potential to be coated with lead-based paint. These structures are potentially located within the project corridor and could be impacted during construction. Typically, paint that was applied after 1979 does not contain lead. Materials that are coated in lead-based paint will be recycled or disposed of at an approved facility according to state and federal regulations.

Hazardous Material Spills

Several fuel spills have occurred in the past either within or adjacent to the project corridor. All spills listed by Satisfi were further researched in the National Response Center (NRC) database. For spills identified within or adjacent to the project corridor, the NRC database listed them as cleanup complete and release secured.

3.16 VISUAL RESOURCES

Visual resources of a project corridor can be described by evaluating certain factors that indicate the scenic quality or visual appeal of the landscape, the existing level of alteration or scenic integrity of the landscape, and the sensitivity to visual change in the landscape. The scenic quality of an area can be described by evaluating landscape features such as landform, vegetation, water features, color, adjacent scenery, scarcity, and cultural modifications, and comparing those features with those typically found within the region.

Overall quality is rated as A, B, or C, with “A” denoting distinctive or high quality landscapes, “B” denoting typical or moderate quality landscapes, and “C” denoting indistinct or low quality landscapes.

Scenic integrity is a measure of modifications to the landscape and can be rated as natural appearing, slightly altered, moderately altered, and heavily altered.

Visual sensitivity of an area is a function of the type and number of viewers, importance of the travel route, surrounding land uses, and the presence or absence of important geological, historical, or biological features. Visual sensitivity is high along the entire project corridor due to the high traffic levels, the presence of recreationists and other tourists who use the highway, and residential areas scattered along the corridor. Scenic quality and existing scenic integrity are discussed by landscape subtype below.

There are two areas of BLM land along the US 160 project corridor: a 0.25-mile section in the Grandview area, and a 1.75-mile area located about 5.0 miles west of Bayfield. The BLM has developed a system for managing visual resources called the Visual Resource Management (VRM) System that takes into account scenic quality, distance zones, and visual sensitivity. Areas are assigned a VRM classification I through IV based on the combination of the inventory factors (scenic quality, sensitivity, and distance zones). The VRM classes describe the different degrees of modification allowed to the landscape, with Class I area allowing the least amount of

modification, and Class IV allowing the greatest amount of modification. The BLM lands in the Grandview project area are VRM Class III, and the BLM lands in the Bayfield project area are VRM Class II lands.

The project corridor is located in the Navajo Section of the Colorado Plateau Physiographic Province (Fenneman 1931). The landscape within this section typically consists of mesas, foothills, and stream valleys. The climate is semi-arid with hot, dry summers and usually dry, cold winters. The San Juan Mountains, located just to the north and east of the project corridor, can receive heavy winter snows, which are visible from the project corridor. Natural vegetation includes desert scrub on the mesas (big sagebrush is the dominant species), riparian vegetation (narrow-leaf cottonwood and willows) along the stream valleys, and conifer woodland (pinyon-juniper) in scattered areas within the foothills and mesas.

The Florida and Los Pinos rivers are the main drainages crossed by US 160 within the project corridor; both flow in a north to south direction and eventually join the San Juan River in New Mexico. Agricultural development has occurred along the corridor, especially on Florida Mesa and in the Florida and Los Pinos valleys. Agricultural land consists of both dryland and irrigated pasture, and irrigated hayland. Residential and commercial development has also occurred in scattered locations along the project corridor, influencing the scenic character of the landscape as viewed by travelers along the highway.

Within the project corridor, distinct visual subtypes were identified by distinguishing relatively homogeneous combinations of topography, landcover, and land use. Traveling east from the start of the project at Farmington Hill, the subtypes include Farmington Hill, Grandview, Florida Mesa, Florida River valley, pinyon-juniper hills, Dry Creek valley, Gem Village, and the Los Pinos valley/Bayfield area. These areas are identified in Figure 3.16.1, Visual Landscape Subtypes, and picture number references throughout this section are for photographs shown in this figure.

Farmington Hill comprises the mesa on top of the hill, the steep side slope, and the adjacent drainage (i.e., Wilson Gulch). Picture Number 1 shows the agricultural land located on the mesa top, which is a natural-appearing pastoral landscape of generally moderate to high scenic quality. Views from this location include scenic long distance views of the San Juan Mountains to the north. Picture Number 2 shows the steep side slope of the hill and Wilson Gulch at the bottom of the slope. An existing access road climbs the side of the hill, which creates a noticeable linear disturbance, but, overall, the hillside is covered with pinyon-juniper and Gambel's oak and is natural appearing. The US 160 project corridor runs along the base of the slope and represents a major disturbance in the landscape. Wilson Gulch is downslope of the existing highway and has an associated linear wetland. Scenic quality of the gulch is moderate, and scenic integrity is slightly altered.

Grandview (Picture Number 3) is distinguished primarily by its developed land use, which includes a mixture of commercial and residential uses. Landform is primarily a west-facing slope in a transitional area between Florida Mesa to the east and Farmington Hill to the west. Vegetation is scattered throughout the area and is primarily a mix of pinyon-juniper and oak. This section is moderately altered with scenery common to the region. The mixed land use and many unrestricted access points along the highway create an environment that lacks visual cohesion.

Florida Mesa (Picture Number 4) is characterized by its flat landform, absence of tall vegetation, adjacent agricultural pasture and irrigated haylands, and panoramic views of the surrounding

landscape, including the San Juan Mountains to the north. Although not uncommon scenery within the region, this is one of the few sections within the project corridor that provides the viewer with uninterrupted long distance views, and scenic quality is rated moderate. Development is primarily scattered residential, and the section has an overall natural appearing to slightly altered appearance.

The Florida River valley (Picture Number 5) is characterized by the river and its associated linear band of riparian vegetation and floodplain. Narrow leaf cottonwoods visually dominate the riparian vegetation, and the water provides an uncommon water feature in this arid environment. The valley is approximately 1.0 mile wide, and land use is primarily pastureland with some residential development. Gas wells can be seen in the valley, but do not draw much visual attention from highway travelers. Scenic integrity is rated as slightly altered. Scenic quality is moderate, except for the river and adjacent riparian vegetation, which is high value scenery.

East of the Florida River valley (Picture Number 6) is a section of pinyon-juniper covered hills. This is one of the most rural, natural appearing landscapes in the project corridor. The section comprises a series of low hills covered in places with thick bands of pinyon-juniper and has a very distinctive appearance compared with the remainder of the corridor. With a few exceptions, scenic integrity is natural appearing, and scenic quality is moderate. The BLM manages a 1.75-mile section of land in this area.

After leaving the pinyon-juniper hills, the highway proceeds along Dry Creek (Picture Number 7) for approximately 2.0 miles. This is a narrow valley, characterized by rolling pastureland along the creek and surrounded by tree- and shrub-covered hills on both sides. This area is mostly undeveloped except for the agricultural land and a few scattered residential areas. Scenic quality is moderate, and scenic integrity is natural appearing.

The Gem Village section (Picture Number 8) is visually defined by the commercial and residential development that comprises the village. Development is located on both sides of the highway. South of the area of development that lines US 160 are irrigated haylands that provide a scenic backdrop to the village. Scenic quality is moderate, and scenic integrity is heavily altered.

After leaving Gem Village, the highway passes through the Los Pinos valley and the town of Bayfield (Picture Number 9). The Los Pinos River carries substantially more water than the Florida River and provides a brief but scenic view for travelers on the highway. East of the river, the area starts to become visually influenced by the town of Bayfield.

Development density starts to increase until one is at the center of development along US 160 at what is known locally as Eight Corners, the US 160j/CR 501 intersection in Bayfield. Development is a mix of both commercial and residential use, with some wetland and irrigated pasture and haylands located on the northwest side of the Eight Corners intersection. The highway continues east through Bayfield until the project ends approximately 1.0 mile east of town. Scenic quality is generally moderate except for high quality scenery at the Los Pinos River crossing. Scenic integrity ranges from natural appearing along the river corridor to heavily altered in Bayfield.

3.17 ENERGY CONSUMPTION

Energy consumption associated with the existing US 160 includes vehicular fuel consumption associated with traffic on the highway and consumption of fuels and production of maintenance materials associated with road maintenance.

3.18 GEOLOGY AND SOILS

3.18.1 Geology

The project corridor is located in the San Juan Basin, which straddles both the southern Rocky Mountains and the Colorado Plateau Physiographic Province. The San Juan Basin is an elliptical asymmetric basin that is 100 miles long, north to south, 90 miles wide east to west and extends from southwestern Colorado into northwestern New Mexico. The San Juan Mountains form its border to the north, and the Hogback Mountains border the basin to the west. The Continental Divide lies along the east and south sides of the San Juan Basin (Fassett 1971; URSGWC 2000c).

The San Juan Basin has been a site of marine and terrestrial deposition from early Paleozoic through Holocene times. The maximum thickness of sedimentary rocks is more than 14,000 feet in the central portion of the basin and the sedimentary section thins at the basin margins. Marine conditions prevailed throughout the Paleozoic and Mesozoic eras and were interrupted by major periods of orogeny (i.e., the process of mountain formation), deformation, and erosion during the Carboniferous, Permian, and Jurassic periods (Larson 1956; URSGWC 2000c). The final regression of marine conditions occurred during the late Cretaceous era and resulted in the deposition of the Pictured Cliff Sandstone, which is present throughout most of the San Juan Basin. The Fruitland Formation, which ranges from 0 to 500 feet in thickness, overlies the Pictured Cliffs Sandstone and is composed of interbedded sandstone, siltstone, shale, carbonaceous shale, coal, and thin limestone beds in places. The Fruitland sediments were deposited primarily in the coastal non-marine environment behind the regressing sea that deposited the Pictured Cliffs Sandstone and comprises coastal swamp, river, floodplain and lake deposits. There is a general thickening from southeast to northwest across the basin.

The Fruitland Formation is overlain by the Kirtland Shale, which comprises fluvial and floodplain shales with occasional sandstone and siltstone beds. The Kirtland Shale, along with the Fruitland Formation, crops out to 3.0 to 4.0 miles north of the project corridor. The Kirtland Shale is overlain by the Ojo Alamo Sandstone in the central and southern portions of the basin and the Animas Formation in the northern portion of the basin and within the project corridor. The Kirtland Shale ranges from less than 100 feet along the eastern edge of the basin to more than 2,000 feet thick in the northwestern corner near the Colorado/New Mexico border (Fassett 1971; URSGWC 2000c).

The Animas Formation is composed of terrestrial variegated conglomeratic sandstones and shales. The Animas deposits are easily identifiable due to the abundance of volcanic cobbles and tuffaceous material that provide evidence of the volcanic activity that started during the late Cretaceous era and continued sporadically throughout the Tertiary era (Larson 1956; URSGWC 2000c). The evidence for late Cretaceous volcanism is consistent with other evidence indicating that a period of deformation and erosion preceded deposition of the Animas sediments. The

thickness of the Animas Formation ranges from 0 to 2,700 feet across the San Juan Basin. Along the project corridor the Animas sediments are 1,100 feet thick near the Animas River and thicken eastward to 1,800 feet near the Florida River and more than 2,600 feet thick east of Bayfield (Fassett 1971; URSGWC 2000c). The rolling hills within the project corridor comprises primarily Animas Formation outcrops that were formed by three periods of glaciation and the erosional period that started with uplift during the Miocene era and has continued to the present. Quaternary age alluvial deposits along the Animas River, Florida River, Los Pinos River, and Dry Creek drainages cover the Animas Formation, which is considered bedrock in the project corridor (Steven et al. 1974; URSGWC 2000c).

The Upper Animas Formation and Quaternary age alluvial materials in the major drainages comprise the aquifers within the project corridor. The private wells used as a source of water for residences and businesses outside the Durango and Bayfield Water District boundaries range in depth from 30 to 450 feet but are most commonly between 50 and 200 feet deep. Water table elevations vary considerably along the corridor based on the aquifer, (i.e., alluvial versus Animas Formation-bedrock) and proximity to the nearest drainage. The aquifers within the Animas Formation are commonly confined discontinuous sandstone units.

3.18.2 Minerals

The project corridor is located in a physiographic region that has high-yield natural gas and coalbed methane production. The Fruitland Formation coalbeds range in thickness from less than 10 to more than 70 feet throughout the basin, and within the project corridor range from 20 to 50 feet in thickness. Coal was mined in the Fruitland outcrop areas 3.0 to 4.0 miles north of the project corridor during the early and mid-1900s (Fassett 1971; URSGWC 2000c). Methane gas, which contains highly toxic hydrogen sulfide in places, has historically been emitted from seeps within the coalbeds in various parts of the basin, requiring mitigation measures in some areas to prevent explosive or flammable conditions from developing (Stonebrooke 1996; URSGWC 2000c). Based on geologic mapping information, the closest location of coal outcrops to the project corridor is approximately 1.5 miles northwest of the US 160/US 550 (south) intersection. Therefore, gas seeps are not expected to impact design and construction activities. Gas production wells located within the project corridor are discussed further in Section 3.15, Hazardous Waste Sites. There are no known surface or subsurface mines in the project corridor (CGS 2004).

3.18.3 Geologic Hazards

According to the FEMA Multihazard Mapping Initiative (MMI) (FEMA 2004), the project corridor is susceptible to infrequent landslides and severe weather. There is less than a 10 percent chance that an earthquake of sufficient magnitude to cause appreciable damage would occur in a 50-year period (peak ground acceleration of 0 to 6.0 percent). There are no faults of significance in the project corridor vicinity. However, soil faulting and/or bedrock faulting are possible in areas that are seismically dormant or typically not prone to seismic activity.

According to the USGS National Karst Map Project, there are no karst (i.e., an irregular limestone region with pinks, underground streams, and caverns) areas of significance in the project corridor (USGS 2002). Susceptibility for slumping and landslides are low to moderate in

the general project corridor vicinity. In addition, the project corridor is susceptible to infrequent flash flooding (FEMA 2004).

Corrosive soils are soils that potentially produce high concentration of sulfate salts and, therefore, can corrode metals and concrete in moist conditions. Areas of corrosive soils occur in the western part of La Plata County; however, they have not damaged materials associated with highway construction (Lynn 2005b). Although corrosive soils do not pose a problem in the project corridor, expansive soils may create problems during construction. Expansive soils are those that contain clay minerals that repeatedly swell when wet and contract when dry, which may damage man-made structures.

3.18.4 Soils

The soil survey for La Plata County was produced by NRCS and provides general information on the characteristics of soils found within the US 160 project corridor (NRCS 1982). Soils in the general area occupy varying landforms including drainageways, floodplains, valley bottoms, low terraces, mesa tops, ridge tops, hills, and high mountains with sideslopes ranging from 0 to 65 percent. Soils range in depth from shallow to deep and have formed on glacial outwash, residuum, slope alluvium, floodplains, and terraces.

Major uses of the soils in the area include range and wildlife habitat, irrigated cropland, pasture, timber production, source of construction material, and home sites. NRCS identifies 21 soil types within the project corridor (see Table 3.18.1, Characteristics of Soils Within the US 160 Project Corridor and Figure 3.18.1, Soils Within the Project Corridor). All the soils are characterized by low soil strength with high shrink-swell potential, as previously discussed under 3.18.3, Geologic Hazards. These soil types can be categorized into the following four general map units:

- Arboles-Bayfield-Zyme
- Falfa-Ustic Torriorthents
- Zyme-Rock Outcrop-Ustic Torriorthents
- Pescar-Tefton-Fluvaquents

Unit 1: Arboles-Bayfield-Zyme is found as a long, thin strip east of the Florida River in the Dry Creek and Gem Village section, and east and west of the Los Pinos River in the Dry Creek and Gem Village and Bayfield sections. In general, these soils are well drained, shallow to deep soils found on foothills and in upland valleys. These soils consist of moderately fine textured soils that have low soil strength and a high shrink-swell potential.

Unit 2: Falfa-Ustic Torriorthents is found along the Grandview section and Florida Mesa and Valley section. In general, these are deep, well drained to excessively drained soils found on mesas and breaks. These soils consist of moderately fine to moderately coarse textured soils that have low soil strength and a high shrink-swell potential.

Unit 3: Zyme-Rock Outcrop-Ustic Torriorthents is the predominant soil group in the project corridor and is found in the Grandview section and the Dry Creek and Gem Village section. In general, these are deep, excessively drained soils that are found on foothills, terraces, ridges,

terrace escarpments and breaks. These soils consist of moderately fine to moderately coarse textured soils and rock outcrops that have low soil strength and a high shrink-swell potential.

Unit 4: Pescar-Tefton-Fluvaquents consist of areas of floodplains and riverbeds along the Florida and Los Pinos rivers in the eastern portion of the Florida Mesa and Valley section and the Bayfield section. In general, these are deep, somewhat poorly drained soils that are found on floodplains, low terraces, and alluvial valley floors. These soils consist of moderately coarse textured to medium textured soils with a fluctuating to high water table and frequent flooding.

**Table 3.18.1
Characteristics of Soils Within the US 160 Project Corridor**

Soil Series Name (Map Unit)	Erosion Hazard	Uses	Characteristics	Section of Project Corridor Where Soil Type is Found
Arboles clay, 3 to 12% slope (5)	Moderate	Irrigated field crops (pasture and rangeland)	Deep, well-drained with low soil strength and high shrink-swell potential	Located in all sections
Archuleta Sanchez complex, 12 to 65% slopes (7)	Moderate	Wildlife habitat, livestock grazing, and woodland	Shallow, well drained and stony	Bayfield
Badland (9)	High	Support some vegetation, but have very limited value for livestock and wildlife	Steep areas of barren land dissected by many intermittent drainageways	Grandview
Bayfield silty clay loam, 1 to 3% slope (10)	Slight	Irrigated cropland, irrigated pasture, wildlife habitat, and rangeland	Deep, poorly drained with low soil strength, high shrink-swell potential, and poor drainage	Dry Creek and Gem Village
Bayfield silty clay loam, seeped, 1 to 3% slope (12)	Slight	Irrigated croplands, irrigated pasture, wildlife habitat, and rangeland	Deep, poorly drained with low soil strength, high shrink-swell potential, and poor drainage	Dry Creek and Gem Village
Big Blue clay loam (13)	Slight	Irrigated pasture and rangeland	Deep, poorly drained with occasional flooding, wetness and high shrink-swell potential, also includes a high water table	Grandview Dry Creek and Gem Village
Bodot clay, 0 to 10% slope (14)	High	Irrigated field crops, pasture, and rangeland	Moderately deep, well-drained with low soil strength and high shrink-swell potential	Grandview Dry Creek and Gem Village Bayfield
Corta Loam, 1 to 3% slope (22)	Moderate	Irrigated field crops and irrigated pasture, timber production, and livestock grazing	Deep, well-drained with low soil strength and high shrink-swell potential	Bayfield
Corta loam 3 to 8% slope (23)	Moderate	Irrigated cropland, pastureland, and woodland	Deep, well-drained with low soil strength and high shrink-swell potential	Bayfield
Falfa clay loam, 1 to 3% slope (26)	Moderate	Irrigated crops, non-irrigated crops, rangeland, and homesites	Deep, well-drained with low soil strength and high shrink-swell potential	Florida Mesa and Valley
Falfa clay loam, 3 to 8% slope (27)	Moderate	Irrigated crops, non-irrigated crops, rangeland, homesites	Deep, well-drained low soil strength and high shrink-swell potential	Grandview Florida Mesa and Valley
Fluvaquents, sandy, frequently flooded (28)	Slight	Livestock grazing and wildlife habitat	Deep, somewhat poorly drained and poorly drained, nearly level soils with a fluctuating water table and flooding	Bayfield

**Table 3.18.1
Characteristics of Soils Within the US 160 Project Corridor**

Soil Series Name (Map Unit)	Erosion Hazard	Uses	Characteristics	Section of Project Corridor Where Soil Type is Found
Pescar fine sandy loam (50)	Slight	Irrigated pasture and hay, rangeland	Deep, somewhat poorly drained with frequent flooding, high water table, and seepage	Bayfield Florida Mesa and Valley
Sedillo gravelly loam, 0 to 3% slope (59)	Slight	Rangeland and wildlife habitat	Deep, well-drained with cobbles and gravel, making excavation difficult	Florida Mesa and Valley
Simpatico loam (64)	Slight	Irrigated and non-irrigated crops, rangeland	Deep, well-drained with flooding, low soil strength and moderate shrink-swell potential	Grandview Florida Mesa and Valley
Sycle fine sandy loam (65)	Slight	Irrigated cultivated crops, pasture, rangeland	Deep, well-drained with cobbles and gravel, making excavation difficult	Bayfield
Tefton loam (66)	Moderate	Irrigated cultivated crops, pasture, rangeland	Deep, somewhat poorly drained with flooding, wetness, and a fluctuating water table	Florida Mesa and Valley
Ustic Torriorthents-Ustollic Haplargids complex, 12 to 60% slope (70)	High	Wildlife habitat, rangeland, source of construction material	Deep, somewhat excessively drained with cobbles and gravel, making excavation difficult	Grandview Florida Mesa and Valley Bayfield
Vosburg fine sandy loam, 3 to 8% slopes (74)	Moderate	Irrigated and non-irrigated crops, wildlife habitat, and rangeland	Deep well-drained soil	Florida Mesa and Valley
Zyme clay loam, 3 to 25% slope (81)	High	Livestock grazing and wildlife habitat	Well-drained with shallow depth to bedrock and high shrink-swell potential	Grandview Florida Mesa and Valley Dry Creek and Gem Village
Zyme-Rock outcrop complex, 12 to 65% slope (82)	High	Livestock grazing and wildlife habitat	Well-drained with shallow depth to bedrock and high shrink-swell potential	Grandview Florida Mesa and Valley Dry Creek and Gem Village

Source: NRCS 1982.
% = percent