3.0 AFFECTED ENVIRONMENT

This section describes the existing environmental resources and conditions in the general vicinity of the Project Area. These resources could be affected by, or affect, the Proposed Project, including the construction, operation, and maintenance activities associated with the proposed transmission line upgrades.

The Project Area described for most of the resources is the 75 foot ROW of the existing transmission lines to be upgraded which are located in Townships 8, 9, 10 and 11 North, Ranges 69 and 70 West in northern, Colorado. The Project Area for socioeconomic resources was Larimer County and the City of Fort Collins. The Project Area for cultural resources was extended to a 100 foot ROW for urban areas, a 150 foot ROW for open areas, or a 200 foot ROW for areas likely to contain cultural resources.

The natural environment assessed as part of this EA included climate and air quality; earth resources, including geology, soils and water resources; and biological resources, including vegetation, wetland and riparian areas, wildlife and fisheries, and threatened, endangered, and candidate species.

Because potential habitat for T&E species, or other sensitive species was found during the biological field survey in the Project Area, a Biological Assessment Report was prepared. A Floodplains/Wetlands Assessment Report also was also prepared as required by DOE (10CFR1022). These reports are provided in **Appendices C and D**, respectively.

Questions and Answers About Electromagnetic Field (EMF) and Information Sources prepared by the U.S. Department of Health and Human Services, National Institutes of Health is provided in **Appendix E**. The Platte River Standard Construction Practices are provided in **Appendix F**.

Assessment of the cultural resources included Class I and Class III surveys of cultural resources. The human environment resources that are addressed in this document include, visual resources, land use, socioeconomics, public health and safety, and electrical effects. Resources that were identified in the public scoping meetings as not requiring detailed analysis as part of this EA include paleontology and traffic/circulation. A Class III Cultural Resource Inventory Report (Greystone 2001) was prepared after conducting an intensive cultural resources survey for the Project Area and is summarized in **Section 3.4**.

3.1 NATURAL ENVIRONMENT

This section provides information concerning climate and air quality, geology and soils, and water resources in the Project Area.

3.1.1 Climate and Air Quality

The Project Area has a semi-arid continental climate. The mean annual precipitation in the Project Area is between 14 and 15 inches (Hansen, et al. 1978). Most of the annual precipitation falls during the warm season between April and September. Climate summary data from the Western Region Climate Center is provided in **Table 3-1** for the Fort Collins Station for the period of record 1900 to 1999. The prevailing aloft winds in the Project Area are westerly but

surface winds are somewhat variable (Hansen, et al. 1978).

TABLE 3-1
Climate Summary Data
Fort Collins, Colorado (053005)

Period of Record Monthly Climate Summary

Period of Record: 1/1/1900 to 12/31/1999

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	40.8	44.1	50.8	60.1	68.7	79.0	84.9	83.2	75.0	64.2	50.9	42.5	62.0
Average Min. Temperature (F)	13.2	17.0	23.7	32.8	41.9	50.3	55.7	54.0	45.0	34.1	22.9	15.4	33.8
Average Total Precipitation (in.)	0.37	0.49	1.16	2.01	2.82	1.84	1.61	1.40	1.30	1.11	0.60	0.47	15.19
Average Total Snowfall (in.)	6.2	6.8	10.0	6.6	1.1	0.0	0.0	0.0	0.4	3.0	6.7	6.2	47.2
Average Snow Depth (in.)	1	1	1	0	0	0	0	0	0	0	1	1	0

percent of possible observations for period of record.

Max. Temp.: 99.6 percent Min. Temp.: 99.6 percent Precipitation: 99.6 percent Snowfall: 99.5 percent Snow Depth: 49.1 percent

Check Station Metadata or Metadata Graphics for more detail about data completeness.

Source*: Western Regional Climate Center 2000.*

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for 6 pollutants, known as "criteria" pollutants. The criteria pollutants are carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. Concentrations of criteria pollutants that are higher than the EPA standards are considered to be

unhealthy to the public for long-term exposure. The Colorado Department of Public Health and Environment (CDPHE) monitors for the criteria pollutants within the Project Area. Based on CDPHE monitoring results for Fort Collins and LaPorte, the Project Area is in compliance with the NAAQS.

If a development disturbs more than 25 acres or exceeds 6 months in duration, state air quality regulations require a fugitive dust control plan, air pollution emissions notice, and a permit from the CDPHE (Larimer County 1999). Regardless of the size or duration of development, all land development must be conducted so as not to create nuisance dust conditions.

3.1.2 Earth Resources

This section provides a discussion of the physiography and topography, geology, including bedrock geology, seismicity, and mineral resources, and soils in the vicinity of the Project Area.

3.1.2.1 Physiography and Topography

The Project Area is within the Colorado Piedmont Section of the Great Plains physiographic province and includes both lowland and upland portions of the Colorado Piedmont. The regional topography is characterized by gently sloping lands with little topographic relief. The area consists of irregular plains with relatively horizontal sedimentary bedrock that is mantled by unconsolidated deposits of wind-blown silt and sand. These unconsolidated sediments are cut by tributaries to the South Platte River which drain the Front Range of the Southern Rocky Mountains.

3.1.2.2 Geology

This section provides information concerning the bedrock geology, seismicity, and mineral resources of the Project Area.

Bedrock Geology

The Project Area is located in the Denver Basin, a structural basin encompassing some 50,000 square miles of northeastern Colorado, southeastern Wyoming, and southwestern Nebraska. Below the unconsolidated sediments of Quaternary and recent geologic time, are relatively horizontal sedimentary bedrock formations dating from the late Cretaceous time. The formations in order from nearest the surface and youngest to oldest are the Denver Formation (sandstone with volcanic debris), Laramie Formation (carbonaceous shale and claystone), Fox Hills Sandstone, and Pierre Shale. Shallow bedrock (less than 5 feet from the surface is likely encountered within the Project Area.

Geologic considerations within the Project Area include surficial soil deposits and bedrock with high shrink-swell potential. There appear to be no active faults; unstable or potentially unstable slopes; areas susceptible to avalanche, landslides, rockfalls, mudflow or soil liquefaction; karst terrain features or areas prone to subsidence; significant radioactivity; or volcanism within the Project Area. Seismic effects are discussed in the following subsection.

There are no significant constraints or hazards associated with the geologic formations within the Project Area.

Seismicity

Historically, minor earthquake activity has occurred in Colorado. Most of the shocks have been centered west of the Rocky Mountain Front Range. The Project Area is located within seismic risk Zone 1 (Algermissen 1969), with 0 being the lowest risk and 4 being the highest. No seismic events of significance have been reported in the vicinity of the Project Area.

Mineral Resources

Numerous sand and gravel resources, including active mining and inactive (closed) mineral operations, are located within the Project Area. Sand and gravel resources are primarily located in several stream valleys within floodplain deposits as shown on **Figure 3-1**.

3.1.2.3 Soils

The soil types within the Project Area have been identified and mapped by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) and published in the *Larimer County Soil Survey* (NRCS 1980). The NRCS has identified and located lands of national importance, including Prime and Unique Farmlands, and Farmlands of State and Local Importance throughout the United States. Prime Farmlands are defined as lands that, when managed properly, can be farmed continuously without degradation. These lands have the best combination of physical and chemical characteristics for producing food and crops, and have the soil quality, growing season and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods.

In general, Prime Farmlands have acceptable acidity or alkalinity, acceptable salt and sodium content, few or no rocks, an adequate and dependable water supply from precipitation or irrigation, and a favorable temperature and growing season. They are not excessively erodible, not saturated with water for a long period of time, and not frequently flooded. Prime and Unique Farmlands, and Farmlands of State and Local Importance that are located within Colorado are delineated in the *Colorado Important Farmland Inventory* (NRCS 1980).

Some areas of the ROW for the existing transmission line and Proposed Project are designated as Prime Farmland soils as shown on **Figure 3-2** and were previously disturbed for installation of the existing transmission lines. Most of the areas within the existing transmission line ROW from the LaPorte Tap to the Rawhide Energy Station are used for agricultural purposes. The agricultural lands in the Project Area include livestock pastures, irrigated crops, with remnants of short-grass prairie. The portion of the Proposed Project requiring replacement of H-frame wood poles with steel poles is mostly within the city limits of Fort Collins, and the land use for this area is primarily industrial.

R 70 W R 69 W R 68 W R 67 W

T 11 N T 10 N T 9 N T 8 N T 7 N

Rawhide Energy Station

Park Creek Reservoir

N. Poudre Res. No. 15

Boxelder Creek

Coal Creek

Indian Creek

TO AULT SUBSTATION

N. Fork Cache la Poudre River

Seaman Reservoir

Cache la Poudre River

Douglas Reservoir

Dennmel Lake

Bee Lake

N. Poudre Res. No. 6

Rocky Ridge Lake

Curtis Lake

Windsor Reservoir

Terry Lake

Fossil Creek

Cobb Lake

Richard Lake Substation

Poudre Substation

TO CHEYENNE

LaPorte Substation

LaPorte Tap

Linder Tech Substation

Overland Substation

Horsetooth Reservoir

FORT COLLINS

Timberline Substation

Drake Substation

Dixon Substation

TO FLATIRON

TO LOVELAND

TO RAWHIDE AND AULT SUBSTATIONS

Timnath Reservoir

TIMNATH

WELLINGTON

LARIMER COUNTY

WELD COUNTY

Buckeye Rd.

84 Rd.

80 Rd.

76 Rd.

72 Rd.

70 Rd.

68 Rd.

66 Rd.

64 Rd.

58 Rd.

52 Rd.

50 Rd.

Prospect Rd.

Drake Rd.

Horsetooth Rd.

Mulberry Rd.

Vine Dr.

LA PORTE

21 Rd.

19 Rd.

17 Rd.

15 Rd.

9 Rd.

Overland Trail

Taft Hill Rd.

Shields St.

College Ave.

Lemay Ave.

Timberline Rd.

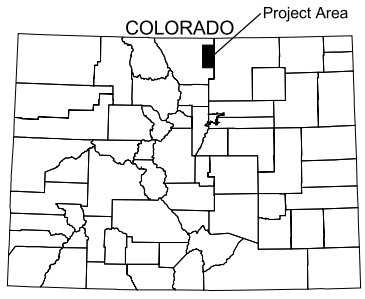
LEGEND

- Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
- Upgrade Existing 115kV Single Circuit to 115/230kV
- Rebuild Existing 115kV Single Circuit to115/230kV
- Convert Existing 115kV Double Circuit to 115/230kV
- Upgrade Existing 230kV Single Circuit to 230kV Double Circuit
- Existing 115kV Double Circuit
- Existing 230kV Double Circuit
- Existing 115kv Single Circuit
- Existing 230kV Single Circuit
- Existing Substation
- Rawhide Energy Station
- Rawhide Property Boundary
- Mine Boundary
- Municipality

Agricultural Land Classification

- Irrigated Land (Not Prime)
- Prime (Irrigated)
- Prime (If They Become Irrigated)
- High Potential Dry Cropland (Prime If They Become Irrigated)

- US Interstate Highway
- US Highway
- State Highway
- Primary Road
- Secondary Road
- Railroad
- Cache la Poudre River
- Stream
- Ditch or Canal
- Aqueduct
- Lake/Reservoir
- Section Line
- County Line
- Township/Range
- Rural Electrical Association Transmission Line
- Western Area Power Administration 345kV Circuit



SOURCE: Important Farmlands of Larimer County provided by USDA - Soil Conservation Service and Colorado State University Experiment Station, 1979

GREYSTONE®

1 2 3 4 Miles

N Scale

Western Area Power Administration

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-2

Prime Agricultural Lands

Prime Farmlands are shown on **Figure 3-2**. The majority of the soil types in the Project Area are moderately deep to deep, sandy loams to loams, on slight to moderate slopes. These soils are typical of short-grass prairie areas. They are generally used as rangelands or for agriculture. There are no potentially unstable or steep slopes (greater than 15 percent) or other significant constraints associated with the soil types in the Project Area.

3.1.3 Water Resources

Surface water resources within the Project Area include rivers, streams, creeks, irrigation ditches and canals, lakes and reservoirs. Floodplains are defined as land areas susceptible to being inundated from any source. Groundwater resources include alluvial and bedrock aquifers, seeps and springs.

To date, there are no regulated or delineated special sources of water, such as sole source aquifers or wellhead protection areas, within the Project Area (Karst 2000).

Surface water and floodplains, and groundwater within the Project Area are discussed in the following sections.

3.1.3.1 Surface Water and Floodplains

There are numerous perennial and intermittent streams, as well as several man-made irrigation ditches, reservoirs, canals, and floodplains in the Project Area as shown on **Figure 3-3.** Surface water resources in the Project Area include the Cache la Poudre River, Larimer and Weld Canal, Poudre Valley Canal, North Poudre Supply Canal, Park Creek Lateral, Boxelder, Rawhide Energy Station, and Coal Creeks. No lakes or reservoirs are located within or adjacent to the disturbance areas for the Proposed Project.

Review of the National Parks Services (NPS) List of Wild and Scenic Rivers indicated that no Wild or Scenic Rivers exist within the Project Area. A 30-mile reach of the Cache la Poudre River in the Roosevelt National Forest, many miles west and upstream of the Project Area, is classified as Wild and Scenic. The Cache la Poudre River in the vicinity of the Project Area is classified by NPS as Recreational.

Water uses in the Project Area include irrigation for agricultural uses, recreation, and water supply. Waterways and the adjacent riparian areas also provide habitat for wildlife.

Floodplains are classified based on how frequently they are inundated. The 100-year floodplain delineation is typically used to define floodplain hazard areas. Land areas classified as within the 100-year floodplain have a predicted one percent chance of being flooded in any given year. The boundaries of 100-year floodplain hazard areas were delineated based on digital map data available from the Larimer County Planning Department (LCPD) and Flood Insurance Rate Maps prepared by the Federal Emergency Management Administration (FEMA).

The designated floodplain hazard areas within the Project Area are generally located adjacent to the Cache la Poudre River and its tributaries as shown on **Figure 3-3**. A portion of the ROW for the existing transmission lines and for the Proposed Project is located within the 100-year floodplain. A Floodplains/Wetlands Assessment Report is provided in **Appendix D**.

R 70 W R 69 W R 68 W R 67 W

T 11 N T 10 N T 9 N T 8 N T 7 N

Rawhide Energy Station

21 Rd. 84 Rd. 19 Rd. Buckeye Rd. 80 Rd. 76 Rd. 72 Rd. 15 Rd. 70 Rd. 17 Rd. 68 Rd. 9 Rd. 66 Rd. 64 Rd. 58 Rd. 52 Rd. 50 Rd.

Park Creek Reservoir

Boxelder Creek

Coal Creek

Indian Creek

N. Poudre Res No. 15

N Fork Cache la Poudre River

Cache la Poudre River

Seaman Reservoir

Douglas Reservoir

Demmel Lake

Bee Lake

N. Poudre Res. No. 6

Rocky Ridge Lake

Curtis Lake

Windsor Reservoir

Terry Lake

Cobb Lake

Boxelder Creek

Richard Lake Substation

Poudre Substation

LaPorte Substation

LaPorte Tap

Linden Tech Substation

Overland Substation

Timberline Substation

Drake Substation

Dixon Substation

TO CHEYENNE

TO AULT SUBSTATION

TO RAWHIDE AND AULT SUBSTATIONS

TO FLATIRON

TO BOYD

WELLINGTON

FORT COLLINS

TIMNATH

Timnath Reservoir

Horsetooth Reservoir

LARIMER COUNTY

WELD COUNTY

LEGEND

- Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
- Upgrade Existing 115kV Single Circuit to 115/230kV
- Rebuild Existing 115kV Single Circuit to115/230kV
- Convert Existing 115kV Double Circuit to 115/230kV
- Upgrade Existing 230kV Single Circuit to 230kV Double Circuit
- Existing 115kV Double Circuit
- Existing 230kV Double Circuit
- Existing 115kv Single Circuit
- Existing 230kV Single Circuit
- Existing Substation
- Rawhide Energy Station
- Rawhide Property Boundary
- Rural Electrical Association Transmission Line
- Western Area Power Administration 345kV Circuit
- 100-Year Floodplain
- 500-Year Floodplain
- US Interstate Highway
- US Highway
- State Highway
- Primary Road
- Secondary Road
- Railroad
- Cache la Poudre River
- Stream
- Ditch or Canal
- Aqueduct
- Lake/Reservoir
- Section Line
- County Line
- Township/Range
- Mine Boundary
- Municipality

COLORADO — Project Area

SOURCE: Floodplain data provided by Larimer County Planning Department with permission from FEMA

GREYSTONE®

1 2 3 4 Miles

N Scale

Western Area Power Administration

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-3

Water Resources and Floodplains

3.1.3.2 Groundwater

Groundwater resources in the Project Area include alluvial and bedrock aquifers, seeps, and springs. Alluvial aquifers occur in unconsolidated deposits and generally underlie the valleys and terraces of the streams and rivers. Localized bedrock aquifers also occur with area, with the depth to the water table generally ranges from 5 to 20 feet, varying seasonally.

Groundwater is used by many residences in the Project Area for household and potable water use. There are no known water supply wells within the ROW of the existing transmission lines or for the Proposed Project.

Available information for the shallow groundwater in the area indicate relatively poor water quality due to high values for specific conductance, total dissolved solids, alkalinity, and hardness.

3.2 BIOLOGICAL RESOURCES

Biological resources characterized in the Project Area included vegetation, including terrestrial vegetation, wetland and riparian areas, and species of concern; and wildlife and fisheries, including terrestrial wildlife, fisheries, and threatened, endangered, and candidate species. Wetlands and riparian areas associated with the ROW of the Proposed Project are typically small, linear bands along the Cache la Poudre River and it tributaries, and are discussed in more detail in the **Section 3.2.1.2**, **Wetland and Riparian Areas**. The federally listed species, species proposed for listing, and candidate species that may potentially occur in the Project Area are addressed in the Biological Assessment Report provided in **Appendix C**. The purpose of the Biological Assessment Report was to review the Proposed Project in sufficient detail to determine if the action Amay affect@ any federally listed threatened, endangered, candidate, or proposed species and was prepared in accordance with the legal requirements set forth under Section 7 (c) of the Endangered Species Act (19 U.S.C) 1536. This section of the EA includes a summary of the information provided in the Biological Assessment Report, a discussion of important habitat areas, and additional information on sensitive species.

3.2.1 Vegetation

Vegetative resources in the Project Area include terrestrial vegetation and more aquatic-oriented species in wetland and riparian areas. Both groups are discussed in the following sections. Additionally, species of concern are also described.

3.2.1.1 Terrestrial Vegetation

The Project Area is located in the High Plains of Eastern Colorado within the physiographic region known as the Great Plains Province. Historically, the dominant plant community in this region was short-grass prairie, interspersed sporadically with mixed-grass communities and wetlands in moist swales and wetlands and riparian communities located along watercourses. However, large sections of this once dominant grassland community have been altered or disturbed by urbanization, livestock grazing, and agriculture (Benedict 1991; Emerick and Mutel, 1984).