DOE/EA-1508
Environmental Assessment

Beaver Creek-Hoyt-Erie Transmission Line Rebuild Project
Morgan and Weld Counties, Colorado

U.S. Department of Energy
Western Area Power Administration
Rocky Mountain Region
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List of Acronyms

ACSR	aluminum conductor steel reinforced (conductor designation)
AM	amplitude modulated
APCD	Air Pollution Control Division
AQD	Air Quality Division
BCC	Birds of Conservation Concern
BC-HT	Beaver Creek-Hoyt transmission line
BC-HT-EE	Beaver Creek-Hoyt-Erie transmission line
BLM	Bureau of Land Management
CAA	Clean Air Act
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNDIS	Colorado Natural Diversity Information Source
CNHP	Colorado Natural Heritage Program
CO	Carbon Monoxide
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DAU	Data Analysis Unit
dBA	decibels
dBuV/m	decibels above one microvolt per meter
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Area
FM	frequency modulated
FONSI	Findings of No Significant Impacts
FWS	U.S. Fish and Wildlife Service
GLO	General Land Office
GMU	Game Management Unit
HT-EE	Hoyt-Erie transmission line
kcmil	thousand circular mils (conductor size designation)
KOP	Key Observation Point
kV	kilovolt
kV/m	kilovolts per meter
MBTA	Migratory Bird Treaty Act
MCR	Morgan County Road
MCREA	Morgan County Rural Electric Association
MM	Modified Mercalli Intensity
MP	milepost
MVA	megavoltampere (line capacity)
MVAR	megavoltampere reactive (line capacity)

MW	megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAHP	Office of Archaeology and Historic Preservation
PM	particulate matter
ppb	parts per billion
PSD	Prevention of Significant Deterioration
PFYC	Probable Fossil Yield Classification System
REA	Rural Electric Association
RMP	Resource Management Plan
ROW	Right-of-Way
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SEO	Colorado State Engineers Office
SIP	State Implementation Plans
SPCC	Spill, Control, Containment, and Countermeasures Plan
SR	State Route or State Highway
SWA	State Wildlife Area
TEP&C	Threatened, Endangered, Proposed, and Candidate
TOT3	Transmission path between southeastern Wyoming and northeastern Colorado
TVI	television interference
UBC	Unified Building Code
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
V	Volt
V/m	volts per meter
VRM	Visual Resources Management
WCR	Weld County Road
WECC	Western Electricity Coordinating Council
WSA	Wilderness Study Area
WUS	Waters of the US

Summary

Proposed Project

Western Area Power Administration (Western) is proposing to rebuild the existing Beaver Creek-Hoyt 115-kilovolt (kV) and Hoyt-Erie 115-kV transmission lines as a double circuit 230-kV transmission line (proposed action/proposed project). The proposed action consists of replacing the existing transmission lines, making on-site modifications to the Adena Substation and expanding the Beaver Creek Substation and Erie Substation to accommodate the 230-kV circuits. One circuit would continue to operate at 115-kV for the foreseeable future in order to maintain interconnection with the Adena, Brighton and Erie substations. The Hoyt Substation may be expanded to 230-kV capability in the future or a separate 230-kV substation may be built in proximity to the existing Hoyt Substation. The location and timeline for the Hoyt Substation changes has not been determined and would be subject to future environmental review.

Project Participants. Under Western's Open Access Transmission Tariff, Western provides transmission service to Tri-State Generation and Transmission Association, Inc. (Tri-State), a customer of Western's. Tri-State is a non-profit cooperative that serves member utilities in Colorado, Wyoming, New Mexico and Nebraska. Member utilities in the project area include Morgan County Rural Electric Association, Fort Morgan, Colorado, and United Power, Brighton, Colorado. Western's transmission system is interconnected with Tri-State's. The Beaver Creek-Hoyt-Erie transmission line interconnects with Tri-State's Erie Substation. Western is proposing to enter into a contract with Tri-State, whereby Tri-State would provide financial support to the proposed upgrade of the Beaver Creek-Hoyt-Erie Transmission Line. Under the proposed contract, Tri-State would receive ownership of one of the 230-kV circuits. Tri-State would interconnect the 230-kV circuit at their Erie Substation and their Story Substation, which is just to the east of the Beaver Creek Substation. This contract would be mutually beneficial to both parties because it would allow Western to improve the reliability of the transmission system and provide Tri-State with an additional transmission path to improve the efficiency of power delivery to their customers.

Project Description. The existing Beaver Creek-Hoyt transmission line is 32 miles long and crosses through Morgan County, Colorado. The Hoyt-Erie transmission line is 46 miles long and crosses portions of Morgan and Weld Counties, Colorado. Western proposes to upgrade the existing transmission lines by removing the existing 115-kV H-frame structures, conductors and hardware and installing a double circuit 230-kV transmission line on single pole steel structures. New H-frame structures would also be installed at specific locations including, among others, four locations where the proposed 230-kV transmission line would pass under other existing transmission lines owned by other utilities. Long term, the proposed action would result in a reduction in the number of structures compared to the existing 115-kV transmission line that would be removed. Western would widen the existing right-of-way (ROW) as necessary to allow adequate electrical clearances. The proposed action entails the following:

- Beaver Creek-Hoyt-Erie Transmission Line Rebuild (78.3 miles).

  Approximately 78.3 miles of the existing Beaver Creek-Hoyt-Erie 115-kV transmission line would be dismantled. This would include the removal of 595 existing transmission structures, conductors and hardware.

- Approximately 400 double circuit 230-kV single pole steel structures would be installed from the Beaver Creek Substation to the Erie Substation. The new double circuit single pole steel structures would support the 230-kV circuits. One circuit would be operated at 115-kV for the foreseeable future in order to retain interconnection with Morgan County Rural Electric Association's (MCREA) Adena Substation, Tri-State's Sand Creek Tap and Prospect Valley Substation, United Power's Brighton Substation, and Western's Hoyt Substation.

- Approximately 18 new 230-kV steel H-frame structures would be installed at four transmission line undercrossing and 10 H-frame structures would be installed near the Beaver Creek Substation (8 structures) and Hoyt Substation (2 structures).

- The existing Beaver Creek-Hoyt-Erie ROW would be widened as necessary to meet National Electrical Safety Code (NESC) standards and provide increased flexibility for maintenance activities for the proposed 230-kV transmission line. The existing ROW is typically 75 feet wide, and would be increased to widths ranging from 85 feet to 125 feet. ROW expansion requirements would vary depending on the width of the existing ROW, structure designs, and whether the existing ROW overlaps with adjacent transmission line ROWs. The ROW would be expanded to 125 feet in width at the four undercrossing where multiple H-frame structures would route the line under existing transmission lines.

- No major new access roads would be constructed. Existing public and private roads would be used to access the ROW. Within the ROW, Western would access the construction sites and structure sites via existing roads or minor new roads, and with the use of overland construction vehicles. Some grading within the ROW may be required to reach new structure sites, stringing sites or other construction areas.

- <u>Beaver Creek Substation, Erie Substation and Hoyt Substation Expansions and Adena Substation Modifications</u>

  To accommodate the operation of the proposed double-circuit 230-kV transmission line, the Beaver Creek and Erie Substations would be expanded to accommodate new electrical equipment such as transformers and breakers. The proposed project would also install line sectionalizing switches at the existing Adena Substation.

  - The Beaver Creek substation would be expanded to the east of the existing substation. The existing 5.3 acres would be enlarged to approximately 9 to 10 acres. A potential disturbance area of 31.2 acres is evaluated in this EA.

  - The Erie Substation would be expanded from its existing 1.5 acre substation size to approximately 5 acres. The substation expansion would occur to the east and/or north of the existing facility. This EA evaluates a potential disturbance area of approximately 9.5 acres.

  - The timeframe for expansion or additions in the vicinity of the Hoyt Substation have not been determined. The existing Hoyt substation is located in a floodplain. Any future 230-kV additions are likely to be constructed outside the floodplain. Modifications to the Hoyt Substation are not addressed in this EA due to these uncertainties and would be subject to NEPA compliance in the future.

Purpose and Need

The Beaver Creek-Hoyt-Erie 115-kV transmission line, constructed in 1952, is an original facility in the Colorado-Big Thompson Project. Although the line has operated reliably, its limited capacity impacts the rating of the constrained transmission path between southeastern Wyoming and northeastern Colorado (referred to as TOT3), of which it is a component. Due to its limited capacity the existing transmission line reduces the capability of the path to carry its full designed load. Increasing the carrying capacity of the Beaver Creek-Hoyt-Erie transmission line will avoid further reduction of the path constraints. If no action is taken on the existing line, the circuit will overload to 130% of the line's present thermal capacity within 5 years. After another 5 years, the line will exceed the rated capacity by 145%. If the line is rebuilt as a single circuit 115-kV line, with larger conductor (795 kcmil ACSR), it is forecast to overload within 15 years, shorter than the expected life of the proposed 230-kV line.

Without the proposed project, the TOT3 transfer path would have to be reduced by up to 400 MW in order to avoid future projected overloads. Western's reduction would be 25% (100 MW). This scenario is not acceptable to Western as it would restrict the ability of Western to move Wyoming hydroelectric power to Colorado Federal firm electric service loads.

The proposed transmission line rebuild will utilize larger conductors (1272 kcmil ACSR), thus yielding greater capacity. The greater capacity of the 230-kV transmission line will help alleviate overloading problems already experienced on the line. The existing 115-kV transmission lines are also approaching the predicted useful life of the wood H-frame structures. Anticipated maintenance costs required to continue operating the existing transmission line will be deferred when the transmission line is rebuilt.

In summary, the proposed action will accomplish the following objectives:

- Increase the operating capacity of the Beaver Creek-Hoyt-Erie transmission line.
- Ensure that the electric system in the area will continue to operate within acceptable reliability criteria while accommodating future load growth.
- Allow Western to continue to serve its network customers in a reliable manner.
- Ensure that customers with existing 115-kV interconnections are served.
- Provide line-switching capability at the Morgan County REA's Adena Substation.
- Ensure that updated communication and control facilities are provided to reliably operate and control the transmission line.
- Ensure that the line can be operated at its full capacity without impacting other interconnected transmission lines in the southeastern Wyoming and northeastern Colorado.
- Increase Western's ability to serve Colorado Federal Firm loads with Wyoming hydroelectric power.

Alternatives Considered and Eliminated

Western considered several replacement options for the Beaver Creek-Hoyt-Erie transmission line. Alternatives considered and eliminated from further study would not meet Western's purpose and need for the project, or reduce potential adverse impacts. The 230-kV voltage was identified as the best solution based on electrical systems studies. Without the proposed project, the TOT3 transfer path between southeastern Wyoming and northeastern Colorado would have to be reduced by up to 400 MW in order to avoid future overloads. The greater capacity of the 230-kV transmission line (with larger conductors-1272 ACSR) will help alleviate overloading problems that would result from the continued operation of 115-kV transmission line.

Alternatives considered and eliminated from further study included reconductoring the existing 115-kV line, constructing a new 115-kV line on wood H-frame or light duty steel H-frame structures, and constructing a new 115/230-kV line on lattice steel structures. The 115-kV only alternatives would not prevent a decrease in the TOT3 total transfer capacity. The lattice steel structure alternative was eliminated because the larger structure footprint would likely increase impacts to both natural resources and agricultural lands as compared to single pole steel structures. Visual impacts would also be greater with the lattice structures.

Scope of Environmental Assessment

This Environmental Assessment (EA) was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and Department of Energy (DOE) guidance. This EA identifies and analyzes the consequences of the proposed action, three routing alternatives and the no action alternative on the human and natural environment. The evaluations of the proposed action and routing alternatives incorporate Western's standard construction operation and maintenance practices and a number of project-specific mitigation measures to avoid and minimize impacts to the extent feasible. With implementation of these measures, all impacts reported in the EA would be less than significant.

The routing alternatives were identified through public scoping and land owner consultations. These alternatives include:

- Beaver Creek-Brush Prairie Ponds State Wildlife Area (SWA) Reroute Alternative (Brush Prairie Ponds SWA Reroute) – This alternative is approximately 7.1 miles long and would replace approximately 5.6 miles of the existing transmission line. This alternative would minimize impacts to rural residential areas and agricultural lands in the Brush area as compared to the existing alignment. It would also address maintenance and construction issues related to the seasonally saturated soils along the ROW of the existing line; reduce the potential for collision mortality to waterfowl; reduce impacts to wetlands; reduce impacts to hunting and other uses of the SWA; and eliminate the restricted construction window proposed by the Colorado Division of Wildlife (CDOW). The alternative would diverge from the proposed project at Beaver Creek Substation and would parallel the Beaver Creek-Deering Lake 115-kV transmission line for 0.6 mile and Xcel Energy's Story-Pawnee 230-kV line for 3.8 miles. The alternative would establish a new ROW for 2.7 miles along the southern boundary of the SWA, to a point where it would reconnect to the existing Beaver Creek-Hoyt ROW. The new ROW parallels an existing gas pipeline ROW.

- Beaver Creek-Big Sandy Reroute Alternative – This alternative is a related action that would be implemented in conjunction with the Beaver Creek to Brush Prairie Ponds SWA Reroute Alternative. Under this alternative, a portion of the existing Beaver Creek-Big Sandy 115-kV transmission line would be relocated to parallel the Brush Prairie Ponds SWA Reroute Alternative. This alternative was developed in response to landowner requests. In total, approximately 3.4 miles of the existing Big Sandy transmission line would be removed from the Beaver Creek Substation, and 4.2 miles of new 115-kV line would be installed parallel to the Brush Prairie Ponds SWA Reroute Alternative. The alternative would terminate approximately 1.1 mile southwest of the State Highway 71 crossing, where it would reconnect to the existing Big Sandy 115-kV transmission line ROW. This alternative consolidates both lines in the same ROW and reduces the impacts on wetlands, soils, and agricultural and residential land uses, and visual resources.

- Bijou Creek Crossing Reroute Alternative – This alternative would reroute approximately 4.8 miles of the Beaver Creek to Hoyt transmission line several miles east of the Hoyt Substation. The alternative is being considered by Western in response to landowner's comments regarding ways to increase the efficiency of irrigation systems and allow expansion of land uses and business options.

Summary of Findings

The EA evaluates the short term and long term impacts that may result from the construction and operation of the proposed action and alternatives. Impacts are assessed on a resource by resource basis, and include the project area that may be affected either directly or indirectly by the proposed project. All impacts have been determined to be less than significant with implementation of Western's standard practices and project-specific mitigation measures. The results of the resource evaluations are compared in Table S-1 (at the end of this section) for the proposed action and alternatives. The following is a summary of the findings for the proposed action and routing alternatives:

Air Quality - The proposed project and routing alternatives would have localized, short term direct effects on air quality. Impacts would primarily be temporary and periodic emissions from construction and maintenance vehicles and fugitive dust generated by construction activity. The project would have no effect on climate. The project and alternatives would not cause, nor contribute to a violation of Federal or state standards. The project and routing alternatives would be in compliance with National Ambient Air Quality Standards and the Colorado State Implementation Plan. There are no Federal or state permitting requirements for this source type. There are no notable differences in air quality impacts between the proposed action and routing alternatives. The no action alternative would also continue to have periodic and temporary impacts on air quality, as maintenance of the existing lines would increase over time.

Geology and Soils - There are no known geologic hazards (i.e., areas prone to earthquake, landslide, rockfall, or subsidence) within the project area. No active faults, inferred active faults, nor geologic hazards are documented in the project area. The project area contains a number of facilities related to oil and gas production and coal resources. The project would not impact these resources, however, as it would be located along existing and expanded transmission line ROWs and at substation expansion sites.

The proposed project and routing alternatives would mainly result in short-term soil disturbances at localized areas within Western's ROW. Short term impacts on soils would result where project

construction activities cause the loss of vegetation cover at structure sites, stringing sites, and where Western's existing access roads are improved or short spur roads to new structure sites require grading. Installation of the new steel structures would require excavations for holes up to 30 feet deep, depending on soil and geologic conditions. Soil disturbances would also occur at the substation expansion sites. Disturbed soils would be spread around the proposed facilities in a manner to facilitate revegetation. Short-term disturbances for construction are estimated to include 198.7 acres for the proposed transmission line rebuild and less than the 40.7 acres at substation sites. Long-term soil losses are estimated to be less than 2 acres for all transmission structure sites, and approximately 15 acres for the Beaver Creek and Erie Substation expansions.

Impacts to soils would be considered significant if the project or alternatives caused a major acceleration of soil erosion which resulted in, or contributed to, violations of water quality or impacts to existing water uses. Within the project area, increased soil erosion has the greatest potential to occur in areas susceptible to wind erosion. Western would implement both standard practices and project specific measures to ensure that disturbed areas are stabilized (e.g. seeding, mulching, or other techniques) and indirect effects from soil erosion are minimized. Areas susceptible to wind erosion would be monitored to ensure successful stabilization of soils is achieved.

Impacts to soils from the alternatives would be similar to the proposed project overall; however, the Brush Prairie Ponds SWA Reroute and Big Sandy Reroute Alternatives would cross slightly more areas susceptible to wind erosion.

Paleontology - The proposed project and alternatives would cross geologic formations with known paleontological resource potential, including the Pierre Shale and Denver Formation. No resources have been documented along the proposed project and alternatives. The likelihood of encountering resources during construction is considered low given topsoil and agricultural land use conditions. Western would avoid and minimize potential impacts to paleontological resources during construction through data recovery procedures, if fossil remains are uncovered during construction.

Surface Water Resources – The project area is within the South Platte River watershed and would have short term impacts on water resources. The proposed project crosses 22 stream channels and 26 irrigation ditches or canals. Surface water within the project area generally meets water quality standards for designated uses except for one stream (Beaver Creek), which exceeds state water quality standards for selenium. Surface water use is primarily for aquatic life and agriculture. The proposed project would have no direct impacts on surface waters and water quality since all surface waters would be spanned, and no surface water use is proposed. Standard construction measures, including erosion control measures, would also be implemented to reduce the potential for sedimentation and water quality impacts. National Pollutant Discharge Elimination System Permits (NPDES) would be obtained as necessary.

Groundwater. Impacts to groundwater could occur during construction of foundations for structures near the Brush Prairie Ponds recharge area. Seasonally saturated soils typically require installation of deeper foundations than soils that are not saturated. The proposed project and alternatives cross the Beaver Creek basin south of the City of Brush. The City of Brush municipal well fields are located south of Brush Prairie Ponds recharge area, and south of the existing transmission line. The Beaver Creek alluvium supplies water to the City of Brush well fields, as well as the Fort Morgan Reservoir and Irrigation Company. The Brush Prairie Ponds SWA alternative route is the closest to the City of Brush's water wells. Impacts to the groundwater

could occur and would be potentially significant if construction of the project impacted the protective clay layer that lies approximately 40 to 60 feet below the surface. Direct impacts to the protective clay layer is considered unlikely since the proposed structures would require foundations from 10 to 30 feet deep. In order to ensure that impacts to groundwater resources does not occur, Western would conduct geological investigations at each proposed structure site within the City of Brush well field and/or Brush Prairie Ponds Recharge Area (structures within Sections 22 and 21 T3N, R56W, and/or Sections 27 and 28, T3N, R56W). Borings would extend 5 feet beyond the depth of the structure foundations to determine if the clay layer would be encountered during project construction. Alternative structure designs would be used that would allow for shallower foundations in the unlikely event that the standard foundations would reach the clay layer. In the event that water is encountered during construction of foundations, Western would obtain a Permit for Construction Dewatering Wastewater Discharge.

Floodplains. The proposed project would span or intersect floodplains at 12 locations on the Beaver Creek-Hoyt-Erie transmission line ROW. Seven of the 12 floodplains would be spanned, thus, there would be no direct impact to these floodplains. The remaining floodplain crossings would be too wide to be spanned. Since the spacing of the proposed structures would be greater than the spacing of the existing structures, actual numbers of structures located within floodplains would be reduced over the existing conditions. One structure would be required to span the Antelope Creek floodplain and two structures could be required in the Muddy Creek floodplain. The largest floodplains include Badger Creek, Beaver Creek, and the South Platte River floodplains, with an estimated 5 structures, 4 structures, and 3 structures to be installed respectively within each of these floodplains. Long term disturbance would be limited to the footprint of the structures (approximately 50 square feet per structure). Western would cross floodplains in compliance with Permit 12 (utilities) of the Army Corps of Engineers Nationwide Permit. Western would not propose to fill or dredge in floodplains. Western would follow FEMA approved floodplain construction requirements. Western would also require the construction contractor to implement a spill control and response procedures to control and clean up accidental spills of fuels and oils.

The impacts of the alternatives would be the same or similar to the proposed project. The Brush Prairie Ponds SWA Reroute and Beaver Creek-Big Sandy Alternatives cross 4 floodplains compared to 5 floodplains for the proposed project. The Brush Prairie Ponds SWA Reroute alternative would be located in the section to the north of the section containing the City of Brush municipal well field, but it would be closer than the existing line. Consequently the reroute, would have a greater potential conflict with the city's municipal wells than the proposed project. However, since Western would implement project mitigation measures to avoid construction of structure foundations that would impact the protective clay layer that lies over the well field aquifer, long term impacts would be similar to the proposed project.

The alternatives would have similar potential impacts to floodplains as the proposed project. The Brush Prairie Ponds SWA Reroute and Beaver Creek-Big Sandy Reroute would cross the Beaver Creek floodplain to the south of the existing transmission line and would require 3 structures to cross the floodplain compared to 5 structures for the proposed project. The Bijou Creek Crossing Reroute would require one intermediate structure to cross the floodplain, compared to no structures for the proposed project.

In summary, all impacts are expected to be of short duration and less than significant for the proposed project and the alternatives. There are no long term impacts expected to surface water, floodplains, or groundwater from the proposed project or the alternatives.

Vegetation and Wetlands – The proposed transmission line would result in the short term disturbance of approximately 198.7 acres. The majority of disturbances (138.3 acres) would occur in agricultural land. Predominant vegetation types affected include agricultural lands, native prairie, and non-native grassland. The vast majority of area affected during construction would be reclaimed following construction. Less than 3 acres would be disturbed long term within the ROWs. Impacts to vegetation and wetlands would be considered significant if the project resulted in the loss or substantial impact to a designated conservation area, the establishment of noxious weeds that reduce agricultural productivity, or wetland fill impacts of 0.5 acre or greater. The project area contains no designated conservation areas. Western would use standard construction practices and project measures to ensure the introduction and/or spread of invasive species or weeds are minimized to less than significant levels.

The proposed project ROW would intersect or cross approximately 33 wetlands. Most are associated with stream channels, ephemeral drainages, or irrigation ditches. Potential direct impacts to wetlands would be avoided through structure placement that would allow spanning of all wetlands. Indirect impacts could result if increases in erosion and sedimentation affected wetlands across the Brush Prairie Ponds SWA where the existing ROW crosses nearly a mile of intermittent wetlands and aquatic habitat. These types of indirect impacts would be minimized through implementation of Western's standard practices that provide for erosion control and avoidance of wetlands during construction and maintenance operations. Some direct impacts to riparian/cottonwood woodlands would occur, however. Cottonwoods and other trees that could impact the safe operation of the transmission line would be removed. Less than 0.1 acre riparian woodlands would be affected. There would be no significant impacts to wetlands, riparian vegetation or other potentially sensitive habitats from the expansion of the Beaver Creek and Erie substations. Construction of the substations would impact agricultural, native prairie, and previously disturbed and weedy vegetation. Long-term impacts to vegetation at the substation sites would include up to 10 acres at the Beaver Creek Substation and 5 acres at the Erie Substation.

The routing alternatives would have similar potential for adverse impacts to vegetation as the proposed project. The Brush Prairie Ponds SWA Reroute would result in fewer impacts than the proposed project since the alternative would avoid the long term presence of the project near wetlands and aquatic habitat in the SWA by routing south of the wetlands area. The Bijou Creek Crossing would potentially have slightly greater impacts than the proposed project on riparian woodland habitat in the Bijou Creek floodplain.

Wildlife - The project area supports habitat for a number of wildlife species, including big game (mule deer, white-tailed deer, and pronghorn), smaller mammals (including black-tailed prairie dogs), waterbirds (waterfowl, shorebirds, and waders), raptors, and other birds (songbirds). Impacts to wildlife would be significant if the project resulted in a long term decrease in economically or ecologically important wildlife populations, or a population trend warranting listing as Federally threatened or endangered. The construction of the project would have the potential to result in the direct mortality of small, less mobile mammals within the corridor, disturb active raptor nests, or disturb black-tailed prairie dog towns. The long-term direct loss of habitat would be slightly adverse, however, given the small amount of long term habitat loss (less than 2 acres for the transmission line and approximately 15 acres at the substation sites).

Impacts to wildlife would be minimized with Western's standard practices and project mitigation measures. Western's high-voltage transmission lines are designed to comply with the recommendations of the Avian Powerline Interaction Committee and U.S. Fish and Wildlife

Service for minimizing electrocution hazards to raptors. Risks of collision would be slightly increased over the existing conditions, because of the increased number of lines that would be present with the 230-kV transmission line, compared to the existing 115-kV transmission line. The highest potential for waterbird collisions is where the existing transmission line is in proximity to the Brush Prairie Ponds SWA ponds. To avoid or minimize impacts to raptors, Western would conduct raptor nest inventories prior to construction, and would implement appropriate mitigation to prevent the project from disrupting active nests. Impacts to migratory bird nests would also be minimized by avoiding ground-clearing activities in the Brush Prairie Ponds SWA during the nesting season, or conducting surveys for nests prior to construction so that they may be avoided. The potential impacts to black-tailed prairie dogs, nesting raptors, and waterbirds would not occur with the substation modifications since suitable habitat does not exist in the proposed expansion areas.

The impacts of the alternative routes would be similar to, or less than, those of the proposed project. The Brush Prairie Ponds SWA Reroute would minimize long-term risks associated with waterbird collisions with the powerlines since the reroute would be out of the direct flight path of the birds coming into and leaving the SWA or flying between ponds. Potential impacts to the existing black-tailed prairie dog town would be eliminated with the Bijou Creek Crossing alternative. The new ROW for the Bijou Creek Crossing alternative would be close to a red-tailed hawk nest and would cross a wider expanse of riparian/cottonwood woodland habitat.

Special Status and Sensitive Species – Special status and sensitive species include those species and critical habitats listed, or candidates for listing, under the Endangered Species Act of 1973. Other species considered include state-listed species and species of concern listed with the Colorado Heritage Program. The following Federally threatened, endangered, proposed and candidate species (TEP&C) and/or their critical habitats are known to occur within the project area: Black-footed ferret (endangered), Preble's meadow jumping mouse (threatened, recently recommended for de-listing), Least tern (endangered), Piping plover (threatened), Whooping crane (endangered), bald eagle (threatened), Plains sharp-tailed grouse (state endangered), Mexican spotted owl (threatened), Burrowing owl (state threatened), Pallid sturgeon (endangered), Colorado butterfly plant (threatened), and Ute ladies tresses (threatened). Western would avoid habitats for these species either through facility placement or construction timing restrictions.

Impacts to special status species would be considered significant if the project resulted in a "jeopardy" biological opinion under Section 7 of the ESA, or if a population reduction is caused by the project, resulting in its listing under the ESA. Western would implement both standard measures and project measures to ensure impacts are less than significant. Black-footed ferrets are believed to be extirpated in Eastern Colorado. Field reconnaissance of the project area identified two prairie dog towns as possibly meeting the criteria for potential habitat for black-footed ferret. Western has consulted with the USFWS, and the Service has determined that limiting conditions are applicable to the project area that would make it unlikely to support black footed ferrets. Consequently, no surveys are required for this species for ESA compliance. Burrowing owls may inhabit prairie dog towns. USFWS and CDOW recommended surveys for the owls if construction cannot be avoided between March 1 and October 31.

Western would minimize the potential to impact other TEP&C species through pre-construction surveys and avoidance measures that include limiting construction activities during breeding periods and avoiding construction activities within 0.5 mile of active raptor nests. Avoidance and mitigation measures for TEP&C species are incorporated in Western's standard construction and

project specific mitigation measures. With implementation of these measures, the proposed and alternative would not affect listed species.

Cultural Resources – Class I and Class III cultural resource surveys were conducted for the proposed project and alternatives. Significant cultural resources are defined as those listed on, or eligible for listing on, the National Register of Historic Places (NRHP). Impacts to cultural resources would be significant if the project impacted cultural resources considered eligible for, or listed on, the NRHP. Twenty eligible or recommended as eligible sites were recorded on the Beaver Creek-Hoyt-Erie transmission line ROW; nineteen historic sites and one pre-historic site. Western's standard construction and mitigation practices and project specific mitigation for cultural resources would be implemented to minimize the impacts on cultural resources. These measures include avoiding direct impacts to sites where feasible through careful structure placement and avoidance of sites during construction. None of the historic properties along the Beaver Creek-Hoyt-Erie transmission line currently have existing transmission structures within the site boundaries. No known archaeological sites or historic properties exist within the expansion areas of the substations, the Brush Prairie Ponds SWA Reroute, or Beaver Creek-Big Sandy Reroute. The Bijou Creek Crossing Reroute is similar to the proposed project. Since the span length between structures would be increased with the proposed project compared to the existing transmission line, avoidance of direct impacts to cultural resources is considered feasible. Consequently, impacts to cultural resources are not anticipated. If avoidance of all eligible sites is not feasible, a mitigation plan would be implemented prior to construction.

Land Use – The project crosses portions of Morgan and Weld Counties that are primarily in agriculture related land uses. The proposed project also crosses the Brush Prairie Ponds SWA, managed by the CDOW. Several communities and a number of dispersed rural residences are located within two miles of the proposed project including the City of Brush, in Morgan County, and the communities of Lochbuie, Wattenberg and Brighton in Weld County. Several utility corridors occur in the project area. These corridors contain pipelines, transmission lines and communication facilities. Western's existing transmission lines and ROWs have been established land uses since the 1950's.

Impacts to land use would be significant if the proposed action or alternatives were inconsistent with the adopted land use plans and regulations of local, state and Federal agencies, or resulted in long term impacts to the region's prime farmland productivity or the economic viability of area farms and businesses. The proposed project would not conflict with the Weld County and Morgan County land use plans. Prime farmland exists along both segments of the existing transmission line, and is crossed by the Beaver Creek-Hoyt segment for 7 miles and the Hoyt to Erie segment for 35.5 miles. Impacts to Prime Farmlands would primarily be short-term during construction, and less than the existing 115-kV transmission line long term, once the project is in operation. Long-term impacts to area businesses or farms would be similar to the existing 115-kV transmission line that would be removed. The Brush Prairie Ponds SWA, which provides hunting and wildlife viewing opportunities, is crossed diagonally by the existing transmission line and would be similarly crossed by the proposed project. Impacts to the SWA would therefore be very similar to the on-going effects of the 115-kV transmission line.

The proposed project and routing alternatives would result in short term disruptions to agricultural lands and practices during construction. Long term effects to agricultural land and operations would be less than the existing conditions since the proposed project (and routing alternatives) would result in fewer structures being required in cultivated farmland and the proposed single pole structures would result in less land permanently taken out of production.

Overall, the proposed project and routing alternatives would result in fewer structures being located on private properties than the no action alternative, due to the greater span length of the single pole steel 230-kV structures compared to the existing H-frame structures. The proposed project and routing alternatives would have short term adverse impacts on farm operations (crop loss, soil compaction interference with equipment, access roads, and irrigation systems) that would be mitigated to the extent feasible with Western's standard construction practices and landowner notification procedures. Long term impacts to agricultural land would include land permanently loss from production and potential interference with ground equipment and aerial spraying operations. These impacts would be less than significant since impacts would be localized and similar to the constraints posed by the existing transmission line.

The proposed project would result in similar impacts to the Brush Prairie Ponds SWA as the existing 115-kV transmission line. Short term impacts to hunting activities during construction would be avoided since Western would not conduct ground disturbing activities in the SWA during the hunting season. Long term effects to the SWA would be very similar to the existing conditions. Construction-related impacts to local residents and communities would be short-term and adverse, and result from the intermittent presence of construction crews and vehicles and related noise, dust and traffic that would be evident as crews work along the ROW dismantling the existing transmission line and installing the new 230-kV transmission system. Long term, the proposed project would result in less frequent maintenance activities being necessary during the life of the project.

The routing alternatives would result in reduced long term impacts to land use compared to the proposed project. The Brush Prairie Ponds SWA Reroute would reduce existing impacts to the SWA by moving the transmission line south of the waterfowl concentration areas and hunting areas and avoiding some pivot irrigation systems. Similarly the Beaver Creek-Big Sandy and Bijou Creek Crossing alternatives would reduce on-going impacts to several landowner's irrigation systems and agricultural fields. Short term impacts for all alternatives would be similar to those described for the proposed project.

Short term and long term impacts from construction activities at the Beaver Creek or Erie substation expansion sites would be similar to the impacts described above. No significant adverse long term impacts to existing land uses are expected from ROW changes since existing land uses would not be prohibited or removed. There are no known conflicts with any planned developments in Weld or Morgan Counties.

Visual Resources –The construction and operation of the proposed project and alternatives would be visible from the Brush Prairie Ponds SWA; from major travel routes in Morgan and Weld Counties, Colorado, including I-76, U.S. Highway 85 and State Route 71; and from residential areas including homes near the communities of Brush, Wattenberg, Lochbuie, and Brighton, and from dispersed rural residences, and recently developing subdivisions in Morgan and Weld Counties. Visual impacts would be significant if the project or alternatives caused long term visual changes that diminished the value or use of established parks or recreation areas of national and regional importance or designated scenic areas with recognized regionally important viewsheds. These types of regionally important visual resources do not exist in the project area.

Visual impacts would primarily be the direct, long term effects that would result from the installation of the taller 230-kV single pole steel structures and increased number and diameter of conductors, as well as the removal of the existing 115-kV transmission line. The new single pole structures would be approximately twice as tall as the existing H-frame structures (average 100 ft. versus 55 ft.); however, fewer structures would be required for the 230-kV transmission line since

span lengths would be increased from 700 feet to approximately 1000 feet. Consequently, depending on individual viewing conditions, long term visual impacts could range from adverse to beneficial. Adverse to slightly adverse visual impacts would result to rural residences, the Brush Prairie Ponds SWA, and at several highway crossings (State Route 71, I-76, and U.S. Highway 85), where the new structures and conductors would be visible within foreground (within 0.5 mile) distances. The perceived visual changes would range from weak to moderate depending on the landscape character and specific viewing conditions and distances. Beyond 0.5 mile, the changes in visual character between the existing transmission line and proposed transmission line rebuild would appear incremental. Construction-related impacts to landscape aesthetics would be short-term and intermittent. Western would implement both standard practices and project measures to ensure that ground disturbances are mitigated and restored to pre-existing conditions following construction, and that long term visual contrasts of the new structures are minimized to the extent feasible.

Compared to the proposed action, the Brush Prairie Ponds SWA Reroute and Beaver Creek- Big Sandy Reroute alternatives would result in similar or slightly reduced visual impacts near the City of Brush, from State Route 71 and from the Brush Prairie Ponds SWA. These alternatives would have reduced visual impacts to area residents and highway travelers since the alternatives would result in the consolidation of utilities to the east and south of the Beaver Creek substation, further away from most residents views. These alternatives would also have beneficial visual effects where the removal of the 115-kV transmission line near Beaver Creek improves views from homes and roads. Visual impacts to the SWA would similarly be reduced since the 115-kV structures, hardware, and conductor would be removed from the center of the wildlife area and ponds that are used most intensely for hunting and fishing, and instead routed further away from these recreational areas, to the south. No substantial differences in visual impacts would result from the Bijou Creek Crossing Reroute or the expansion of the substations.

Socioeconomics and Community Resources – The proposed project and alternatives would have no long term adverse impacts to socioeconomic conditions or community resources. The project would not disproportionately affect minority or low-income populations. Short term impacts would be beneficial economic activity in the project area.

Transportation - The proposed project and alternatives would have significant impacts on transportation if the project restricted public roads, resulting in adverse impacts to emergency response capabilities or economic hardships to local businesses. No significant impacts would occur since traffic restrictions would be very short-term and intermittent, and no businesses would be impacted by limited access conditions. Short-term and slightly increased traffic would result on two interstate highways (I-76 and I-25) and five US (34 and 85) and State highways (71, 52, and 79) serving the area. Short term increases in construction traffic and traffic delays would also occur on local Morgan and Weld county roads.

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Air Quality	Slightly adverse short-term effects. Short term increases in particulates and vehicle emissions during construction. Long term beneficial effects due to reduction in maintenance activities and related emissions.	Same	Same	Same	Same	Same	Not significant. Long term increase in vehicle emissions due to more frequent maintenance activities
Geology and Soils	No geologic hazards or impacts to mineral resources identified. Slightly adverse to adverse soils effects, due to soil disturbances. Direct short-term soil impacts would result from both the removal of existing 115-kV structures, and installation of new 230-kV structures (approx. 198.7 acres). Proposed project would affect some areas with soils susceptible to wind erosion. Western would implement project measure (SOILS-1) to minimize potential increases in erosion and related indirect soil impacts in wind erosion areas.	Same	Same	Same	Same	Same	Not significant. Increase in soil erosion from more frequent maintenance activities.
Paleontology	Potential long term inadvertent loss of fossil deposits could result, however, impacts would be minimized and less than significant with project measure PALEO-1.	Same	Same	Same	Same	Same	No Identifiable impacts.

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Water Resources (Surface Water, Floodplains, and Ground Water)	Slightly Adverse. Proposed project crosses 22 stream channels and 26 irrigation ditches or canals. All surface waters would be spanned, resulting in no direct impacts to surface water resources. Potential for indirect impacts from increased soil erosion and sedimentation would be minimized. Crosses 12 floodplain areas; seven would be spanned. Structures would be placed in the following floodplains: South Platte River (3 structures); Antelope Creek (1 structure), Muddy Creek (1 structure), Sand Arroyo (1 structure), Badger Creek (5 structures) and Beaver Creek (4 structures). Groundwater could be encountered during construction near Brush Prairie Ponds recharge area. Colorado Discharge Permit would be obtained if necessary. Direct impacts to groundwater would be minor and of short-duration. Western would implement measure WATER-1 to avoid potential impacts.	Similar surface water and floodplain effects. Would cross 1 less stream than proposed project. Would require 3 structures versus 5 for the proposed project to cross the Beaver Creek floodplain. Potential adverse impacts to groundwater if construction of structure foundations near Brush well fields impacted the protective clay layer . Impacts would be avoided through testing, monitoring, and implementation of measure WATER-1.	Same as BC-Brush Prairie Ponds SWA Reroute. Would not directly impact Brush well fields.	Similar to proposed project, but would require 1 structure in the Bijou floodplain.	Same potential indirect impacts as proposed project. No identifiable direct impacts.	Same potential indirect impacts as proposed project. No identifiable direct impacts.	No identifiable impacts.

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Vegetation and Wetlands	Potential adverse impacts, due to vegetation loss and potential for spread of invasive (weed) species. Short term vegetation disturbance of 198.7 acres from transmission line construction related activities. Most disturbances (138.3 acres) would be to agriculture. Western would implement project measure VEG-2 to reduce the potential for introducing or spreading noxious weeds. Long term vegetation loss would be less than 3 acres. Potential direct impacts would occur to less than 0.1 acre of riparian/cottonwood woodlands due to tree removal and trimming necessary for electrical clearances. Would cross or intersect 33 wetlands. All wetlands would be spanned, resulting in no direct impacts. Potential for indirect short term impacts to wetlands from construction related sedimentation and spills would be mitigated with Western's standard practices and project measure VEG-1. Substation expansions would result in approximately 15 acres of long-term vegetation loss in primarily agricultural and weedy areas. Some native prairie vegetation also permanently removed.	Similar potential short term and long term impacts. Alternative would eliminate risk of indirect impacts to wetlands and aquatic habitat in SWA. Additional 0.1 acre of short term disturbance and less than one-half acre of long term disturbance.	Similar potential short term and long term impacts.	Similar potential short term and long term impacts.	No identifiable impacts	No identifiable impacts	No identifiable impacts

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Wildlife	Potential short term mortality of wildlife, and other species including black-tailed prairie dogs during construction. Potential long term impacts to raptors and waterbirds, due to collision hazards. Western would reduce impacts with standard practices and project measures WILDLIFE-1, -2 and -3.	Reduces impacts, compared to proposed project. Would minimize risks associated with waterbird collisions since reroute is out of flight path of birds coming into SWA	Same	Same. Eliminates potential impacts to black-tailed prairie dog town, but potentially increase impacts to red-tailed hawk nest and riparian habitat area.	No identifiable impacts	No identifiable impacts	No identifiable impacts
Special Status and Sensitive Species	Potential adverse impacts to special status and sensitive wildlife and plant species are related to construction activities and potential powerline collisions. Listed Species in project area include Black-footed ferret, Preble's meadow jumping mouse, Least tern, Piping plover, whooping crane, bald eagle, Plains sharp-tailed grouse, Mexican spotted owl, Colorado butterfly plant, Ute ladies'-tresses. Prairie dog towns not considered potential habitat for black-footed ferret by USFWS. Potential impacts to other species would be avoided and/or minimized with Western's standard practices and project measures SS-1 (raptor surveys and seasonal restrictions) and SS-2 (burrowing owl survey/ seasonal restriction), along with on-going consultations with USFWS on ESA compliance.	Similar impacts as proposed project overall. Alternative has no habitat for special status species.	Similar impacts as proposed project overall. Alternative has no habitat for special status species.	Similar impacts as proposed project overall. Alternative has no habitat for special status species.	No identifiable impacts	No identifiable impacts	No identifiable impacts

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Cultural Resources	Long term potential to adversely impact 20 NRHP eligible or recommended as eligible sites from construction activities. Impacts would be minimized with Western's standard practices and project measures CULT-1 and CULT-2. No significant impact. Long term beneficial impact from less land disturbance due to fewer structures. No significant impacts.	No identifiable impacts	No identifiable impacts	Same as proposed project	No identifiable impacts	No identifiable impacts.	Adverse effect on historic sites from continued and frequent maintenance activity. No significant impact.
Land Use	Short term and long term impacts to agricultural lands, equipment operations and irrigation systems. Short term dust and noise impacts to residential and community land uses from construction activity. Similar short term impacts to Brush Prairie Ponds SWA. Compared to the existing conditions, long term beneficial impacts to agriculture and SWA would occur due to fewer structures, less land losses for structure foundations, and a decrease in maintenance activity. Potential long term impacts on agriculture practices, irrigation and aerial spraying. Long-term impacts similar to the existing conditions and on-going effects of 115-kV line.	Similar short term impacts to residential and community uses due to dust and noise. Reduces impacts to prime farmlands, agricultural operations and prime farmland. Eliminates conflict with recreational activities at Brush Prairie Ponds SWA	Similar short term dust, noise and nuisance impacts from construction activity. Reduced impacts to farm operations.	Similar short term dust, noise and nuisance impacts from construction activity. Reduced impacts to farm operations.	Similar short term dust, noise and nuisance impacts from construction activity.	Similar short term dust, noise and nuisance impacts from construction activity.	Adverse impacts to land owners and land uses from maintenance activities would continue.

Table S-1. Summary Comparison of Impacts - Proposed Beaver Creek-Hoyt-Erie Transmission Rebuild Projects and Alternatives							
	Proposed Project	**BC-Brush Prairie Ponds SWA Reroute Alternative**	**BC-Big Sandy Reroute Alternative**	**Bijou Creek Crossing Reroute Alternative**	**Beaver Creek Substation Expansion**	**Erie Substation Expansion**	**No Action Alternative**
Visual	Slightly adverse to adverse visual impacts resulting from larger and taller single pole steel structures in visually sensitive recreation, residential areas and near major travel routes. Potentially affected areas include Brush Prairie Ponds SWA, rural residences and views from highways and roads at crossings and parallel locations. Long term beneficial impacts from a reduction in the number of structures viewed. Visual effects would be minimized with project measure VISUAL-1.	Similar. Reduced visual impacts on State Route 71, rural residential near Brush and the Brush Prairie Ponds SWA.	Similar. Reduced visual impacts on State Route 71 and rural residential near Brush due to consolidation of lines within one corridor and with two sets of single pole steel structures.	Similar.	Similar	Similar	No identifiable impact.
Socioeconomics	Short term beneficial impacts including increased economic activity in local jurisdictions from construction workforce, contractor, and Western expenditures.	Same	Same	Same	Same	Same	No new economic activity in region from new construction activity.
Transportation	Short term increase in construction traffic on major and minor thoroughfares. Short term traffic delays possible, but would not impede emergency services.	Same	Same	Same	Same	Same	Potential for increased maintenance traffic on local roadways.

1.0 Introduction

The National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508) establish procedures that ensure environmental information is available to decision makers, regulatory agencies, and the public before Federal actions are implemented. The Western Area Power Administration (Western) is the lead Federal agency for preparing the Environmental Assessment (EA) for the Beaver Creek-Hoyt-Erie (BC-HT-EE) Transmission Line Rebuild Project (proposed action/proposed project). This EA follows the procedures established by the U.S. Department of Energy (DOE) to implement NEPA (10 CFR part 1021).

This EA identifies and analyzes the consequences of the proposed action and alternatives on the human and natural environment and suggests mitigation strategies for adverse impacts. The EA is not a decision document, but an information document, written in plain language to inform the public and decision makers regarding the environmental effects of the proposed action. Western will use this EA to decide whether to prepare an Environmental Impact Statement (EIS) or to issue a Finding of No Significant Impact (FONSI). Scientific studies used to support this EA are incorporated by reference and summarized in the document.

1.1 Background

Western's mission is to market and transmit reliable, cost-based electric power to its customers. This commitment extends to providing quality service at the lowest possible cost. Sound business practice requires Western to maintain its transmission lines and the associated facilities that provide customers with appropriate transmission service and reliability.

Western's Rocky Mountain Customer Service Region is planning to rebuild the existing Beaver Creek-Hoyt 115-kilovolt (kV) transmission line and the Hoyt-Erie 115-kV transmission line as a double circuit 230-kV transmission system. These existing transmission lines are 32 miles and 46 miles long, respectively; and route through portions of Morgan and Weld Counties, Colorado. The proposed action would be located along Western's existing rights-of-way (ROWs) for most of its distance. Existing ROWs would typically be expanded from the present width of 75 feet to between 85 and 110 feet. ROW widths up to 125 feet would be required in certain areas—particularly where the proposed action would cross under transmission lines owned by other utilities.

The EA evaluates the proposed action of rebuilding the existing transmission lines along the same ROW centerlines as the existing Beaver Creek-Hoyt and Hoyt-Erie 115-kV transmission lines. Several routing alternatives, which would relocate sections of the rebuild transmission line in order to minimize impacts to private landowners, agricultural lands and natural resources, are also analyzed. The proposed action and routing alternatives would predominantly cross private lands, as well as some state lands. No Federally owned lands would be crossed by the proposed action or alternatives.

The proposed action would require on-site modifications to the Adena Substation and the expansion of the Beaver Creek Substation and the Erie Substation. One circuit of the proposed project would continue to operate at 115-kV for the foreseeable future, and would maintain the 115 kV connection to the Adena Substation, Brighton Substation, Sand Creek Tap and Hoyt

Substation. The second circuit would be energized to 230-kV and the Beaver Creek and Erie Substations would be expanded to accommodate the 230-kV circuit when needed in the future. This EA evaluates the potential impacts of the substation expansions.

Western's transmission system is interconnected with transmission systems owned and operated by Tri-State Generation and Transmission Association, Inc. (Tri-State), a customer of Western's. Tri-State is a non-profit cooperative that serves member utilities in Colorado, Wyoming, New Mexico and Nebraska. Member utilities in the project area include Morgan County Rural Electric Association (MCREA), Fort Morgan, Colorado and United Power, Brighton, Colorado.

Under Western's Open Access Transmission Tariff, Western provides transmission service to Tri-State. Western's Beaver Creek-Hoyt-Erie Transmission Line interconnects with Tri-State's Erie Substation. Western is proposing to enter into a contract with Tri-State, whereby Tri-State would provide financial support to the proposed upgrade of the Beaver Creek-Hoyt-Erie Transmission Line. Under the proposed contract, Tri-State would obtain ownership of one of the 230-kV circuits. Tri-State would interconnect the 230-kV circuit at their Erie Substation and Story Substation, which is just to the east of the Beaver Creek Substation. This contract would be mutually beneficial to both parties because it would allow Western to improve the reliability of the transmission system and provide Tri-State with an additional transmission path to improve the efficiency of power delivery to their customers.

1.2 Purpose and Need

The Beaver Creek-Hoyt-Erie 115-kV transmission line, constructed in 1952, is an original facility in the Colorado-Big Thompson Project. Although the transmission line has operated reliably, its limited capacity impacts the rating of the constrained transmission path between southeastern Wyoming and northeastern Colorado (referred to as TOT3). Due to its limited capacity, the existing transmission line reduces the capability of the path to carry its full designed load. Increasing the carrying capacity of the Beaver Creek-Hoyt-Erie transmission line will avoid further reduction of the path constraints. If no action is taken on the existing line, the circuit will overload to 130% of the line's present thermal capacity within 5 years. After another 5 years, the line will exceed the rated capacity by 145%. If the line is rebuilt as a single circuit 115-kV line, with larger conductor (795 kcmil ACSR), it is forecast to overload within 15 years, shorter than the expected life of a rebuilt transmission line.

Without the proposed action, the TOT3 transfer path would have to be reduced by up to 400 MW in order to avoid future projected overloads. Western's reduction would be 25% (100 MW). This scenario is not acceptable to Western as it would restrict the ability of Western to move Wyoming hydroelectric power to Colorado Federal firm electric service loads.

The proposed transmission line rebuild would utilize larger conductors (1272 kcmil ACSR), thus yielding greater capacity. The greater capacity of the 230-kV transmission line would help alleviate overloading problems already experienced on the line. The existing 115-kV transmission lines are also approaching the predicted useful life of the wood H-frame structures. Anticipated maintenance costs required to continue operating the existing transmission line would be deferred when the transmission line is rebuilt. In summary, the proposed action will accomplish the following objectives:

- Increase the operating capacity of the Beaver Creek-Hoyt-Erie transmission line.
- Ensure that the electric system in the area will continue to operate within acceptable reliability criteria while accommodating future load growth.
- Allow Western to continue to serve its network customers in a reliable manner.
- Ensure the TOT3 total transfer capability is not reduced by 400MW.
- Ensure that customers with existing 115-kV interconnections are served.
- Provide line-switching capability at the Morgan County REA's Adena Substation.
- Ensure that updated communication and control facilities are provided to reliably operate and control the transmission line.
- Ensure that the line can be operated at its full capacity without impacting other interconnected transmission lines in the southeastern Wyoming and northeastern Colorado.
- Increase Western's ability to serve Colorado Federal Firm loads with Wyoming hydroelectric power.

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1.3 Public Scoping

Public and regulatory agency involvement is important for analyzing the proposed transmission line upgrade and ensuring that relevant environmental impacts are evaluated. During the early stages of the project planning, Western notified stakeholders of the project and solicited information on their concerns in a scoping letter dated October 22, 2004. Stakeholders contacted included local and state government agencies, landowners along the existing right-of-way, and Native American tribes with historical ties to the area. Western met with the Colorado Division of Wildlife, the City of Brush administration and utilities, and the Morgan County Water Quality District to discuss specific issues. One project update letter was sent to local government officials in June 2005.

Nearly every landowner was personally contacted about the project. Landowners who requested meetings with Western were accommodated. Western also met with landowners along the alternative reroutes.

Additional consultation with Native American tribes occurred through written correspondence. The correspondence with tribes helps Western meet the requirements for consultation under agency policy and as required by Executive Orders and regulations. Much of the correspondence dealt with survey results and recommendations for management of historical properties that are eligible for the National Register of Historic Places.

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2.0 Alternatives Including the Proposed Action

2.1 Description of the Proposed Action

Western proposes to rebuild the existing Beaver Creek-Hoyt-Erie 115-kV transmission line as a double-circuit 230-kV transmission system. The existing transmission line is approximately 78 miles long, and extends 32 miles between the Beaver Creek and Hoyt substations and 46 miles between the Hoyt and Erie substations. The proposed rebuild project crosses portions of Morgan and Weld Counties, Colorado (Figure 2.1-1).

Figure 2.1-1. Project Vicinity

The proposed action consists of the following specific facilities and related activities:

- Western's existing 115-kV transmission lines would be removed between the Beaver Creek Substation and the Erie Substation. Lines removed would include portions of Western's existing Beaver Creek-Hoyt (BC-HT) and Hoyt-Erie (HT-EE) 115-kV transmission lines. The existing wood H-frame structures, conductors and hardware would be dismantled.

- A new, double circuit 230-kV transmission line would be installed on single pole steel structures between the Beaver Creek Substation and the Erie Substation for most of its distance. The 230-kV transmission line would be supported on H-frame steel structures in specific locations, including four locations where the 230-kV transmission line would

pass under other existing transmission lines. A number of wooden H-frame structures would also be installed near the Beaver Creek and Hoyt Substations.

- The new structures would be placed within Western's existing and expanded ROWs for most of the transmission line's distance. In order to meet necessary electrical clearances and provide for maintenance activities, Western would widen existing ROWs, or acquire new ROWs, as needed. The existing ROWs are typically 75 feet wide, and would be expanded to 85 feet to 110 feet wide. The ROW would be widened to 125 feet at the four transmission line undercrossing locations, and other locations where needed for longer spans between structures.

- Although constructed as a double-circuit 230-kV transmission line, Western would continue to operate one circuit at 115-kV between the Beaver Creek and Erie substations, in order to retain interconnection with the Adena Substation, Brighton Substation and Erie Substation. Line switches would be added at the Adena Substation, which would allow the transmission line to be manually sectionalized and isolated. The existing tap at the Adena Substation would continue to operate at 115-kV. The second 230-kV circuit would be installed to allow connection to the Beaver Creek and Erie Substations in the future.

- Construction of the 230-kV transmission line would occur in phases: the transmission line would be rebuilt from the Beaver Creek Substation to the Hoyt Substation in 2006; and from the Hoyt Substation to the Erie Substation sometime between 2007 and 2010.

- Prior to the 230-kV line being energized, the Beaver Creek and Erie Substations would be expanded to accommodate the 230-kV transmission line voltage. Specific designs and construction schedules have not been established for the substation expansions. These actions are estimated to be completed by 2010. The Beaver Creek Substation is owned and operated by Western. The Erie Substation is owned and operated by Tri-State.

2.1.1 Project Location

The proposed transmission line would cross Morgan County for approximately 35 miles, and Weld County for 43 miles. The Beaver Creek-Hoyt transmission line segment extends between the Beaver Creek Substation, near Brush, Colorado, and the Hoyt Substation, near Hoyt, Colorado. Figure 2.1-2 shows the location of the existing 115-kV transmission line between these two substations. The proposed action would replace this existing line with a new 230-kV transmission line in the same ROW centerline location. References to locations along the existing Beaver Creek-Hoyt transmission line are annotated in the EA as mileposts BH 0 to BH 32 or by Western's structure numbers. Figure 2.1-2 also shows the location of the routing alternatives considered in the EA, as well as the Beaver Creek, Adena, and Hoyt substations.

The Hoyt-Erie 115-kV transmission line segment extends between the Hoyt Substation and the Erie Substation, east of the town of Erie. The location of the existing Hoyt-Erie transmission line and the proposed 230-kV transmission line that would be constructed along the same ROW centerline is shown on Figure 2.1-3. References to locations along this line are indicated in this EA as mileposts HE 0 to HE 46, or by Western's structure numbers.

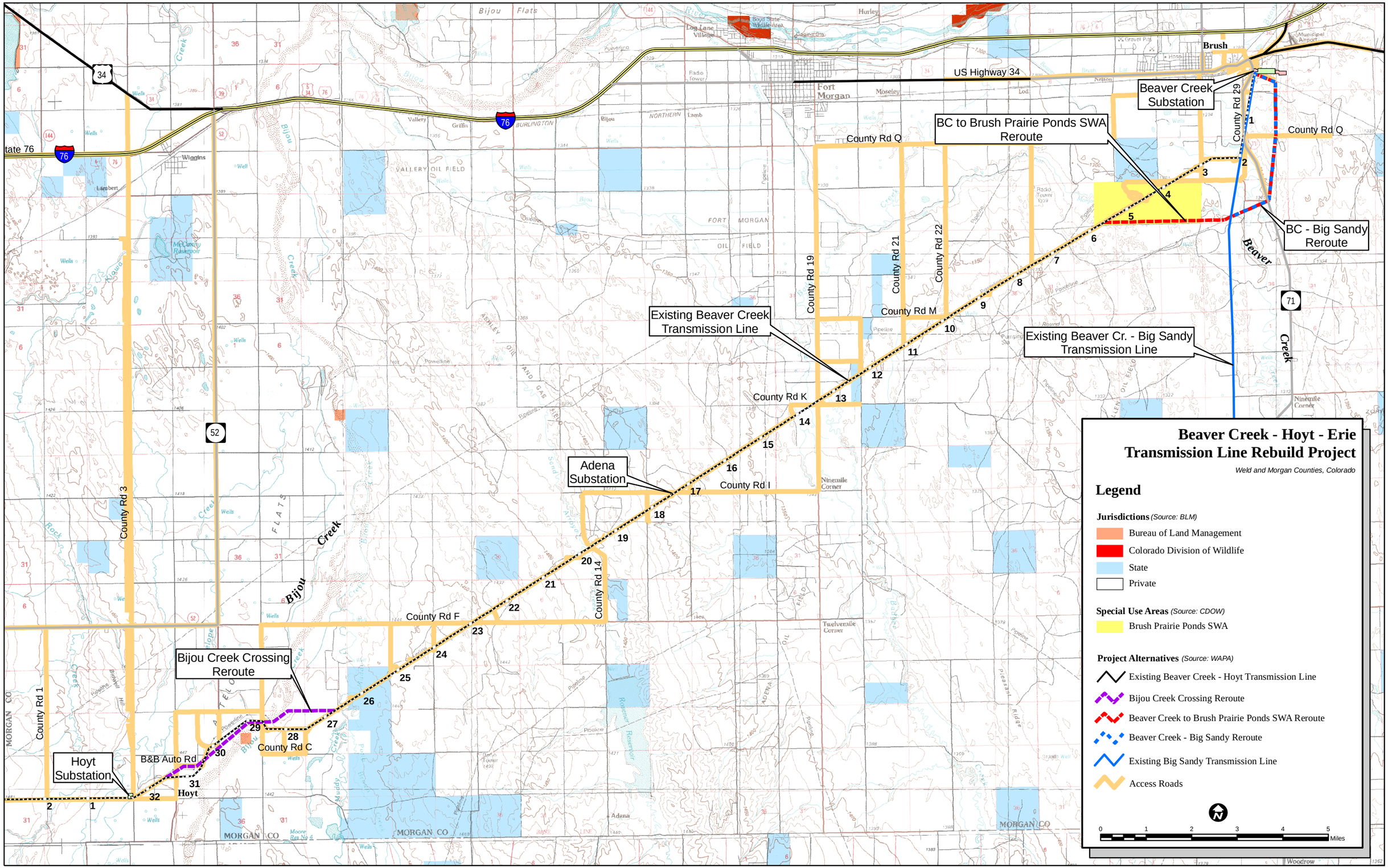

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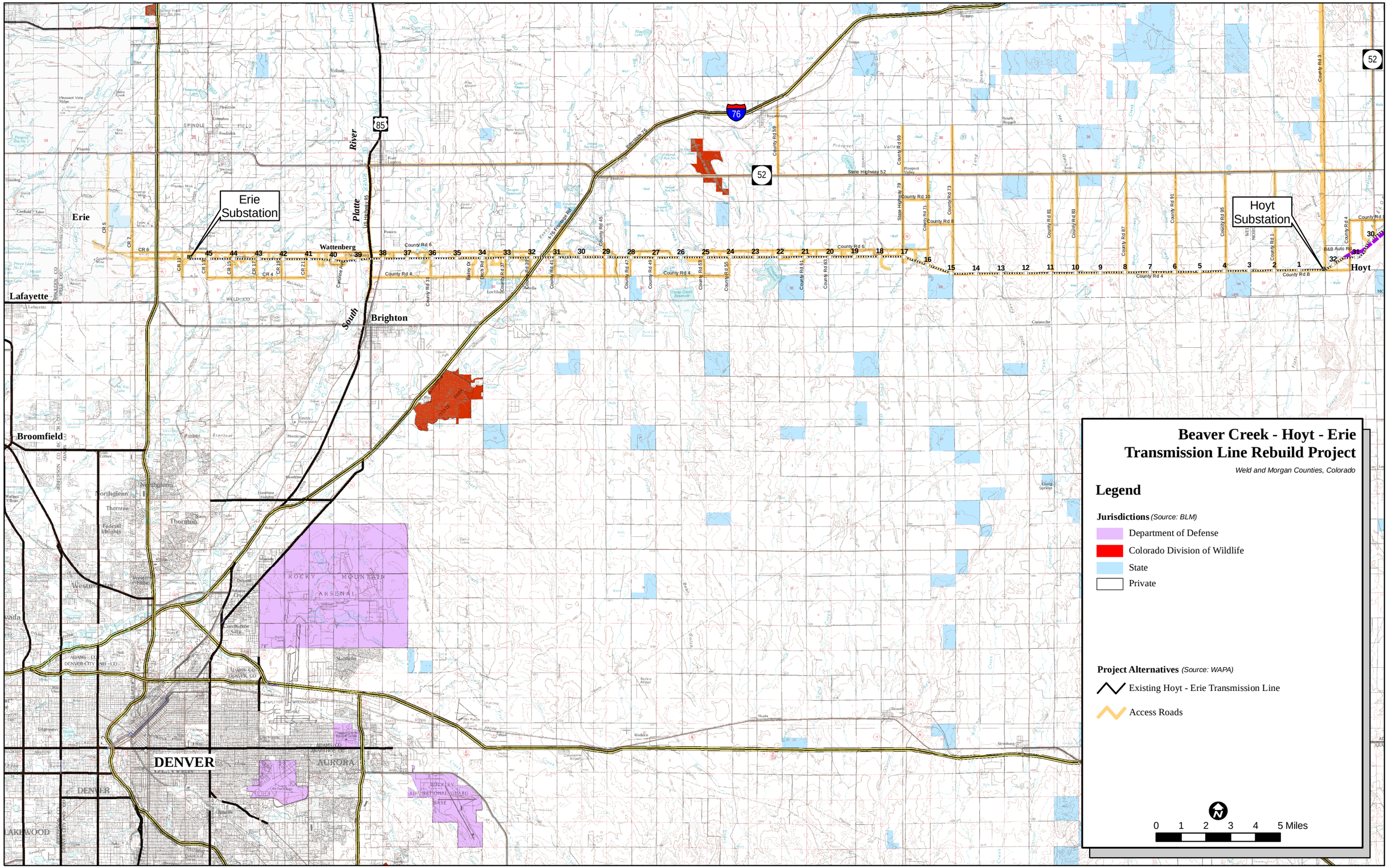
Figure 2.1-2. Location of Existing Beaver Creek - Hoyt Transmission Line



Beaver Creek - Hoyt - Erie Transmission Line Rebuild Project

Weld and Morgan Counties, Colorado

Legend

Jurisdictions *(Source: BLM)*

- Department of Defense
- Colorado Division of Wildlife
- State
- Private

Project Alternatives *(Source: WAPA)*

- Existing Hoyt - Erie Transmission Line
- Access Roads

0 1 2 3 4 5 Miles

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Figure 2.1-3. Location of Existing Hoyt - Erie Transmission Line

The Beaver Creek-Hoyt Transmission Line Segment (Figure 2.1-2). The proposed project would originate at the Beaver Creek Substation, approximately 1 mile east of Brush, Colorado. From the substation, the proposed transmission line would travel southwest through rural residential and agricultural areas for approximately two miles, crossing State Route (SR) 71 and Morgan County Road (MCR) 29, south of Brush. West of MCR 29, the transmission line would turn west for 0.8 mile and then southwest at milepost BH 2.8, continuing in that direction for 24.7 miles. Through this area the transmission line would cross Beaver Creek, the Brush Prairie Ponds State Wildlife Area (SWA), irrigated agriculture and open rangeland. The majority of this area is rural and undeveloped, with intermittent fields of irrigated agriculture. At milepost BH 27.5, the transmission line would turn westward for approximately one mile before turning northwest across Bijou Creek. From milepost BH 29.0 to BH 30.8, the transmission line would route southwest along the northern edge of Bijou Creek across agricultural lands. For the remaining 2.2 miles, the transmission line would travel west and southwest across irrigated farmland to the Hoyt Substation, located near MCR 3.

The Hoyt-Erie Transmission Line Segment (Figure 2.1-3). From the Hoyt Substation, the proposed transmission line would continue westward across irrigated farmland for approximately 15 miles, crossing into Weld County near milepost HE 3.0. At milepost HE 15, the transmission line would turn northwest for two miles crossing Sand Creek, before heading west at milepost HE 17. From milepost HE 17 to the Erie Substation, the proposed transmission line would follow a westward direction for 29 miles, primarily crossing irrigated farmland in southern Weld County. Along this segment, the transmission line would cross I-76 near milepost HE 31.5, and U.S. Highway 85, near milepost HE 38.5. Through most of its length in Weld County, the transmission line would parallel Weld County Road (WCR) 6. The proposed transmission line would also cross the South Platte River near milepost HE 39.0, pass south of the community of Wattenberg near milepost HE 39.5 and several miles north of Brighton, Colorado. The proposed rebuild project would terminate at the Erie Substation.

2.1.2 Proposed Transmission Structure Designs

Western is proposing to rebuild the majority of the Beaver Creek-Hoyt-Erie transmission line with single pole steel structures. The existing wood H-frame structures would be removed, and new steel pole structures would be installed along the same centerline. Figure 2.1-4 shows the existing and proposed structures and ROW.

The existing H-frame structures are typically 50 to 55 feet high and have average spans between structures of 600 to 700 feet. The new double-circuit single pole steel structures would be 95 to 100 feet high, with spans between structures averaging 1,000 feet. Approximately 400 steel pole structures would be installed.

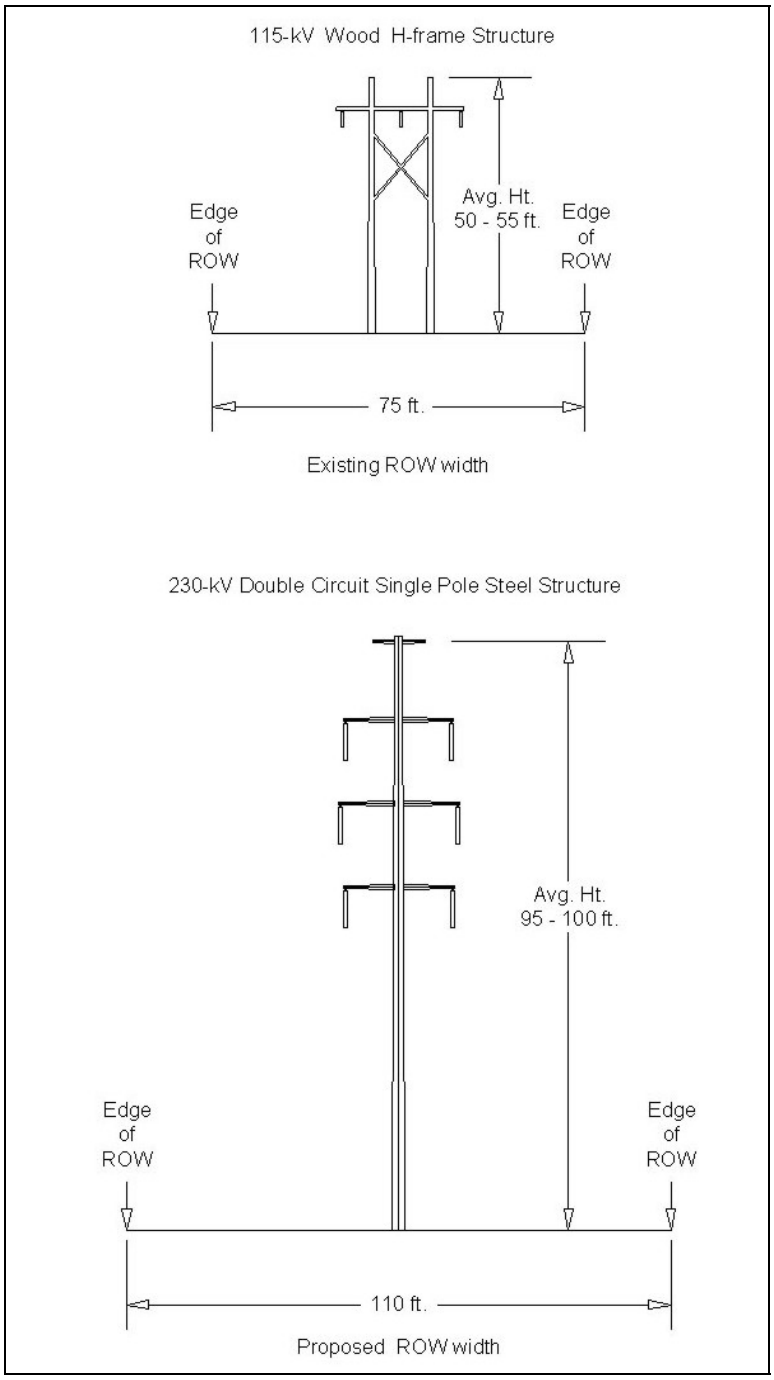

Figure 2.1-4. Comparison of Existing H-frame and Proposed Single Pole Transmission Structures and ROWs (ROW width varies between 85 ft. and 125 ft.)

In addition to the new steel pole structures, approximately 18 H-frame steel structures would be installed at the four transmission line undercrossings and 10 H-frame structures would be installed near the Beaver Creek and Hoyt Substations. At each of the undercrossing locations, the double circuit 230-kV transmission line would be transitioned to two sets of H-frame structures in order to route the lines under other transmission facilities. The proposed H frame structure design and associated ROW configuration are shown on Figure 2.1-5. The H-frame structures would

reach typical heights of 75 to 80 feet, and would have spans between structures that could extend beyond 1400 feet. Additional H-frame structure locations may be identified during final engineering.

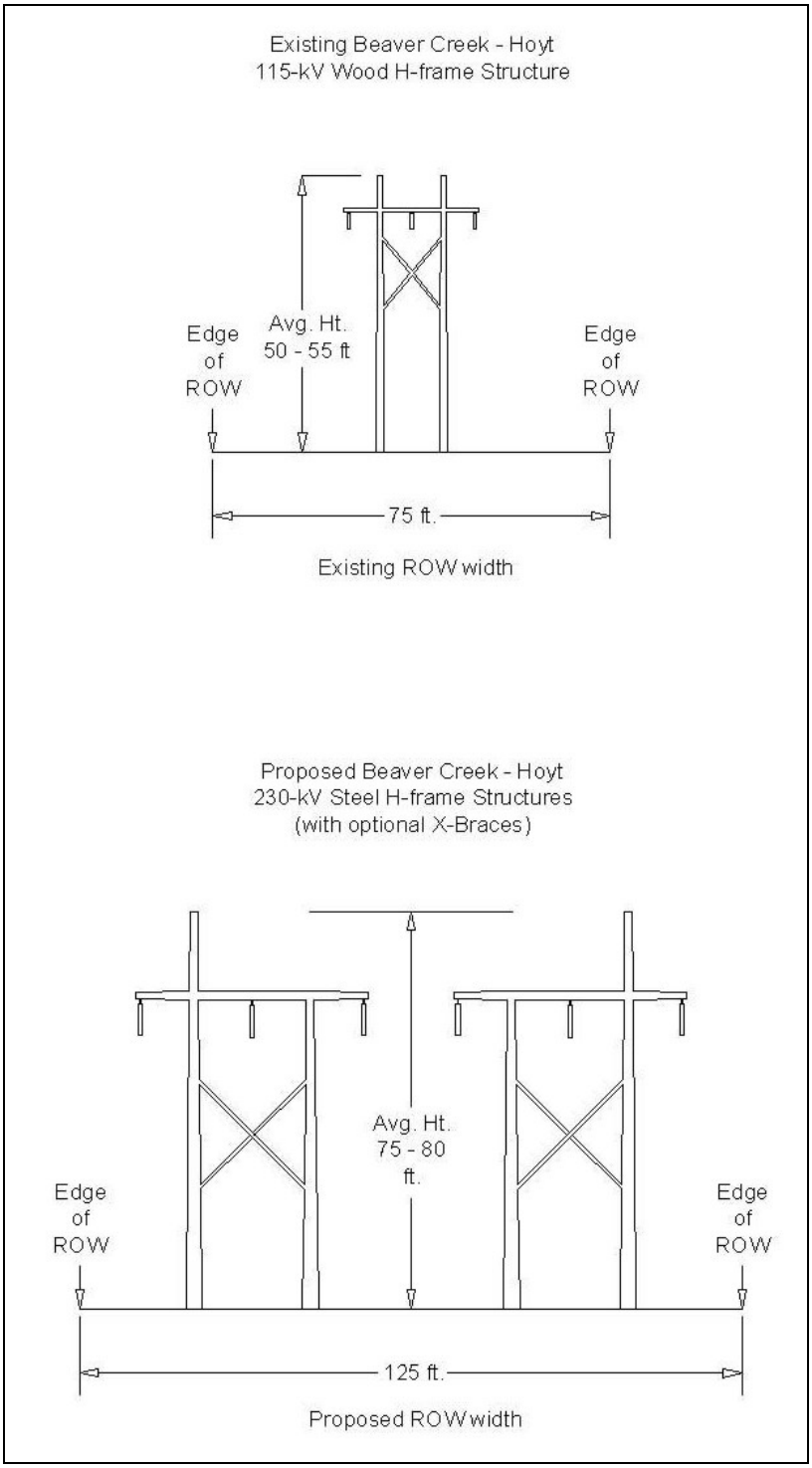

Figure 2.1-5. Comparison of Existing and Proposed H frame Structures and ROWs

The transmission line undercrossing locations are shown on Figure 2.1-2, and are near mileposts BH 6.5, BH 117, BH 23, and BH 25.2. Near the Beaver Creek and Hoyt substations, H-frame structures would also be used for four spans south of the Beaver Creek Substation and for one span east of the Hoyt Substation.

In total, 595 existing wood H-frame structures would be removed and replaced with approximately 400 new single pole steel structures and 28 new H-frame structures. Table 2.1-1 summarizes the design characteristics of the proposed action.

Table 2.1-1. Transmission Design - Beaver Creek-Hoyt-Erie Rebuild Project

Description	Comparison of Existing and Proposed Structure Designs	
	Existing 115-kV Wood H-Frame Structures (to be removed)	**Proposed 230-kV Single Pole Steel Structures (to be installed)**
Right-of-Way Width	75 feet	85 to 125 feet
Span between Structures (average)	600 to 700 feet	1,000 feet
Span between Structures (maximum)	875 feet	1,200 feet to 1,400 feet
Number of Structures per mile (average)	8	5
Height of Structures (average)	50 to 55 feet	95 to 100 feet
Height of Structures (typical range)	50-70 feet	85-135 feet
Typical Structure Base (8 ft. diameter steel base) (sq. feet)	45 sq. feet	48 to 50 sq. feet
Land disturbed by construction at each structure base (maximum square feet)	6,500 heavy disturbance 16,000 light disturbance	6,500 heavy disturbance 16,000 light disturbance
Miles of line per conductor stringing site	2-3 miles	2-3 miles
Land disturbed at each stringing site	1 acre 125 feet x 125 feet	1 acre 125 feet x 125 feet
Conductor type and size	477 kcmil ACSR	1272 kcmil ACSR
Circuit Configuration	Horizontal	Vertical
Minimum ground clearance beneath conductors	25 feet	25 feet

2.1.3 Right-of-Way (ROW)

Western would acquire new, or widen existing ROWs to provide adequate electrical clearances for the double circuit 230-kV transmission line and to increase flexibility for maintenance operations. Existing ROWs would be expanded, on average, from 75 feet wide to between 85 and 110 feet wide along the majority of the transmission line where the single pole steel structures are installed. Where two sets of H-frame structures are installed (e.g. at the four undercrossings with other transmission facilities), the ROW would be expanded to 125 feet wide.

Western would acquire all ROWs necessary to meet National Electric Safety Code (NESC) standards. All expanded and new easements would be acquired in accordance with applicable laws and regulations governing Federal acquisition of property rights. These laws allow the payment of just compensation to landowners for the rights acquired and every effort would be made to acquire these rights by direct purchase.

2.1.4 Construction Sites - Access Roads, Stringing Sites, and Structure Sites

Access to the ROW would occur along existing public and private roads. No new roads would need to be graded or constructed to reach the proposed project ROW. Within the ROW, Western

would access construction sites and structure sites via existing roads and with overland construction vehicles. Some grading may be required within the ROW to access new structure sites and conductor stringing/pulling sites. These types of disturbances would be localized and occur within Western's ROW.

During construction, conductor stringing/pulling sites would be established every two to three miles along straight sections of the transmission line and at many angles in the line. These sites would be approximately one acre in size and would be used for pulling equipment during the installation of the conductors. Most of the stringing sites would be located within the ROW, and would be restored to pre-existing conditions to the extent feasible following construction. Stringing/tensioning sites at angle structures may be located outside the ROW and at these sites, additional short term agreements with landowners would be required.

Approximately 6,500 square feet of disturbance are assumed to occur during construction at each structure site. Between the Beaver Creek and Hoyt substations, 249 structures would be removed, and replaced with approximately 185 structures. Between the Hoyt and Erie substations, approximately 346 structures would be removed and 243 new structures installed. The overall reduction in the number of structures would result from the increased span length provided by the proposed 230-kV structures. After construction is completed, all new and old structure sites and stringing sites would be recontoured and reclaimed as needed. In the future, access roads would be used occasionally for routine and emergency maintenance activities of the project. Short term and long term disturbances expected with the proposed action are summarized on Table 2.1-2.

2.1.5 Substation Expansions and Modifications

The operation of the proposed transmission line would require interconnections to the Beaver Creek and Erie substations. These substations would be expanded to accommodate the new double-circuit 230-kV transmission line, prior to the line being energized at the 230-kV voltage. The proposed action would also entail adding line switches at the Adena Substation. Changes to the Adena Substation would not result in ground disturbances or changes to the size of the substation facility. For purposes of NEPA compliance, the following assumptions were made for the substation expansions:

Beaver Creek Substation – Western's Beaver Creek Substation would be expanded east of the existing substation site. The substation facility would be enlarged from its current size of approximately 5.3 acres to approximately 9 to 10 acres. Since the substation design has not been prepared at the time of this EA, the EA evaluates a potential impact area of approximately 31.2 acres between the Beaver Creek and Story Substations. The substation site and construction area would be smaller than this impact area. If, at a later date, the substation design requirements indicate that the 230-kV facility should be located in an area that has not been studied for environmental impacts, Western would undertake those studies at that time.

Erie Substation – The existing Erie Substation is owned and operated by Tri-State. This substation is approximately 1.5 acres in size, and would be expanded to approximately 5 acres to accommodate the proposed action's 230-kV voltage. The EA evaluates a potential expansion area extending to the north and east. Since the substation expansion has not been designed, a total disturbance area of approximately 9.5 acres is evaluated in the EA.

Hoyt Substation – The timeframe for addition of 230-kV equipment, such as breakers and transformers, has not been determined at this time. When the requirements for the Hoyt Substation modification are identified, Western will undertake additional environmental review. At this time, it is estimated that the substation will not need modification to 230-kV until after 2015.

Table 2.1-2 summarizes the short term (at the time of construction and for one year after construction) and long term (through the life of the project) surface disturbances from the construction and operation of the proposed action.

Table 2.1-2 Summary of Short Term and Long Term Surface Disturbance

Project Component	Quantity (Number of Structures)	Short term Disturbance (Acres)	Long term Disturbance (Acres)
Installation of New Single Pole and H-frame Steel Structures			
H-frame structures	28	4.2 acres	<0.1 acre
Single pole structures	400	59.7 acres	<0.5 acre
Conductor stringing sites	31	31 acres	0
Staging Areas	3	15 acres	0
Total Disturbances due to New Facility Installations:	**428 structures installed, 31 stringing sites and 3 staging areas**	**109.9 acres**	**0.5 acre**
Removal of Existing H-frame Wooden Structures			
H-frame structures removed	595	88.8 acres	0
Total Project Transmission Line Disturbances		**198.7 acres**	**0.5 acre**
Beaver Creek and Erie Substation Expansions			
Beaver Creek Substation	230-kV Substation Equipment	31.2 Acres	9 to 10 acres
Erie Substation	230-kV Substation Equipment	9.5 Acres	5 acres
Total Substation Disturbances		**40.7 acres**	**14 to 15 acres**

2.1.6 Construction Practices and Schedule

The proposed project would be constructed in 2006 between the Beaver Creek and Hoyt substations. The schedule for constructing the proposed transmission line between the Hoyt and Erie Substations, and expanding the Beaver Creek and Erie Substations is estimated to occur between 2007 and 2010. Prior to energizing the 230-kV transmission line, the substation modifications would be completed.

Construction of the proposed transmission line would proceed sequentially along the ROW and would include the following activities that would be performed by three to five crews:

Sites Cleared and Graded - Standard construction procedures for transmission lines require the movement of vehicles and equipment within the ROW. All trees that may grow into the transmission line and present a safety hazard would be removed. Based on initial construction plans, Western expects that an area 125 feet by 125 feet would be needed at each structure site for construction. Stringing sites, one acre in size, would also be needed and may require clearing

and grading to ensure that the stringing and tensioning equipment, cranes and other equipment have a stable platform.

Existing 115-kV Wood H-frame Structures Removed – The proposed action would entail moving heavy equipment along the existing ROW to dismantle the existing 115-kV transmission line. This would include removing the conductors, overhead ground wires, cross arms and support structures. The wood H-frame structures would either be cut off at or below ground level, or would be completely removed and holes backfilled. Structures completely removed would be loosened by digging around their bases and then pulled from the ground. The equipment used in the operation would include: 1) truck-mounted auger or backhoe for digging a hole along side the existing poles so the poles can be loosened and removed; 2) equipment for pulling structures from the ground; 3) a backhoe for refilling the holes; 4) a flatbed trailer for hauling the old poles from the site and 5) a truck-mounted spool for removing the wire from the structures and man-lifts to allow contractors to disconnect structure and line hardware. The wood H-frame structures could be made available to landowners, if requested. All materials would be removed from the ROW and either recycled or disposed of in accordance with Federal regulations. Western would clean up and restore the ROW to preconstruction condition, to the extent possible.

New 230-kV Single Pole Steel Structures Installed – To install the new 230-kV transmission structures, auger trucks would move down the ROW to auger the holes for new footings for the single pole steel structures. Structures would be installed either using reinforced concrete foundations or direct poured concrete embedding around the structure bases. Concrete crews would assemble steel cages for setting concrete footings, where used, and cement trucks would be brought along the ROW to place the footings. As an alternative to the reinforced concrete foundations, structures could be set by having the base portion of the structure set in place and the concrete poured around the base. Assembly crews would put together the remaining portion of the structures, which would be hoisted into place with cranes and placed on the footings or connected to the base section. Maximum depth of augured holes would be approximately 30 feet, although specific structure depths would vary and depend on soil conditions and engineering design criteria. Foundation diameters would be between 4 and 6 feet for most structures. Augured holes for the structures would be between 8 and 10 feet in diameter. Dirt from the holes would be used to backfill around the foundations. Excess dirt would be scattered adjacent to the pole and leveled with existing topography. Lineman would add insulator strings and pulleys to the cross arms.

Conductor Stringing and Tensioning - Stringing sites would be established every two to three miles within the ROW along the straight sections of line and at most angles (turns). Stringing sites may be outside the ROW near angle structures. Stringing equipment would be set up to remove the old 115-kV conductors and to pull in the new 230-kV circuits. Stringing crews would pull a small line through the pulleys, attach a larger wire pulling cable, and finally pull the conductors and overhead ground wire through the pulleys. The conductors would be tensioned and fastened to the insulator strings to allow them to sag to a safe distance above ground. Stringing requires the use of heavy equipment to pull cable into place.

Clean-up/Restoration - Western would clean up and restore the ROW to preconstruction condition, to the extent possible. Clean-up and restoration measures would be used at all structure sites, stringing/pulling sites, staging areas and access roads that are no longer needed. Western would continue to maintain all access roads within the ROW that are necessary for on-going maintenance of the project.

2.1.7 Operation and Maintenance Practices

Electrical power system dispatchers at Western's Rocky Mountain Region, Power Marketing Operations Center would continue directing routine, daily operation of the transmission line. The dispatchers would use communication facilities to operate circuit breakers, which control the transfer of power over the lines. Because they operate automatically, the circuit breakers ensure safety in the event of a structure or conductor failure or other system problem. Currently, aerial patrols of the line are conducted two or three times each year. Ground patrols are completed once a year, as weather permits. These patrols would continue as part of Western's routine maintenance program. Climbing inspections would also be conducted, with each structure being climbed and inspected every five years after construction following current maintenance procedures. In emergencies, prompt crew and heavy equipment movement would be necessary to rapidly repair or replace damaged equipment.

At the end of the transmission line's useful life (100 years), if it was no longer required, the transmission conductors, hardware and structures would be dismantled and removed from the ROW. Site reclamation would restore disturbed areas to as near pre-construction conditions as practicable.

2.1.8 Western's Standard Construction, Operation and Maintenance Practices and Project Committed Mitigation Measures

Western incorporates standard construction, operation and maintenance practices (standard practices) as part of the proposed action. These standard practices, described on Table 2.1-3, are routinely implemented on Western's projects to avoid and minimize impacts to the environment to the extent practicable. These measures would be implemented for the proposed project and other routing alternatives evaluated in the EA. In addition, Western would implement a number of project-specific measures (project measures) which would ensure that impacts in the project area would be mitigated and avoided to the extent feasible. Table 2.1-4 describes the project measures that Western would implement for the proposed project and other routing alternatives. In this EA, the descriptions of the proposed action and alternatives and the descriptions of impacts assume the implementation of these standard practices and project measures.

Table 2.1-3. Western's Standard Construction, Operation and Maintenance Practices

1.	The contractor shall limit the movement of crews and equipment to the ROW, including access routes. The contractor shall limit movement on the ROW to minimize damage to residential yards, grazing land, crops, orchards, and property, and shall avoid marring the lands. The contractor shall coordinate with the landowners to avoid impacting the normal function of irrigation devices during project construction and operation.
2.	When weather and ground conditions permit, the contractor shall obliterate all construction caused deep ruts that are hazardous to farming operations and to movement of equipment. Such ruts shall be leveled, filled and graded, or otherwise eliminated in an approved manner. Ruts, scars, and compacted soils in hay meadows, alfalfa fields, pastures, and cultivated productive lands shall have the soil loosened and leveled by scarifying, harrowing, disking, or other approved methods. Damage to ditches, tile drains, terraces, roads, and other features of the land shall be corrected. At the end of each construction season and before final acceptance of the work in these agricultural areas, all ruts shall be obliterated, and all trails and areas that are hard-packed as a result of construction operations shall be loosened and leveled. The land and facilities shall be restored as nearly as practicable to the original condition.
3.	Water turnoff bars or small terraces shall be constructed across all ROW trails on hillsides to prevent water erosion and to facilitate natural revegetation on the trails.
4.	The contractor shall comply with all Federal, state, and local environmental laws, orders and regulations. Prior to construction, all supervisory construction personnel will be instructed on the protection of cultural and ecological resources. To assist in this effort, the construction contract will address: a) Federal and state laws regarding antiquities and plants and wildlife, including collection and removal; and b) the importance of these resources and the purpose and necessity of protecting them.
5.	The contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, approved construction roads, or excavation operations, vegetation shall be preserved and shall be protected from damage by the contractor's construction operations and equipment.
6.	On completion of the work, all work areas except access trails shall be scarified or left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion. All destruction, scarring, damage, or defacing of the landscape resulting from the contractor's operations shall be repaired by the contractor.
7.	Construction trails not required for maintenance access shall be restored to the original contour and made impassable to vehicular traffic. The surfaces of such construction trails shall be scarified as needed to provide a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.
8.	Construction staging areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all storage and construction materials and debris shall be removed from the site. The area shall be regraded, as required, so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.
9.	Borrow pits shall be so excavated that water will not collect and stand therein. Before being abandoned, the sides of borrow pits shall be brought to stable slopes, with slope intersections shaped to carry the natural contour of adjacent, undisturbed terrain into the pit or borrow area, giving a natural appearance. Waste piles shall be shaped to provide a natural appearance.

Table 2.1-3. Western's Standard Construction, Operation and Maintenance Practices

10.	Construction activities shall be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.
11.	Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or water courses will not be performed without prior approval from appropriate state agencies.
12.	Excavated material or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines, or other water course perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself.
13.	Waste waters from construction operations shall not enter streams, water courses, or other surface waters without use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such waste waters discharged into surface waters shall be essentially free of settleable material. Settleable material is defined as that material that will settle from the water by gravity during a 1-hour quiescent period.
14.	The contractor shall utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants.
15.	Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, shall not be operated until corrective repairs or adjustments are made.
16.	Burning or burying of waste materials on the ROW or at the construction site will not be allowed. The contractor shall remove all waste materials from the construction area. All materials resulting from the contractor's clearing operations shall be removed from the ROW.
17.	The contractor shall make all necessary provisions in conformance with safety requirements for maintaining the flow of public traffic and shall conduct his construction operations so as to offer the least possible obstruction and inconvenience to public traffic.
18.	Western will apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW, to the mutual satisfaction of the parties involved. Western will install fence grounds on all fences that cross or are parallel to the proposed line.
19.	The contractor will span riparian areas located along the ROW and avoid physical disturbance to riparian vegetation. Equipment and vehicles will not cross riparian areas on the ROW during construction and operation activities. Existing bridges or fords will be used to access the ROW on either side of riparian areas.
20.	Western would design and construct the transmission line in conformance with *Suggested Practices for Protection of Raptors on Powerlines* (Avian Power Line Interaction Committee, 1994) to eliminate the potential for raptor electrocution.

Table 2.1-4. Project-Specific Mitigation Measures

SOILS-1	All constructed pad disturbances, staging areas, stringing sites, and ROW access roads located in areas of high and extremely high wind erodibility potentials that are not reclaimed by the landowner during normal agricultural practices need be stabilized following construction. Western will monitor such sites to ensure that they are successfully revegetated with desirable plant species. Measures that may be used to achieve this goal, individually or in combination, include seedbed preparation, fertilization, drill or broadcast seeding, straw mulching, hydromulching, the use of erosion control mats, or chemical tackifiers. Any seed mixture to be used will be a mixture recommended by the Natural Resources Conservation Service of the County within which the disturbance is located. Fertilizer to be applied, if any, prior to seeding will be based on the recommendations of the landowner or the Natural Resources Conservation Service. The areas of high potential wind erosion susceptibility to which this mitigation measure is applicable are listed on Table 3.4 -1.
PALEO-1	The contractor shall receive instructions from Western regarding the potential presence of fossils in pole excavations and in areas excavated or disturbed for roadwork. The contractor will be notified of his obligation to report any suspected paleontological finds to Western. If suspected finds are made, Western will retain a paleontologist to assess the significance of the paleontological finds and make recommendations.
WATER-1	In order to avoid potential impacts to groundwater resources, Western would conduct detailed geological investigations prior to construction in order to insure that penetration of the clay layer would be avoided or mitigated during the final engineering and design and installation of the new structures. Borings and logging of soils structure will be conducted at each new structure site within the City of Brush property and/or Brush Prairie Ponds Recharge Area. (structures within Sections 20, 21, 22 and W1/2 of 23 T3N, R56W). Borings will extend five feet beyond the depth of the structure foundations to determine if the clay layer would be encountered. Monitoring of the test holes will be conducted by a geologist to determine if the clay layer is reached. In the unlikely event that foundations would reach the clay layer, the holes will be filled prior to penetrating the clay layer and an alternative design, requiring shallower foundation, will be used.
VEG-1	The contractor will span wetland areas located along the ROW and avoid physical disturbance to wetland vegetation and aquatic habitat. Equipment and vehicles will not cross wetlands along the ROW during construction and maintenance activities. Existing uplands, bridges, etc. will be used to access the ROW on either side of wetlands.
VEG-2	The contractor will minimize the introduction and/or spread of weeds by washing all equipment at a commercial facility prior to the start of construction each year, by avoiding vehicle traffic in known weedy areas, and by rewashing equipment if weeds are encountered. Western or its contractor will reclaim all disturbed areas as soon as practical after construction each year and would implement a noxious weed control program as necessary.
WILDLIFE-1	Western or its contractor will conduct a raptor nest inventory each year prior to construction and will implement mitigation (avoidance, screening, and timing of construction) to prevent the project from disrupting any occupied nests during the breeding season as per CDOW recommended buffer zones and seasonal restrictions.
WILDLIFE-2	Ground-clearing activities will not occur from April through June, in the Brush Prairie Ponds SWA, per CDOW recommendation. Construction restrictions will lessen the potential for inadvertent loss of migratory bird nests during the avian breeding season.
WILDLIFE-3	No construction activities will occur in the Brush Prairie Ponds SWA during the waterfowl hunting season (September through January 31) to preclude conflicts with hunting use of the SWA, per CDOW recommendation.
SS-1	Western will adhere to “Recommended buffer zones and seasonal restrictions for Colorado raptors” (CDOW, 2002) to preclude impacts to bald eagle nest and winter night roost sites. Measures will be implemented to avoid/minimize construction activities within 0.5 mile of a nest site during the nesting season between November 15 and July 31 or within 0.25 mile of a winter night roost site between November 15 and March 15.

Table 2.1-4. Project-Specific Mitigation Measures

SS-2	If construction cannot avoid prairie dog towns between March 1 and October 31, burrowing owl surveys will be completed, per Colorado Division of Wildlife guidelines to ensure construction activities would not impact breeding burrowing owls.
CULT-1	Impacts to eligible cultural sites caused by construction of new towers will be mitigated by planning, design and avoidance. Whenever possible, transmission structures placement will be planned outside of site boundaries. In cases where avoidance is not possible, a mitigation plan will be formulated. If new structures are to be placed within 100 feet of an eligible site, an archaeological monitor may be present to ensure that the site is not impacted during construction. Western will clearly mark eligible sites within the ROW that must be avoided and instruct the contractor to avoid them.
CULT-2	Maintenance and upgrading of access roads along the borders of eligible irrigation sites will be done with caution, to avoid filling historic irrigation systems with sediment from the roadbed. Construction or maintenance of culverts or bridges allowing access roads to cross eligible sites will be avoided wherever possible. Maintenance and upgrading of access roads on eligible sites will be avoided. Where avoidance is not possible, mitigation through photographic documentation to Athearn's (1990) Level II standards will be implemented prior to any construction or roadwork. This will mitigate adverse effects. These guidelines apply not only to roads surveyed as project access roads, but also to roads beneath the transmission lines that were subsumed in the transmission line survey.
VISUAL-1	The 230-kV steel pole structures will be a neutral, non-reflective steel material, such as galvanized steel. Non-reflective and compatible toned conductors and insulators will also be used. Corten steel will not be used in these settings due to the strong visual contrasts that the darker steel tone would create in these open settings.

2.2 Alternatives to the Proposed Action

2.2.1 Alternatives Considered and Eliminated from Detailed Study

The following alternatives were considered and eliminated from detailed analysis since they would neither meet Western's stated purpose and need, nor reduce potential adverse impacts:

- 115-kV Alternatives
    - Reconductoring the existing 115-kV transmission line
    - Constructing a new 115-kV transmission line on wood H-frame or light duty steel H-frame structures
- 115-kV/230-kV Lattice Tower Design Alternative
    - Constructing a new 115/230-kV transmission line on lattice steel structures

115-kV Alternatives. The 115-kV voltage alternatives were eliminated since they do not meet Western's purpose and need. As discussed in Chapter 1, the 115-kV voltage alternatives would result in overloads on the existing TOT3 transmission system transfer path between southeastern Wyoming and northeastern Colorado within the next 15 years. These alternatives were eliminated from further study because the 115-kV voltage would restrict the ability of Western to move Wyoming hydroelectric power to Colorado Federal Firm Electric Service loads and would result in reliability and system operation conditions that are not acceptable.

115-kV/230-kV Lattice Tower Design Alternative. The lattice steel structure alternative was eliminated since this structure design would increase, rather than reduce or avoid, the impacts of the proposed action. The lattice structure design would result in similar or greater impacts to most natural and human environment resources. The lattice structure would result in greater amounts of long term ground disturbance impacts to natural resources and agricultural lands since each lattice tower base typically requires 1600 square feet compared to 10 to 50 square feet for the single pole base. Span lengths between structures would be similar for both structure types. The single pole structure also minimizes impacts to agricultural equipment operations and weed control, compared to the lattice structure design. Visual impacts would also be greater with the lattice structures due to the increased industrial character and mass of the lattice tower design.

2.2.2 Routing and Realignment Alternatives

Two routing alternatives are evaluated in this EA for portions of the proposed project: 1) the Beaver Creek-Brush Prairie Ponds SWA Reroute; and, 2) the Bijou Creek Crossing Reroute. In addition, the EA addresses the potential relocation of a portion of the Beaver Creek to Big Sandy transmission line. All three routing alternatives are located in Morgan County and pertain to portions of the Beaver Creek-Hoyt transmission line (Figure 2.1-2). These alternatives were developed by Western in response to landowner comments and suggestions on how to minimize impacts to land use and agricultural operations, as well as natural resources.

2.2.2.1 Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative

The Beaver Creek-Brush Prairie Ponds SWA Reroute (Brush Prairie Ponds SWA Reroute Alternative) was identified as a routing option to minimize impacts to rural residential areas and agricultural lands and operations near Brush; to improve maintenance practices by avoiding seasonally saturated areas and wetlands which would allow more efficient use of the larger equipment that would be needed to maintain the proposed transmission line; to allow for expansion of the ROW without unduly impacting existing land uses through the developed areas south of Brush; to avoid impacts to wetlands; to reduce the need for deeper foundations that would be required in the seasonally saturated soils of the SWA; to reduce the likelihood of waterfowl impacts with the transmission line; and to avoid seasonal restrictions on construction and maintenance activities in the SWA.

The alternative route is approximately 7.1 miles long and extends from the Beaver Creek Substation to milepost BH 5.6 (structure number 104-7) of the proposed project. This alternative diverges from the proposed project at the Beaver Creek Substation. From the substation, the alternative would parallel the Beaver Creek-Deering Lake 115-kV transmission line in a southeast direction for 0.6 mile before turning south and paralleling Excel Energy's Story-Pawnee 230-kV transmission lines for 2.7 miles. The alternative would then turn southwest at SR 71, continuing to parallel the Story-Pawnee 230-kV transmission lines for an additional 1.1 miles across SR 71, Beaver Creek and agricultural lands. The alternative would then turn west, establishing a new transmission line ROW for approximately 2.7 miles, where it would rejoin the proposed project at structure number 104-7 near milepost BH 5.6.

With this alternative, Western would remove 5.6 miles of 115-kV transmission line and ROW currently crossing the SWA and agricultural lands south of Brush. Approximately 38 new single pole steel structures would be installed, replacing 44 existing 115-kV wood H-frame structures.

The location of the Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative and the existing 115-kV transmission line section that would be removed under this alternative are shown on Figure 2.2-1. Figure 2.2-2 shows cross-sections of the existing ROW, the alternative ROW and structure designs.

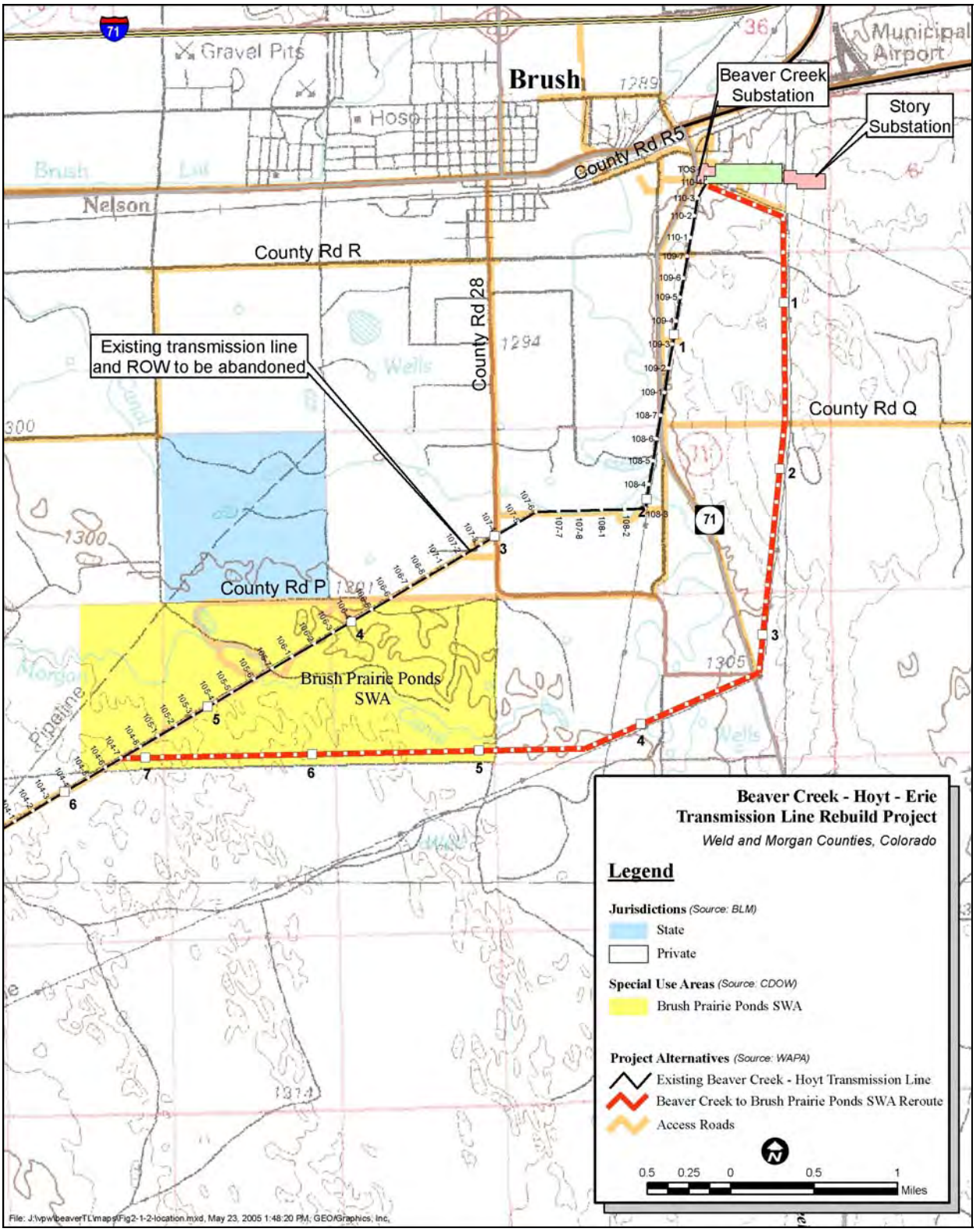

Figure 2.2-1. Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative

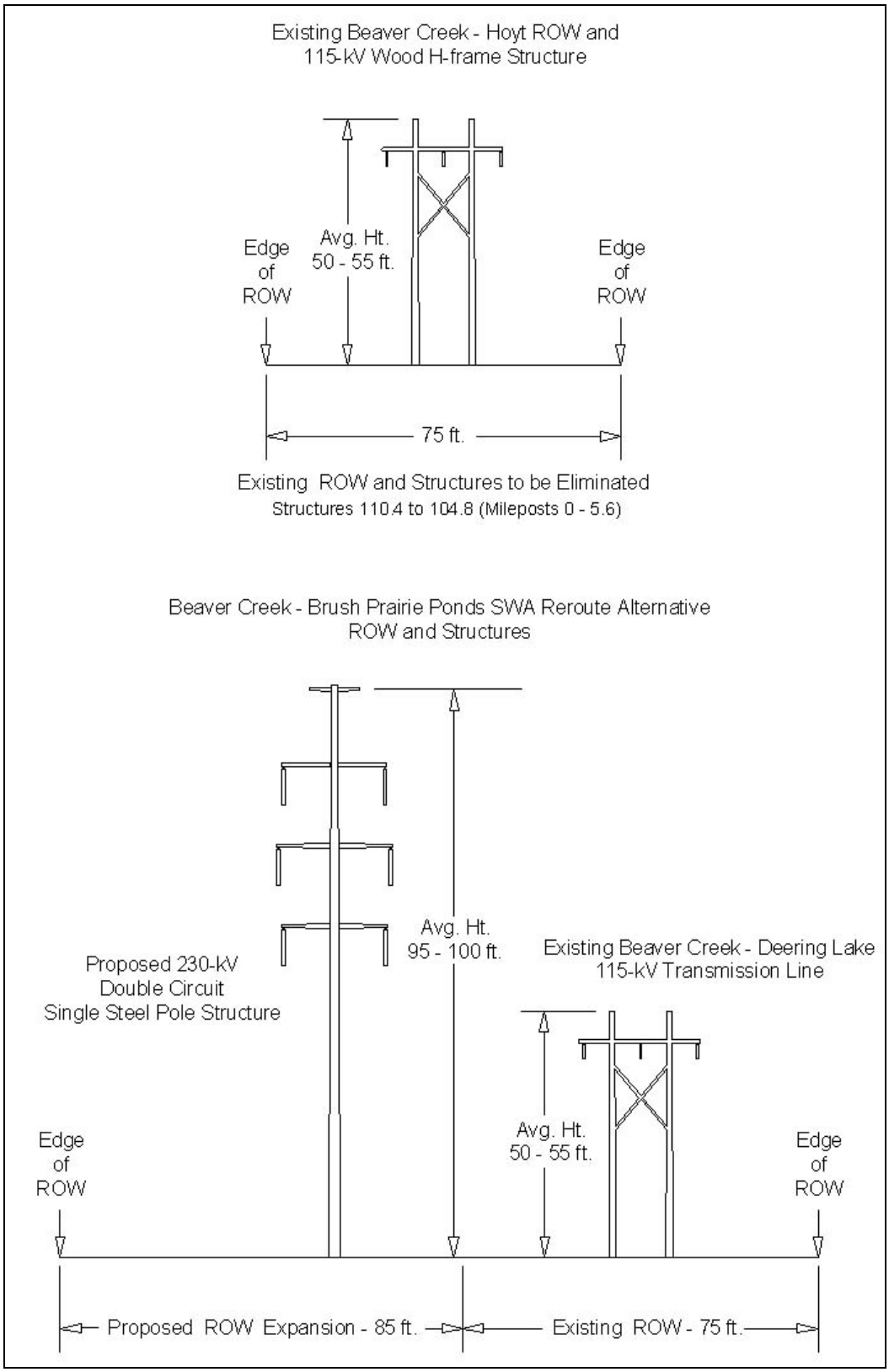

Figure 2.2-2. Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative Existing and Alternative ROWs and Structures

2.2.2.2 Beaver Creek-Big Sandy Reroute Alternative

The Beaver Creek-Big Sandy Reroute is being considered by Western in conjunction with the Brush Prairie Ponds SWA Reroute alternative. This alternative would entail relocating approximately 3.4 miles of the existing Beaver Creek-Big Sandy 115-kV transmission line to parallel the Brush Prairie Ponds SWA Reroute alternative.

The alternative would relocate both the Beaver Creek-Hoyt transmission line and the Beaver Creek-Big Sandy transmission line from the Beaver Creek Substation to south of Beaver Creek. The relocation of these lines is shown on Figure 2.2-3, and cross-sections of the existing and alternative ROW and structure designs are illustrated on Figure 2.2-4. The Beaver Creek-Big Sandy Reroute would be 4.2 miles long, and would follow the same alignment as the Brush Prairie Ponds SWA Reroute from Beaver Creek Substation to approximately 1.1 mile southwest of the SR 71 crossing. At this point, the Beaver Creek-Big Sandy transmission line would turn south, rejoining its existing ROW. Western would rebuild the transmission lines with two sets of double circuit single pole steel structures. Western's ROWs would be combined and expanded to 185 to 220 feet to accommodate both transmission lines. The existing Beaver Creek-Hoyt transmission line and ROW would be removed from the Beaver Creek Substation to milepost BH 3.2.

The Beaver Creek-Big Sandy Reroute would result in 22 structures being installed along the alternative route, and the removal of 26 structures from the existing Beaver Creek-Big Sandy ROW.

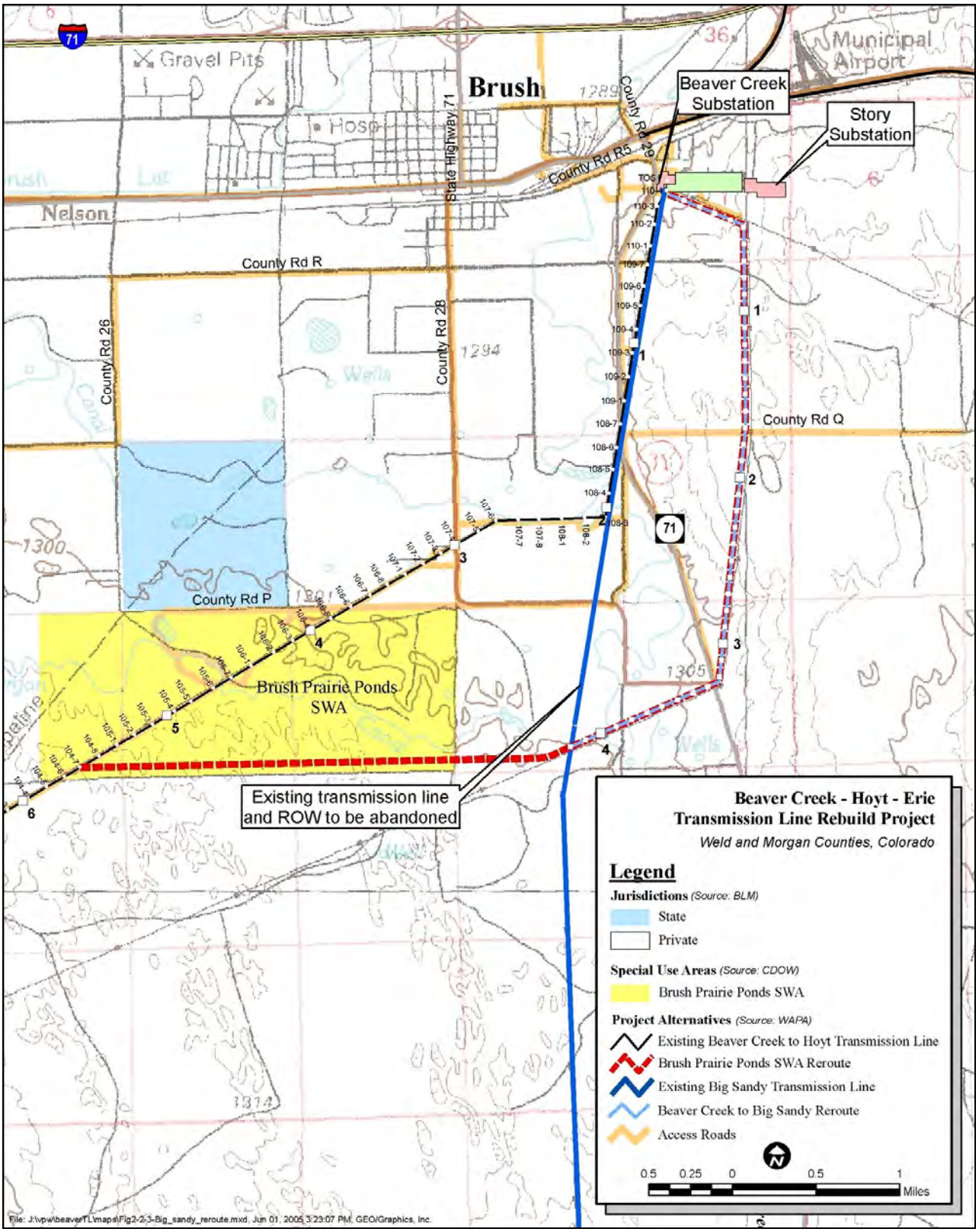

Figure 2.2-3. Beaver Creek-Big Sandy Reroute Alternative

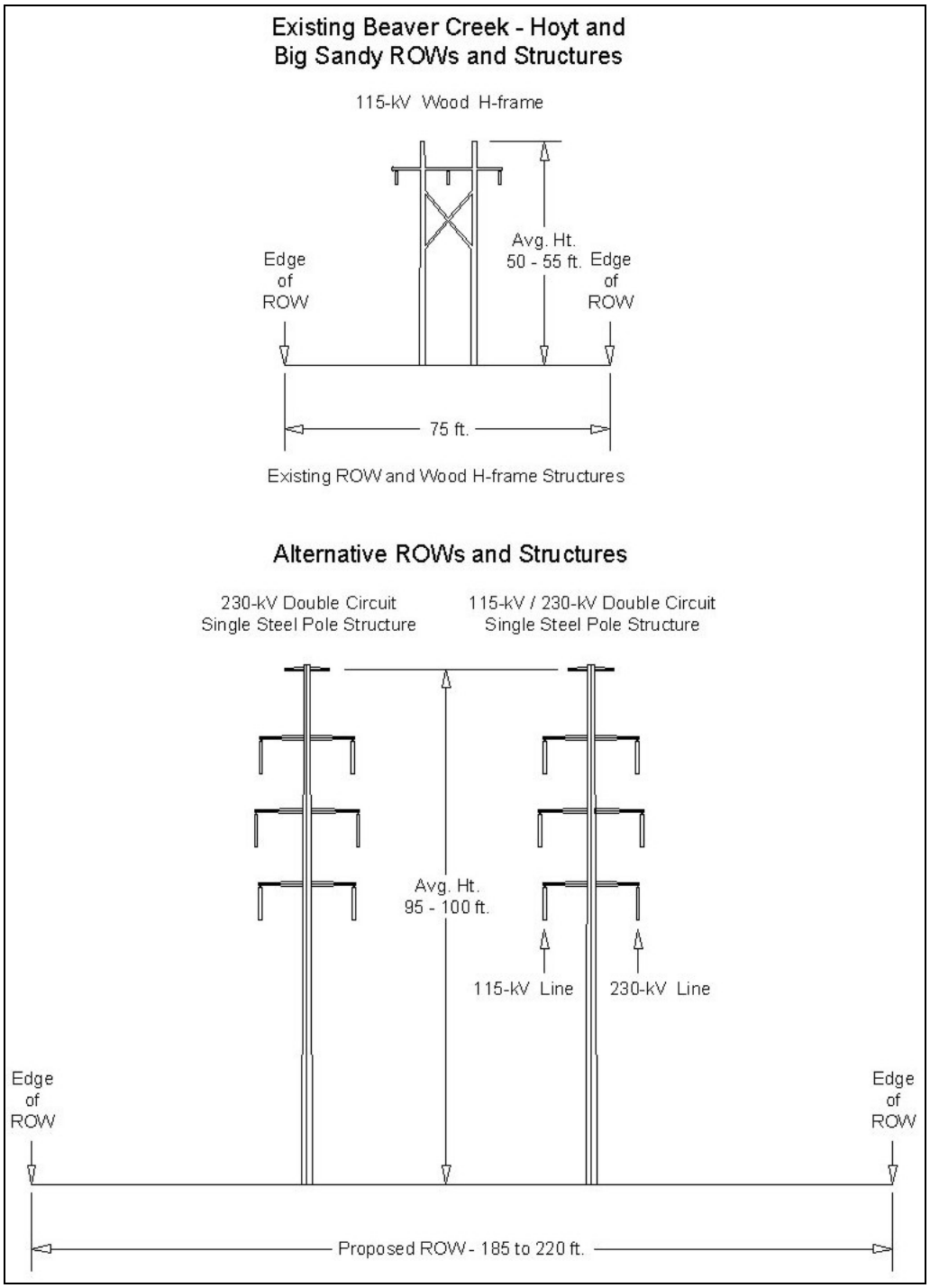

Figure 2.2-4. Beaver Creek-Big Sandy Reroute Alternative, Existing and Alternative ROW and Structure Designs

2.2.2.3 Bijou Creek Crossing Reroute

The Bijou Creek Crossing Reroute Alternative (Bijou Creek Alternative) would reroute a portion of the Beaver Creek to Hoyt transmission line in the vicinity of Bijou Creek, approximately one to three miles east of the Hoyt Substation. The location for this alternative is shown on Figure

2.2-5. The structure design and ROW characteristics for this reroute would be similar to those described previously for the proposed project and Brush Prairie Ponds SWA Reroute alternative (see Figures 2.2-1 and 2.2-2.) This reroute alternative is 4.5 miles long, and diverges from the existing ROW between structures 83-6 and 78-8 (between mileposts BH 26.7 and BH 31.5). This reroute was suggested by landowners who desire to increase the efficiency of irrigating their farmland and allow expansion of land use and business options. The Bijou Creek Crossing Reroute would result in the installation of 24 new 230-kV single pole steel structures along the alternative, and the removal of 37 115-kV wood H-frame structures from Western's existing ROW.

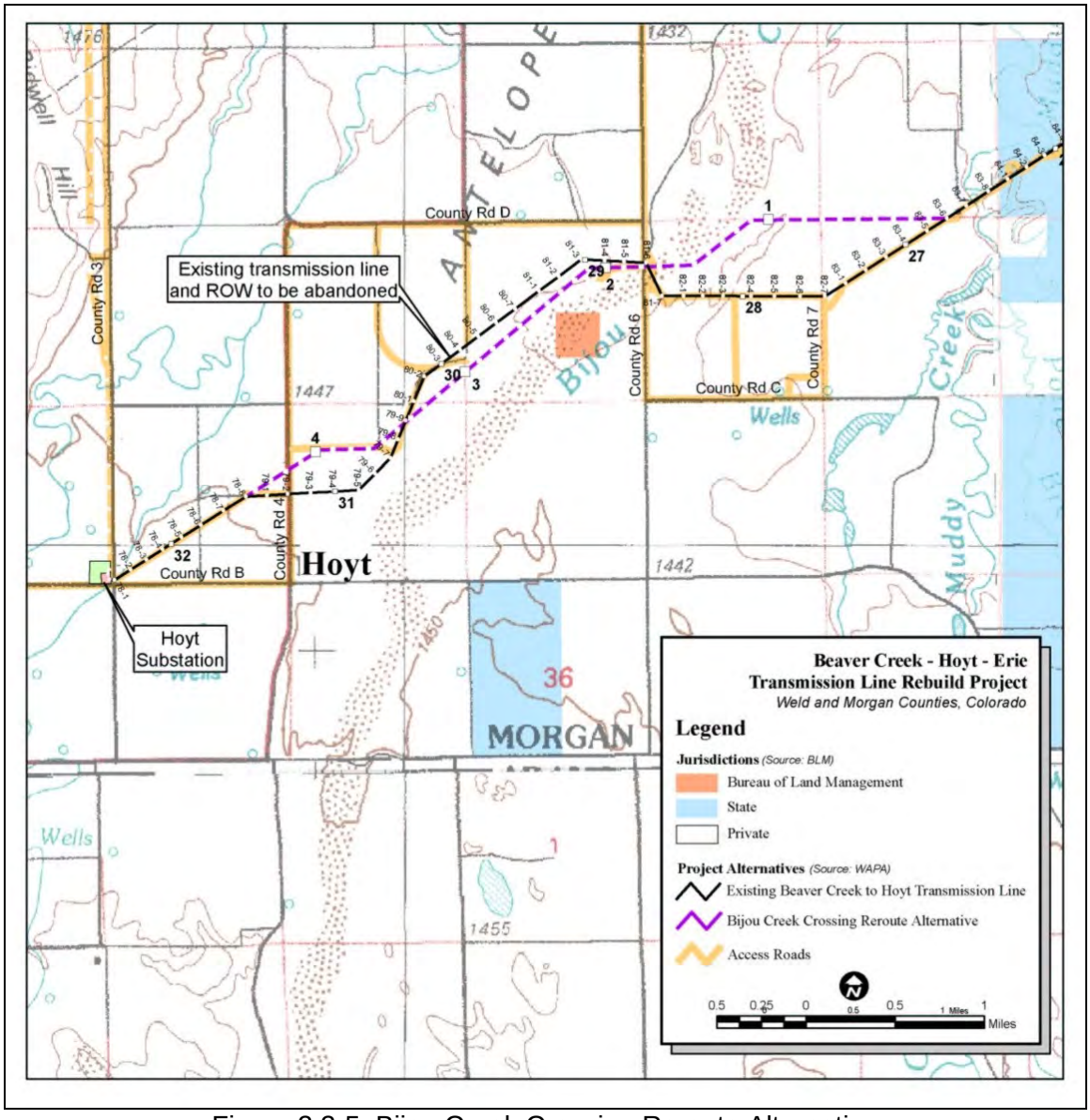

Figure 2.2-5. Bijou Creek Crossing Reroute Alternative

2.2.3 No Action Alternative

Under the no action alternative, Western would not rebuild the existing Beaver Creek-Hoyt and Hoyt-Erie transmission lines, and changes to the Beaver Creek or Erie Substations would not be necessary. Western would continue to perform routine and emergency maintenance as required. This includes replacing structures that are unsafe, replacement of cross arms, insulators, and other hardware as needed, weed control, erosion control, pole treatment, vegetation management practices, conductor upgrades, and so forth. Over the years, maintenance requirements for the existing 115-kV transmission lines may increase due to the age of the facility. Reliability problems may become more frequent because the line is expected to become overloaded in the next few years. The no action alternative would result in a reduction in TOT3 capacity and would negatively impact the transmission system of southeastern Wyoming and northeastern Colorado. Eventually, actions similar to the proposed rebuild would be required for Western to meet contractual obligations to deliver power to its customers and to ensure the safe and reliable performance of the transmission system. Consequently, this alternative would not fulfill Western's stated purpose and need for the proposed action.

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3.0 Affected Environment and Environmental Consequences

3.1 Overview of Analysis Approach

Definitions Related to Impacts

Chapter 3.0 describes the affected environment and environmental consequences of the proposed action and alternatives by resource topics. Project impact areas (project areas) are identified for resource topics to account for the areas that may be affected by the construction and operation of the proposed action and alternatives. Project impact areas are defined at the beginning of each section. Impacts are described according to whether the effects would be short term or long term, direct or indirect. Cumulative effects of the project with other foreseeable past, present and future developments are disclosed at the end of this chapter.

Direct Impacts. These impacts occur at the same time and the same place as the project. For example, soil compaction occurs during construction, and results directly from the activities occurring during the project.

Indirect Impacts. These impacts occur at a different time, or perhaps a different place than the project and often to a different resource. For example, indirect impacts would occur if the project resulted in increased development in the area; or if a direct impact to vegetation, such as removal, resulted in increased erosion that could degrade surface water quality (the indirect impact).

Short Term Impacts. These are impacts that generally occur only during construction or for a limited time thereafter, generally not for longer than 1 or 2 years. For example, air quality impacts from the use of heavy equipment occur during construction, intermittently during routine maintenance, but otherwise do not occur. As another example, short term impacts to vegetation occur during construction, but generally vegetation will re-establish itself during the next growing season.

Long Term Impacts. These are impacts that are expected to occur for the life of the project or for more than a year or two after—depending on the resource. For example, a long term impact to vegetation would include the removal of vegetation where a structure is replaced or a substation is constructed. Visual impacts from the transmission line and substation facilities would be long term since they will continue as long as the project facilities are in place.

Cumulative Impacts. These impacts are the additive impacts to a resource from other actions in the project area. For example, surface water quality degradation from the project, plus all other unrelated construction projects, land uses and other activities in the project area, contribute to an incremental decrease in surface water quality.

Project Analysis Assumptions

Final engineering and design have not been completed for all project facilities at this time. Substation expansions, in particular, have not been fully defined in terms of their exact locations, although reasonable estimations of the area they would cover can be made. Because of this, some impacts may be overstated, but they are identified as to a range of likely impacts.

The following impact assumptions have been made in this assessment:

- Transmission Line Spacing and Disturbances – The EA analyses are based on typical structure spacing of 1000 feet between single pole steel structures, compared to an average 700 feet between the existing H-frame structures that would be replaced. Actual spacing may vary, with maximum spacing reaching 1,200 to 1,400 feet, although on a site-by-site basis, structures can be designed and constructed to span longer distances. Direct ground disturbances at each structure site are estimated based on the assumption that 6,500 square feet per structure could be impacted. Additional 'light' ground disturbances from travel by overland construction vehicles and equipment are assumed to affect up to 16,000 square feet around each structure. A direct ground disturbance is defined to include compaction, auguring, grading, and similar activities.

- ROW Expansion – The width of the ROW for the proposed 230-kV transmission line would be determined based on final engineering and design. For purposes of the EA, it is assumed that the existing ROWs would be widened from 75 feet (average) to 85 feet to 110 feet for the single pole steel structures. ROWs would be widened to 125 feet for the H-frame structures where they are installed: (1) near substations, (2) at four transmission line undercrossings, and (3) at locations where long spans between structures are designed to avoid or minimize impacts to floodplains and riparian woodlands. During final engineering and design, the width requirements for the ROW may be reduced to 85 feet in most locations.

- Access Roads, Trails and Construction Sites – For much of the proposed transmission line rebuild project, Western has adequate existing access for construction. New, short spur roads to structure sites may be required in some locations to accommodate heavy equipment or unusual soil conditions. Whenever possible, overland travel (without grading) would occur, and existing trails and roads would be used wherever available. The location and need for additional minor ROW access cannot be determined until final design and engineering, and, in some cases, not until the construction contractor has reviewed the access situation. For purposes of the EA, it has been assumed that disturbances from access roads may occur anywhere within the proposed and alternative ROWs, so resources were inventoried with that in mind. Site-specific access requirements would be addressed as the construction phase proceeds, and Western's standard practices and project mitigation measures would be implemented. Sites for pulling and tensioning conductor are assumed to occur approximately every 2 to 3 miles on straight sections of the transmission line and at each angle structure. This assumption allows reasonable estimates of impacts to be presented in the EA.

- Substation Expansions. At this time, preliminary designs for the expansion of the Beaver Creek, Hoyt and Erie Substations have not been completed. For the purposes of resource surveys and inventories, Western identified larger areas than would actually be required for each facility. This allows Western flexibility in design, avoids the need to send out resource specialists multiple times, and allows reasonable estimates of likely impacts for each facility for presentation in this EA. These assumptions include:

    - The Beaver Creek Substation would expand to the east of the existing substation. An area of 31.2 acres was surveyed for resources for this EA. After expansion, the Beaver Creek substation would likely be approximately 9 to 10 acres in size.

- The Erie Substation could potentially be expanded to the north, east or west. An area of 9.5 acres was surveyed for resources for this EA. Typical size expected at this facility would be approximately 5 acres.

- The Hoyt Substation expansion timeframe is likely to be several years in the future. Because the present substation is located in a floodplain, expansion in the floodplain is not proposed. The most likely alternative would be to construct a 230-kV facility in the vicinity of the existing substation but outside the floodplain. The need and timing of an expansion of Hoyt Substation is not sufficiently defined at this point to allow a reasonable discussion of impacts. Consequently, the expansion of the Hoyt Substation is not addressed in this EA, and would be subject to future NEPA compliance once the substation expansion needs and timing are determined.

- Western's Standard Construction, Operation and Maintenance Practices, and adopted Project-Specific Mitigation Measures. Western's standard practices (Table 2.1-3) are incorporated into the proposed project and routing alternatives, and are therefore taken into consideration in the impact assessments. Western also has identified project-specific measures (Table 2.1-4) that will be implemented to avoid and minimize impacts to levels less than significant. These project measures are also considered as part of the proposed action and other routing alternatives.

Compliance with applicable Federal environmental regulations and Executive Orders are discussed in the resource sections. Potential issues related to impacted resources are contained in the following EA sections: Air Quality (Section 3.3), Geology and Soils (Section 3.4), Paleontology (Section 3.5) Water Resources – Surface, Ground and Floodplains (Section 3.6), Vegetation and Wetlands (Section 3.7), Wildlife (Section 3.8), Special Status and Sensitive Species (Section 3.9), Cultural Resources (Section 3.10), Land Use (Section 3.11), Visual Resources (Section 3.12), Socioeconomics and Community Resources (Section 3.13), Transportation (Section 3.14), Electrical Effects and Human Health (Section 3.15) and Noise (Section 3.11).

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3.2 Resources Not Requiring Further Study

Resources that were identified as not requiring further study because of the minimal impact the project would have on them include Climate, and Solid and Hazardous Waste.

Climate. Upgrading the existing transmission line would have no effect on climate. Background information on climate is contained in Section 3.3 for purposes of the air quality discussion only.

Solid and Hazardous Wastes. Materials generated from removing and dismantling the existing transmission line and additional waste materials created by upgrading existing facilities would be recycled or disposed of in accordance with applicable regulations and Department of Energy requirements for recycling. Generated wastes include wood poles, aluminum and steel conductors, transmission line hardware, and porcelain insulators. Most of this material can be reused, recycled, or in the least favored option, disposed of in a regulated landfill. At a landowner's request, old wood poles would be available for their use. The project would produce minimal amounts of hazardous wastes. Oils, fuels, lubricants and similar products are consumed in the vehicles and machinery used for construction. Construction contractors are expected to manage these products safely, cleanup spills, and dispose of contaminated cleanup materials in accordance with regulations.

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3.3 Air Quality

3.3.1 Affected Environment

The project impact area for air quality encompasses the regional air basin in which the proposed project and alternatives are located. Federal actions are required to conform to the Clean Air Act (CAA, 1970, as amended).

3.3.1.1 Climate

Information on climate is provided as background information pertinent to the air quality analysis. Regional air basins are classified by the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD). The project passes through the Northern Front Range Region and the Eastern High Plains Region (CDPHE-APCD, 2005). From a climatological standpoint, the project area is considered semi-arid, with the potential for wind blown dust being high, similar to the rest of the intermountain west. Available wind data from Fort Collins and Greeley, Colorado, indicate that annual average wind speed in the project area is seven miles per hour and that the prevailing wind direction is from the north (WRCC, 2005).

As expected in a semi-arid area, annual average precipitation totals are low. Annual average precipitation amounts for the project area are approximately 13 inches (WRCC, 2005). Spring and early summer are the wettest periods, with May being the wettest month.

The project area experiences fairly large diurnal variations in temperature due to the relatively high project elevations and dry conditions. For example, in July, average temperatures range from about 60 degrees in the morning to almost 90 degrees in the afternoon (WRCC, 2005). January is the coldest month of the year with daytime temperatures ranging from the mid-teens in the morning to highs in the low 40s during the afternoon.

3.3.1.2 Air Quality

The CAA is implemented at the Federal, state, and local government levels. The Environmental Protection Agency (EPA) has primary Federal responsibility for implementation of the CAA. In Colorado, the CDPHE-APCD has responsibility for its administration. To comply with the requirements of the CAA, the State of Colorado developed a State Implementation Plan (SIP). The SIP outlines the steps and timelines that Colorado will follow to assure ongoing compliance with the requirements of the CAA.

Part of EPA's role is to develop and maintain National Ambient Air Quality Standards (NAAQS). Although the project area is climatologically predisposed to be dusty, the entire project area is in compliance with the NAAQS for all criteria pollutants (CDPHE-APCD, 2005). This includes standards for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone and particulate matter. This means that the project is located within an "attainment" area and, as such, conformity determination requirements do not apply to the proposed project or alternatives.

From an air quality standpoint, the proposed project is a temporary and transient operation with a finite and relatively small amount of emissions to be released into the air. Any effects on air quality would be short-lived and limited to the immediate vicinity of the activities that generated the emissions.

Air pollutants of potential concern are particulate matter, resulting from short term construction-related project activities or short term maintenance activities, and exhaust (tailpipe) emissions, such as diesel particulates and carbon monoxide from construction or maintenance vehicles. The majority of particulate matter is made up of solid particles, such as the dust generated when construction vehicles drive on a dirt road, although particulate matter may also contain liquid droplets. Most particulate matter is smaller than can be seen by the human eye. The dust that we see is made up of larger, darker, particles and many smaller particles that cannot be seen individually. The project is located in an attainment area for all NAAQS.

3.3.2 Environmental Impacts and Mitigation Measures

3.3.2.1 Issues and Significance Criteria

Impacts to air quality would be significant if:

- The construction, maintenance or operation of the proposed action or alternatives would cause or contribute to a violation of Federal or state standards. Colorado standards are the same as the Federal NAAQS for the air pollutants that may potentially result from the construction and operation of the project or alternatives.

The proposed action and alternatives would be in compliance with NAAQS and the Colorado SIP, consequently, no significant impacts would occur. There are no Federal or state permitting requirements for this source type, and relative to other types of air emission sources, the proposed project would release very small amounts of pollutants for short and intermittent periods of time.[1] There would be no potential for exposure to either humans or the environment from radiation or hazardous chemicals associated with the proposed action or alternatives. The proposed action and alternatives would also not affect any area designated Class I under the Clean Air Act.

The proposed action and alternatives would result in short term temporary direct impacts to air quality during project construction. Short term impacts would result from increases in particulate matter in the immediate vicinity of project activities from the movement of vehicles, equipment and soil disturbances during construction. Short term emissions of diesel particulate matter, nitrogen oxides, hydrocarbons, carbon monoxide and sulfur dioxide from construction and maintenance vehicles would also result. Long term, the project and routing alternatives would result in reductions in particulate matter and other vehicle air pollutants, since future maintenance requirements would be less frequent than currently anticipated under the no action alternative.

3.3.2.2 Impacts Common to the Proposed Action and Action Alternatives

Project-related construction impacts on air quality would be similar to other commercial or light industry construction activities in the area, and to existing farming practices. The predominant air pollutant that would be released into the atmosphere would be particulate matter (dust) associated with soil disturbances including wind blown dust, and diesel particulate emissions from vehicle exhaust. In addition, there would be some gaseous pollutants released into the air, such as CO,

[1] Quantification of pollutants is not required for this type of project. Similarly, the proposed project or alternatives are not subject to New Source Performance Standards and there is no New Source Performance Standard for this source type. The National Emissions Standards for Hazardous Air Pollutants are also not applicable to this project, nor are the proposed project and alternatives subject to any emissions limitations of the Air Quality Control Region.

from the vehicle exhaust of the construction equipment. Western's construction activities would proceed along the existing ROW using existing access roads and overland construction methods. A few new access roads would be constructed to structure sites within the ROW. Construction activities would be limited to the ROW and substation sites. Consequently, soil disturbances and related dust impacts would primarily occur at structure sites, staging areas, pulling sites, access roads and at the Beaver Creek and Erie Substation expansion sites. Along the majority of the project ROW, construction-related impacts would be short term and only detectable in the immediate vicinity of the project facilities and construction activities. Fugitive dust-related impacts would potentially be greater in duration and extent in areas with soils susceptible to erosion from high winds. (See Section 3.4, Table 3.4-1). Impacts to air quality in areas susceptible to erosion from high winds would be short term in duration, since Western would reclaim disturbed soils in these areas, and monitor to ensure that long term soil erosion and related air quality effects do not occur (Table 2.1-4, SOILS-1).

Transmission line maintenance impacts on air quality would be short term and intermittent in occurrence. The impacts would consist primarily of some gaseous pollutants being released into the air from the tailpipes of the few vehicles used for service activities. Some fugitive dust may also result if service vehicles travel over unpaved areas. Graded access roads and areas may also be subject to wind blown dust. Reduced maintenance along the new line would reduce particulates generated from future maintenance traffic.

In the event of an emergency repair, air quality impacts would be short term and similar as those described above. Dust generation and vehicle exhaust emissions would be associated with vehicles and equipment responding to emergency repairs. Unlike other source types, such as a refinery or chemical plant, accidents or malfunctions cannot cause the project to suddenly release more air pollutants into the air or have catastrophic events like the explosion or rupture of a fuel or chemical storage tank. The accident scenario that has the potential to release a large amount of pollution into the air would be a fire, mainly particulate matter, should a grass or brush fire be ignited by a downed wire. Even in this case, impacts to air quality would be short term.

Implementation of Western's Standard Practices 14, 15, and 16 (Table 2.1-3) and Project Measure SOILS-1 (Table 2.1-4) would ensure that air quality impacts are minimized and that no violations, or contributions to violations, of the NAAQS or Colorado state standards occur. Only minor, localized, temporary short term impacts and no long term impacts on air quality from either construction or maintenance activities would occur.

3.3.2.3 No Action Alternative

Under the no action alternative, Western would continue to maintain the existing transmission line and access roads. Maintenance activities include replacing failing structures; replacing conductors and hardware as required; cutting trees, weed control and other vegetation management activities; erosion control, access road repair, and so forth. Air quality impacts would occur from vehicle exhaust and dust generated during maintenance activities. The impacts would be similar to those already occurring during routine maintenance of the facilities. These impacts are sporadic and short term. They are not significant contributors to air quality impacts in the area. Over time, as maintenance need for the existing transmission line increases, short term impacts to air quality would increase. The no action alternative would not have significant impacts on air quality.

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3.4 Geology and Soils

This section discusses geological conditions and hazards, mineral resources and dominant soils in the project impact area. The project impact area consists of the proposed and alternative transmission line ROWs, substation expansion sites, access roads and construction areas. The project area also encompasses off-site areas that could potentially be affected due to increased sedimentation in local drainages and waterways resulting from construction activities.

3.4.1 Affected Environment

Geologic Formations

The project area mainly crosses alluvial and eolian deposits from Pre-Bull Lake and Bull Lake to recent ages. The recent alluvial depositions from east to west include a confluence of the Muddy Creek, Bijou Creek, and Antelope Creek drainages, Kiowa Creek, Lost Creek, Elder Creek, and the South Platte River. The eastern portions of the project area are underlain by sedimentary formations from the Cretaceous Age including predominately the Laramie Formation and the upper unit of the Pierre Shale. The overburden soils in the western ±25 miles are underlain by sedimentary formations ranging from early Tertiary or late Cretaceous Age Denver Formation, Arapahoe Formation, or the lower part of the Dawson Arkose Formation. Each formation of note (from oldest to youngest) is described below. Figure GEO-1, in Appendix A, shows the geologic formations in the project area.

Pierre Shale. The Pierre Shale is a deep marine unit that dates to the Middle Cretaceous Period (approximately 80 million years old). This unit consists of fine grained, usually dark brown to gray shales, silts, and the occasional sandstone. In certain zones the Pierre may contain localized concretionary limestone and cherty nodules that are resistant to erosion. The total thickness of the Pierre within the project area is less than 400 meters. The Beaver Creek-Hoyt transmission line segment crosses through a wide section of the Pierre Formation from mileposts BH 14 to BH 20.

Laramie Formation. The Laramie Formation is a Late Cretaceous (approximately 70-67 million years old), terrestrial deposit representing a humid coastal floodplain environment. This unit is between 200 and 350 meters thick within the project area, and consists of two distinguishable units (Frazier and Swimmer, 1987). The upper unit consists of a reddish, orange, gray, tan and brown multi-colored clay-silt stone. The lower unit consists of tan, gray and orange, fine-grained sandstones, shales, and thin coal seams (Weimer and Land, 1975). The Laramie Formation is located at or near the surface along the Hoyt-Erie transmission line segment between mileposts HE 2 and HE 8, and between mileposts HE 10 and HE 14.

Arapahoe Formation. The Arapahoe Formation is a Late Cretaceous Maestrichtian Age terrestrial rock unit that irregularly overlies the Laramie Formation. The Arapahoe consists of a fluvial, arkosic sandstone and siltstone with a thick basal conglomerate. This formation thins out east of Denver and is sometimes mapped or combined with the lower Denver Formation in the D-1 sequence (see below) (Carpenter and Young, 2002). It is considered more of an upland environment than the more coastal Laramie Formation. The Arapahoe Formation is grouped with the Denver Formation and is located at or near the surface along the Hoyt-Erie transmission line segment between mileposts HE 22 and HE 46.

Denver Formation (D-1/D-2). The Denver Formation is Late Cretaceous to Early Tertiary in age (approximately 66-63 million years old.). It is divided into an upper D-2 sequence and a lower

D-1 sequence (Carpenter and Young, 2002) (Raynolds and Johnson, 2003). Both of these units are crossed intermittently by the Beaver Creek-Hoyt-Erie transmission line from north of Prospect Reservoir, near milepost HE 22, to the Erie Substation.

Dawson Formation. The Dawson Formation is traditionally considered of Paleocene age (63-61 million years old) and is sometimes mapped as part of the Denver Formation D-1 and/or D-2 sequence. Other authors have placed the upper part of the Dawson as early as Eocene in age. This unit consists of coarse grained arkosic sediments derived from the weathering of the uplifting Rocky Mountains (Frazier and Schwimmer, 1987). This fluvial deposit thins out to the east of Denver. It is only loosely consolidated and weathers quite readily. The Dawson Formation is grouped with the Denver Formation and is located at or near the surface along the Hoyt-Erie transmission line segment, between mileposts HE 22 and HE 46.

Quaternary gravels (QgO, and Qg), eolian (Qe) and alluvium (Qa). The Beaver Creek-Hoyt-Erie transmission line also spans several zones of Quaternary fluvial and eolian deposits most notably in the eastern sections along the Beaver Creek to Hoyt transmission line segment, and intermittently along the Hoyt-Erie transmission line segment.

Mineral Resources

The existing Beaver Creek-Hoyt-Erie ROW is approximately a quarter mile south of the closest point of known coal mining activity from the Boulder-Weld coal field. The project area also has large oil and gas fields near Erie, Broomfield and Dacono. From U.S. Highway 85 west to the Erie substation are actively producing oil and gas fields, including the Wattenberg and Spindle fields. Township 1N Range 67W has a large number of producing oil and gas wells. Other producing wells exist throughout the study area as well, but the number of wells substantially declines east along the transmission line route.

Oil and gas wells are permitted through the Colorado Oil and Gas Commission. Based on Colorado Oil and Gas Commission GIS maps, areas surrounding the proposed project have a large number of producing wells; however, current new permits are more than a quarter mile to a half mile from the existing ROW.

Geologic Hazards

The project area is located entirely within the Plains Seismotectonic Province. The maximum credible earthquake anticipated in this area is classified as a magnitude 5.5 to 6.0 and is in a Zone 2 for tectonic activities according to the United Building Code (UBC). There are no recorded active faults or inferred active faults nor related geologic hazards within the project area. There are also no signs of landslides, rockfall, or subsidence in the project area.

Soils

Information on the dominant soils potentially affected in Weld County was taken from the Soil Survey of Weld County – Southern Part (Crabb, 1980). The existing soil survey for Morgan County is in the process of being updated and revised and has not been published. Unpublished soil information for the county was collected from the Natural Resources Conservation Service (formerly the Soil Conservation Service) office located in Fort Morgan, Colorado (Scott, 2005). Specific information drawn from these sources included general soil maps (Order 2 and 3), soil map unit descriptions, and interpretation tables depicting physical and chemical parameters as well as data relating to wind and water erosion potentials.

Parent materials that have given rise to the local soils are varied, ranging from sandy and clayey alluvium to silty loess to eolian sands. Most slopes are nearly level to moderately sloping (0 - 9 percent). Steeper slopes, ranging from 5 to 25 percent, are somewhat rare and occur most notably in Morgan County in association with hill and dune formations. Typical soils overlying the proposed project area are deep to very deep and well drained. Soils composed primarily of sand and loamy sand profiles are somewhat excessively to excessively drained while soils occurring in association with drainage bottoms, low stream terraces and some floodplains may be poorly drained under hydric soil moisture regime conditions. Effective plant rooting depths are typically 60 inches or more. Surface runoff, an indicator of a susceptibility to water erosion, ranges from "very low" to "medium" for the majority of the soil map units. Similarly, water erosion potentials are rated as "low" to "medium", predominantly, with higher runoff and / or erosion potentials limited to a few drainages, hills and ridges exhibiting somewhat steeper slopes and heavier soil textures. The majority of soils in upland topographies are in cultivation or are used for pasture.

Dominant surface soil textures along the rebuild project route in Weld County are variable. Sandy loams and loams commonly overlie higher landforms including uplands, plains, hills, ridges and some stream terraces. Sands and loamy sands occur but are not as common. Loam textures are most common on stream terrace formations. Subsurface textures are variable with sandy, silty, and clay loams most common. Soil profile coarse fragment contents (gravels, cobbles, and stones) are typically less than 15 percent by volume, although higher percentages may be found in association with localized drainage topographies. Soil pH values typically range from 6.6 to 8.4 throughout the profile. The majority of soils along the ROW are non- to slightly saline and exhibit few, if any, constraints to revegetation. Soils located in terraces, bottomlands, and floodplains may be moderately to highly saline, potentially limiting plant diversity to those species adapted to saline soil conditions. Soils classed as "hydric" (wetland) are limited in Weld County. Map units 3 and 71, occurring in swales, are the sole units where dominant unit components are considered to be hydric; however, the majority of the remaining map units of the county have hydric map unit inclusions typified by swale topographies.

Sand and loamy sand surface soil textures are most common across uplands, hills, and dunes along the proposed project route through Morgan County. Loams may also be found but are not as common. Stream terraces and flood plains tend to heavier surface textures, exhibiting primarily sandy loams, loams, clay loams and clays. Subsurface soil textures are highly variable ranging from sands to clays. Soil profile coarse fragment percentages are typically 15 percent or less, with higher percentages occasionally found in drainages in Weld County. Values of pH range from 5.6 to 9.0, with a range of 6.6 to 8.4 predominating. Similar to Weld County, the majority of soils in the project area are non- to slightly saline with higher salinities occurring in association with drainage systems. Hydric soils are limited in Morgan County with one map unit (Ap) dominated by edaphic conditions across flood plains and terraces. Hydric map unit inclusions are common, particularly in flood plain and terrace map units, where these soils have developed in swales or depressions.

Available water capacity, a factor in supporting plant growth, ranges from "moderate" to "high" for the dominant soils of Weld County where soil profiles are composed of more loamy textures. Where such soil textures dominate profiles in Morgan County, similar ratings occur. However, "low" capacities are also common in Morgan County, particularly in the eastern portion of the county where sandy textures predominate across uplands, hills, dunes, and stream terraces.

Susceptibility to wind erosion is a common characteristic of the soils along major portions of the proposed and alternative transmission line ROWs in both Weld and Morgan counties. Soils exhibiting ”high” to “extremely high” potentials, if cultivated (i.e. disturbed), exhibit primarily sand and loamy sand surface textures and are included in Wind Erodibility Groups 1, 2, and 3 (Crabb, 1980). High to extremely high susceptibilities to wind erosion are most common in Weld County between mileposts HE 18 to HE 21 and between mileposts HE 27 and HE 38. In Morgan County, soils classified as having high to extremely high potentials for wind erosion overlie the majority of the county through which the ROW passes. Areas with these soil erosion susceptibilities occur between the Beaver Creek Substation and milepost BH 2, between mileposts BH 3 and BH 13, between mileposts BH 14 and BH 26, and between mileposts BH 27 and BH 32.

Along the Beaver Creek-Hoyt-Erie transmission line ROW, approximately 33 and 75 percent of the soils crossed in Weld and Morgan counties, respectively, exhibit high to extremely high wind erosion potentials.

3.4.2 Environmental Impacts and Mitigation Measure

3.4.2.1 Issues and Significance Criteria

Impacts related to geology would be significant if:

- the proposed action or alternatives resulted in the loss of access to recoverable mineral, petroleum or other geological resources.

Impacts to surface soils would be significant if:

- new construction or maintenance activities for the proposed action or alternatives caused major accelerated soil erosion, due to project earthwork or the destruction of protective vegetation. Significant soils impacts could occur if uncontrolled or unmitigated erosion causes sediment loading of streams, which results in violations of water quality standards or impacts existing water uses. Airborne dust resulting from increased erosion would be significant if it resulted in violations of air quality regulations.

There are no identifiable geologic hazards in the project impact area; therefore, no effects related to these types of constraints are reported. The proposed rebuild project is located near active oil and gas wells between mileposts HE 38 and HE 45. Indirect impacts from construction traffic may impede access to existing oil and gas wells for short periods of time. No long term loss of access to recoverable mineral, petroleum or other geologic resources would occur, and the proposed action would be located in the same location as the existing Hoyt-Erie 115-kV transmission line. Consequently, impacts to recoverable mineral or petroleum resources would be short term and not significant.

The environmental consequences section discusses specific soils-related impacts of the proposed action and alternatives. Issues related to the soils include direct and indirect effects from soil disturbances. Direct impacts during construction include the short term and long term loss of soil resources and productivity at construction sites, structure sites, and substation expansion sites. Indirect impacts to soils from construction disturbances may include the acceleration of soil erosion, including an increase in wind erosion. Indirect effects related to wind erosion are most likely in areas highly susceptible to wind erosion and could result in the on-going loss of the soils, coupled with a decrease in soil stability, productivity and vegetation cover. There is also a

potential for indirect impacts to soil productivity, due to soil compaction from construction equipment and sediment loading of local water bodies.

3.4.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

The proposed action would result in surface, and to a limited extent, subsurface impacts to soil resources. Direct impacts would be associated with surface-disturbing activities including the removal of approximately 595 existing transmission structures and the installation of approximately 428 new structures. Surface disturbing activities would occur at stringing sites, and where the installation of the 230-kV structures would require new access spur roads within the ROW.

Construction activities at each structure site include excavations to depths reaching up to 30 feet in sandy areas. The "spoil" from excavations would be spread over a limited area near the structure sites and within the ROW. This would result in a long term mixing of soil profile materials. Given the limited volume of subsoil materials involved, and the overall similarity of soil profile materials, no significant chemical or physical impacts to the soil resource is anticipated.

At each of the 428 rebuild structure sites, a level area or pad would be necessary for construction equipment to install the new single steel pole or H-frame structures. A disturbance area approximately 6,500 square feet in size could be required at each site. In total, approximately 63.9 acres may be disturbed. Pad construction, along with spoil deposition and equipment use, would result in short term surface soil disturbances leading to an increase in erosion susceptibility and a decrease in soil productivity until disturbed soils were stabilized. Less than 0.1 acre of long term soil disturbance would remain for all structure sites following reclamation.

The removal of the existing 595 115-kV structures would result in approximately 88.8 acres of direct short term soil disturbance. Removal operations would similarly require that an area of approximately 6,500 square feet at each structure site. Impacts to the soil resource would be essentially the same as for the 230-kV structure sites, except that there is no long term disturbance associated with this action.

At staging areas and stringing sites, surface disturbances would typically be limited to impacts caused by equipment traffic and construction operations. No grading would be required at these sites, however, construction activities may result in a removal or crushing of the vegetation cover causing a short term increase in erosion susceptibility and a short term decrease in soil productivity. No pads would be constructed at these sites. Approximately 46 acres of surface soils would be affected. Due to the limited amount of long term soil disturbance from the proposed project, impacts would be adverse, but less than significant.

Soils may be compacted at various construction sites and in association with road construction and use. Compaction can lead to a decrease in soil aeration and infiltration resulting in a reduction in soil productivity. Compaction would not likely be of concern in areas dominated by sandy-textured soils and would be remedied across heavier textured soils using common agricultural equipment. Soil compaction impacts would, therefore, be short term in duration.

Construction disturbances occurring in agricultural areas would be reclaimed, where accessible, and typically be put back into agricultural production. All impacts to soil resources would, in

these instances, be considered adverse and short term. All disturbed structure sites would be stabilized by Western's Standard Practices 1, 2, 3, 5, 6, 7, 8 and 9 (Table 2.1-3), which include a reliance on natural revegetation following site preparation activities (Standard Practice 6). These standard practices would be effective in reducing potential impacts to less than significant levels in areas having low to moderate wind erosion susceptibilities. In areas with high wind erosion potential, Western would ensure that disturbed erodible soils are stabilized through Project Measure SOILS-1 (Table 2.1-4). With implementation of revegetation and soil stabilization techniques outlined in Project Measure SOILS-1, these types of impacts to soils would be short term and less than significant.

Existing roads would be used for construction and maintenance access and would continue to be subject to erosion where they are not surfaced. No new access roads outside Western's ROW are proposed to be constructed, although some minor roads may be required to access new pole sites within the existing or expanded ROW. The location of structure sites and new access spur roads to the structure sites would be identified during final engineering and are unknown at this time. Consequently, for purposes of the EA, the impacts resulting from structure site disturbances and access spur roads are assumed to potentially occur anywhere in the project ROW. With implementation of Western's Standard Practices (Table 2.1-3) and Project Measure SOILS-1 (Table 2.1-4), impacts from access spur roads would be short term and mitigated to less than significant by using revegetation techniques. Where new access spur roads remain in the ROW indefinitely, the impacted soils would be subject to erosion over time.

While sediment loading of adjacent or nearby water bodies could occur, the likelihood is minimal given site conditions, and Western's Standard Practices 2, 3, 5, 6, 7, 8, 9 and 12 (Table 2.1-3). The disturbance sites would typically be located on nearly level to moderately sloping terrain. Surface runoff volume is typically "very low" to "medium" for the majority acreage to be encountered, thereby limiting water erosion potentials. The vast majority of disturbances, limited in size and located intermittently along the ROW, would be sited out of drainages and away from water bodies. Western's standard practices are designed to limit the displacement of surface soils and stabilize disturbed sites, therefore, indirect impacts from sediment-loading of local drainages and water bodies are considered to be negligible.

Proposed Beaver Creek and Erie Substation Modifications

Approximately 5.4 and 1.6 acres of soils are currently overlain by surfacing materials at the Beaver Creek and Erie sites, respectively. Long term direct impacts at the proposed Erie and Beaver Creek substation expansion sites would result from grading and replacement of soil surfaces with substation facilities needed for the operation of the proposed 230-kV transmission line. Existing soils would be buried and permanently removed from production for the life of each substation. In addition, the soil surface would be vulnerable to erosion from the time of initial grading until resurfacing. The potential disturbance areas considered in this EA include 31.2 acres at the Beaver Creek Substation and 9.5 acres at the Erie Substation. Implementation of Western's Standard Practices 2, 4, 5, 6, 7, and 8 (Table 2.1-3) would limit impacts to soil resource to less than significant levels.

3.4.2.3 Impacts of the Alternatives

Beaver Creek-Brush Prairie Ponds SWA Reroute

Under this alternative, approximately 15.3 acres of soils would be temporarily disturbed with the installation of 38 new structures, the removal of 44 existing structures, and the use of three

stringing sites. In comparison, 13.1 acres of soils would be impacted under the proposed project along this segment of the route for these same activities. Long term impacts are essentially identical between these alternatives. No new access roads would be built to the ROW; however, minor access roads within the ROW may be needed to reach new structure sites. The locations of these access roads are unknown and assumed to potentially occur anywhere within the alternative reroute ROW. Approximately 6.0 miles of the 7.1-mile reroute crosses soils having high to extremely high wind erosion potentials. In comparison, the section of the proposed project that this alternative would replace crosses approximately 4.1 miles of soils having similar erosion potentials, including soils currently under cultivation. Impacts of this alternative would be adverse and less than significant with implementation of Project Measure SOILS-1 (Table 2.1-4).

Beaver Creek-Big Sandy Reroute

This alternative would entail the rerouting of the Beaver Creek – Big Sandy transmission line in addition to the Brush Prairie Ponds SWA Reroute. All impacts to soils that would result from this alternative are additive to the impacts associated with the Brush Prairie Ponds SWA Reroute alternative, discussed above. A total of 10.7 acres of short term disturbances would result from the additional construction activities of this alternative. These disturbances include those associated with new structure installation, removal of existing structures, and stringing sites. As with other alternatives, no new access roads would be built but some minor ROW access roads could be required. Long term impacts would be less than 0.5 acre. The majority of the soils to be impacted, with the exception of some soils under agricultural production, are rated as having high to extremely high wind erosion potential.

Bijou Creek Crossing Reroute

Soil related impacts from this alternative would include removing existing structures (5.5 acres) and constructing stringing sites (two acres). These impacts would be identical to the proposed project. No new roads are proposed to be constructed under either alternative and the need for ROW access roads would be minimal. Under this reroute alternative, 3.6 acres of soils would be impacted in the short term by installing new structures as compared to 3.8 acres along this segment under the proposed project. Long term impacts would be virtually identical under both scenarios. Soils to be disturbed with both alternatives are essentially the same in terms of wind erosion susceptibility, with a slightly higher portion of the reroute alternative crossing soils with high to extremely high erosion potential.

No Action Alternative

Under the no action alternative, the soil resource would continue to develop edaphically, consistent with historical trends in terms of chemical and physical characteristics. Future soil productivity would mirror current levels assuming agricultural and grazing practices do not vary significantly. Current rates of natural erosion would likely continue. Existing transmission line operation and maintenance activities would continue and increase over time. Over time, the maintenance of access roads along the existing transmission line and the replacement of structures would result in similar long term impacts to soils as the proposed action.

3.4.2.4 Mitigation Measures

Western will implement a number of Standard Practices (Table 2.1-3, Practices 2, 3, 5, 6, 7, 8, and 12) and Project Measure SOILS-1 (Table 2.1-4) to reduce soils-related impacts to the extent

practicable. No additional mitigation measures are necessary and all impacts would be less than significant with the implementation of the measures listed above.

Measure SOILS-1: All constructed pad disturbances, staging areas, stringing sites, and ROW access roads located in areas of high and extremely high wind erodibility potentials that are not reclaimed by the landowner during normal agricultural practices will be stabilized following site abandonment. Western will monitor such sites to ensure that they are successfully revegetated with desirable plant species. Measures that may be used to achieve this goal, individually or in combination, include seedbed preparation, fertilization, drill or broadcast seeding, straw mulching, hydromulching, the use of erosion control mats, or chemical tackifiers. Any seed mixture to be used will be a mixture recommended by the Natural Resources Conservation Service of the County within which the disturbance is located. Fertilizer to be applied, if any, prior to seeding will be based on the recommendations of the landowner or the Natural Resources Conservation Service. Table 3.4-1 identifies the areas of high potential wind erosion susceptibility to which this mitigation measure is applicable.

Table 3.4-1. Areas of High Potential Wind Erosion Susceptibility

Right of Way Transmission Line Segment	**Soils With High Susceptibilities at or Between the Following Pole Numbers or Mileposts**
Beaver Creek-Hoyt	Structure Numbers: 78-4 to 78-8, 79-2 to 81-1, 81-3 to 81-6, 81-7 to 82-6, 83-1 to 83-4, 84-2 to 90-3, 90-6 to 91-7, 92-5 to 93-3, 93-5 to 96-3, 97-5 to 107-3, 108-5 to 110-4
Hoyt-Erie	Structure Numbers: 35-6 to 36-2, 37-1 to 37-4, 39-2, 40-3 to 46-3, 46-5 to 46-7, 47-1 to 47-3, 47-5, 47-7 to 48-5, 49-6 to 50-2, 50-3 to 50-7, 51-7 to 52-2, 57-2 to 58-3, 58-5 to 60-3, 61-5, 61-7, 68-6 to 68-7, 68-8 to 69-1, 70-5 to 70-7, 77-5
Bijou Creek Reroute Alternative	Mileposts: 0.3 to1.7, 1.8 to 4.2, 4.3 to 4.4
Brush Prairie Ponds Reroute Alternative	Mileposts: Beaver Creek Substation to 3.2, 4.0 to 7.1
Big Sandy Reroute Alternative	Mileposts: Beaver Creek Substation to 3.2 (new construction), Beaver Creek Substation to 1.7 (pole removal)

3.5 Paleontology

Geologic formations within the project impact area may contain fossil remains. Geologic formations are described in EA Section 3.4 and are illustrated on Figure GEO-1, located in Appendix A. The project impact area for paleontological resources encompasses lands that would be directly affected by the proposed project and routing alternatives. The project impact area includes the proposed and alternative transmission line ROWs, substation expansion sites and construction sites. Pertinent issues are whether the project or alternatives would have the potential to physically destroy fossil remains of scientific and educational value.

3.5.1 Affected Environment

Paleontological Potential of Geologic Formations

The U.S. Forest Service has developed a classification system for estimating the probable paleontological potential of geologic and associated rock formations. This system known as the "Probable Fossil Yield Classification System" (PFYC) has been adopted and modified slightly for this EA, as summarized in Table 3.5-1. The following describes the paleontological potential of the geologic formations crossed by the proposed project and routing alternatives.

Pierre Shale. The project impact area crosses through a wide section of the Pierre Formation along the Beaver Creek-Hoyt transmission line segment, from milepost BH 14 to milepost BH 20. The Pierre Formation has long been known as a source for important marine vertebrate fossils, invertebrates, and microfossils. Federally protected specimens that may be discovered within the Pierre Shale include marine reptiles, such as Tylosaurus, Dolichorhynchops and Elasomosaurus; flying reptiles, such as Pteranodon; giant turtles, such as Archelon, and Protostega; fish, such as Xiphactinus, Encodus, Squalicorax, Pachyrhizodus, Cretoxyryhina and others; and the occasional dinosaur that floated out to sea. Invertebrates are commonly found within the Pierre Formation and typically within locally abundant concretionary zones. These invertebrates include pelecypods, gastropods, and ammonites. Many ammonites recovered from the Pierre Formation can reach a length of over 5 feet in diameter. Others may retain exceptionally brilliant color and preservation. Others may include rare, protected genera. Due to the high potential of important vertebrate discoveries within this formation, this zone was determined to be of high paleontological interest (Class 4 PFYC).

Laramie Formation. The Laramie Formation is located at or near the surface of the project area, along the Hoyt-Erie transmission line segment, between milepost HE 2 and milepost HE 8 and also between milepost HE 10 and milepost HE 14. The Laramie Formation has long been a source for fragmentary vertebrate remains. These fossils include at least 9 genera of dinosaurs such as Tyrannosaurus, Edmontosaurus, Triceratops; small mammal fossils, reptiles, fish, and others. Most of these fossils are incomplete or are known only from isolated elements. Occasionally complete or relatively complete skeletons and skulls of Triceratops have been found in this formation in Weld County. Most notable are the presence of the first known ceratopsian fossil footprints known as Ceratopsipes, a possible Tyrannosaurus footprint, and others (Lockey and Hunt, 1995). These tracks have important scientific value since they are the only confirmed ones known to science. Due to the potential for important dinosaurian fossils beneath the top soil of this project area, the Laramie Formation is determined to be of moderate paleontological interest (PFYC-3)

Table 3.5-1 Probable Fossil Yield Classification System

Class	Description	Paleontological Resource Potential
1	Igneous and metamorphic geologic units (excluding tuffs) that are not likely to contain recognizable fossil remains. Ground-disturbing activities will not require mitigation except in rare circumstances.	None
2	Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant invertebrate (or plant) fossils. Ground-disturbing activities are not likely to require mitigation.	Low
3	Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. Ground-disturbing activities will require sufficient mitigation to determine whether significant paleontological resources occur in the area of a proposed action. Mitigation beyond initial findings will range from no further action necessary to full and continuous monitoring of significant localities during the action.	Moderate
4	Class 4 geologic units are Class 5 units that have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation. Proposed ground-disturbing activities will require assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action will impact the resources. Mitigation beyond initial findings will range from no further mitigation necessary to full and continuous monitoring of significant localities during the action. This classification will often not be applied until after on-the-ground assessments are made.	High
5	Highly fossiliferous geologic units that regularly and predictably produce vertebrate fossils and/or scientifically significant invertebrate (or plant) fossils, and that are at high risk of natural degradation and/or human-caused adverse impacts. These areas are likely to be poached. Mitigation of ground-disturbing activities is required and may be intense. Areas of special interest and concern should be designated and intensely managed.	Very High
USFS, 1996		

Arapahoe Formation. The Arapahoe Formation is grouped with the Denver Formation and is located at or near the surface of the project area, along the Hoyt-Erie transmission line segment, between mileposts HE 22 and HE 46. The Arapahoe Formation is known to contain scrappy dinosaur bones and other vertebrates though the numbers are reportedly low (Carpenter and Young, 2002). The majority of specimens recovered from this unit are isolated elements of ceratopsians most notably Triceratops. Due to the low numbers of fossils recovered from the Arapahoe Formation, it is considered to be of low-moderate paleontological interest (PFYC 2-3).

Denver Formation (D-1/D-2). The Denver Formation spans the K-T boundary (Cretaceous-Tertiary Boundary), making it very important from a paleontological standpoint. It is divided into an upper D-2 sequence and a lower D-1 sequence (Carpenter and Young, 2002) (Raynolds and Johnson, 2003). Both of these units are within the project area, and are periodically crossed by the proposed transmission line rebuild, from the Erie Substation to milepost HE 22, north of Prospect Reservoir.

Many important, Federally protected vertebrate fossil specimens can be found within both the upper and lower Denver Formation, with Late Cretaceous faunas and floras restricted to the lower Denver Formation and Paleocene faunas and floras restricted to the upper Denver Formation (Carpenter and Young, 2002). Federally protected specimens include at least 10 genera of dinosaur, such as Triceratops, Tyrannosaurus, Edmontosaurus, and Ornithomimus; several types of small, very important mammalian genera including Baioconodon, Catopsalis, and Oxyclaeus; several crocodilians such as Leidysuchus, Brachychampsa, Champsosaurus; at least 15 genera of turtles such as Neurankylus, Basilemys, Axestemys, and Compsemys; and many species of fish, amphibians, and lizards. Unfortunately, most of this material is fragmentary and often accidentally discovered during major surface excavations, such as road or construction projects (Carpenter and Young, 2002). Plant fossils may be locally abundant and exceptionally preserved, but most are not necessarily protected by any Federal regulations. Due to the number of potential vertebrate finds, the age of the unit spanning the K-T Boundary and the potential for other important discoveries, this unit is considered to be of high paleontological interest (PFYC 4).

Dawson Formation. The Dawson Formation is grouped with the Denver Formation and is located at or near the surface of the project area, along the Hoyt-Erie transmission line segment, between milepost HE 22 and milepost HE 46. Though vertebrates including important mammal fossils are occasionally discovered within the Dawson, and plant fossils may be locally abundant, the Dawson Formation is considered to be of low to moderate paleontological interest (PFYC 2-3).

Quaternary gravels (QgO, and Qg), eolian (Qe) and alluvium (Qa). The project area also spans several zones of Quaternary fluvial and eolian deposits most notably in the eastern section along the Beaver Creek-Hoyt transmission line segment. These deposits are also crossed intermittently by the Hoyt-Erie transmission line segment. Though occasional important vertebrate specimens such as bison and mammoth bones may be contained within these deposits, they are considered to be of low paleontological interest (PFYC-1).

Field Observations

Field reconnaissance was conducted by Earth Engineering Consultants to observe conditions within the project impact area. Based on field observations, outcrops likely to contain significant paleontological resources were not evident. Areas considered as having a high potential for paleontological resources were found to be of lower potential during field surveys, due to an abundance of topsoil and the lack of significant relief or erosion.

Beaver Creek Substation to Hoyt Substation. One zone with a high paleontological potential was identified between milepost BH 14 and milepost BH 20, where the Pierre Formation is exposed at or near the surface. Aerial photographs revealed a series of unusual rolling hills with some potential areas of exposed bedrock. Field reconnaissance, however, did not reveal protected vertebrate elements in the accessible drainages. Some areas of this zone could be seen from a distance and were verified to not have any outcrops.

Hoyt Substation to Prospect Reservoir (milepost HE 22). This portion of the project area, between the Hoyt Substation and Erie Substation, consists mostly of Quaternary gravels and alluvium deposited by northward flowing streams. Agricultural fields and cattle ranches were encountered frequently and directly under the existing 115-kV line. Relief and erosion in this area is not significant enough to expose bedrock for paleontological exploration. The area with the most paleontological interest is a stretch of rock between mileposts HE 2 and HE 8, and also between mileposts HE 10 and HE 14, where geologic maps indicated the presence of the Late Cretaceous Laramie Formation.

Area photographs and field reconnaissance revealed the same low relief and land use constraints discovered in the previous two sections. A short stretch of the transmission line was surveyed between mileposts HE 2 and HE 4 in an area where the soil had recently been tilled. No vertebrate fossils or evidence of trace fossils (or for that matter bedrock), were discovered.

Prospect Reservoir (milepost HE 22) to Brighton Substation. Though geologic maps report targeted rock formations exposed at the surface, aerial photographs and field reconnaissance showed few outcrops of significance. Short stretches of the existing transmission line were surveyed including several streams that cut through these areas but exposed bedrock was not observed within 100 feet to either side of the existing transmission line. No fossils were observed in the tilled soil or within any of the drainages. Direct observation suggests that there is a good deal of topsoil development in this area as well. The paleontological potential of this area is considered low. The Prospect Reservoir to Brighton Substation and Brighton Substation to Erie geology and paleontological characteristics are similar.

Brighton Substation to Erie. The existing Beaver Creek-Hoyt-Erie ROW is approximately 0.25 miles south of the closest point of known coal mining activity from the Boulder-Weld coal field. Miscellaneous ceratopsian material is reported from the Arapahoe Formation (Cross, 1896) just southwest of the town of Brighton and within three miles of the Beaver Creek-Hoyt-Erie transmission line. This material consisted of a nose horn core and other fragments possibly from that of a Torosaurus or Triceratops (Carpenter and Young, 2002). Because of this discovery, the Brighton area was considered a main area of interest, particularly in areas where the Denver and Arapahoe Formations were exposed at the surface north east of Brighton.

Aerial photography and direct observation in these areas showed only one significant outcrop of the Denver Formation and this was well away from the existing transmission line. The area directly under the existing transmission line consists predominantly of rolling hills and agricultural fields, neither of which are conducive to surface paleontological exploration. Short stretches of the line were surveyed and no vertebrate, invertebrate, or plant fossils were found. Soil in the area appeared to be a mix of the host bedrock plus some Qg that may have been transplanted into the area. If any protected fossils did exist in the area directly within the ROW of the transmission line they would have been plowed under and severely damaged by farmers many years ago. Drilling or coring to a depth of over 10 feet in this area may again strike undisturbed bedrock and the occasional fossil vertebrate, but the chance of this is minimal.

Other zones within this area consist of Quaternary gravel and alluvium deposits some of which are being actively mined for aggregate. These areas were also observed and confirmed to be of low paleontological interest.

3.5.2 Environmental Impacts and Mitigation Measures

3.5.2.1 Issues and Significance Criteria

Impacts to paleontological resources would be significant if:

- fossil deposits are destroyed without being properly excavated.

The proposed project could result in the inadvertent destruction of fossils during construction. Fossil deposits may be encountered along the proposed project and alternative transmission line ROWs or at substation expansion sites, particularly where geologic formations with known paleontological resources are directly encountered. Impacts to paleontological resources would

be long term if they occurred. The potential for direct long term impacts to paleontological resources is considered to be low, however, given conditions observed in the field. In order to ensure that impacts to paleontological resources are avoided or minimized, Western would implement Project Measure PALEO-1 (Table 2.1-4) in the unlikely event fossils are discovered.

3.5.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

The proposed action would entail constructing new structures sites within the existing ROW. Excavations for structure sites would be up to 30 feet deep. Consequently, there is a potential for direct impacts to paleontological resources, particularly in geologic formations of high or moderate paleontological interest, which include the Pierre Shale (Class 4 PFYC) and the Laramie Formations (Class 3 PFYC). Based on field observations, all areas crossed by the proposed transmission project are expected to have a low potential for impacts to paleontological resources. On-site conditions including topsoil, lack of outcrops, presence of the existing transmission line(s) and previous agricultural and ground disturbances reduce the potential of encountering fossils of scientific value.

Proposed Beaver Creek and Erie Substation Modifications

The impacts of the substation expansions are generally the same as those described for the transmission line rebuild. Consequently, the potential impacts to paleontological resources would be similar. No impacts to paleontological resources are anticipated.

3.5.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

The impacts of the Beaver Creek-Brush Prairie Ponds SWA Reroute, Beaver Creek-Big Sandy Reroute and Bijou Creek Crossing Reroute alternatives would be generally the same as those described for the proposed project. The same formations are crossed by these alternatives as the corresponding segments of the Beaver Creek-Hoyt-Erie ROW. No impacts are anticipated.

No Action Alternative

The no action alternative would avoid direct impacts to paleontological resources during typical maintenance activities, which would continue under this alternative. The existing structures are typically supported without engineered foundations, using direct burial of the end of the structure. If existing structures located in rock outcroppings are replaced because of deterioration or damage, they would be replaced in the same hole from which the old structure is removed.

3.5.2.4 Mitigation Measures

Impacts to paleontological resources are not anticipated, and no additional mitigation measures are necessary beyond Western's Standard Practices and Project Measure PALEO-1. Western's Standard Practice 4 (Table 2.1-3) and Project Measure PALEO-1 (Table 2.1-4) would be implemented, as necessary, to ensure that impacts to paleontological resources are mitigated, if resources are encountered.

Project Measure PALEO-1. The contractor shall receive instructions from Western regarding the potential presence of fossils in pole excavations and in areas excavated or disturbed for roadwork. The contractor will be notified of his obligation to report any suspected paleontological finds to Western. If suspected finds are made, Western will retain a paleontologist to assess the significance of the paleontological finds and make recommendations.

3.6 Water Resources (Surface, Ground, and Floodplains)

The project impact area is located within the South Platte watershed in Morgan and Weld counties, Colorado, and includes streams and floodplains crossed by the existing electric transmission line. Ground water in these areas is also addressed. The project impact area encompasses lands directly affected by the proposed project and alternatives (ROWs, substation expansion sites, access roads) and adjacent areas that may be affected indirectly by construction activities (e.g., resulting from increased sedimentation).

Federal regulations that ensure the protection of water resources include the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA). The SDWA regulates the protection of drinking water resources and pollution prevention strategies. The CWA regulates pollutant discharge into source waters. In accordance with the CWA, the EPA has established primary and secondary standards to guarantee quality drinking water free of contaminants. The Colorado Water Quality Control Division of the Colorado Department of Public Health and Environment (CDPHE) regulates the discharge of pollutants into the state's surface and ground waters and enforces the Colorado Primary Drinking Water Regulations. The NPDES (National Pollutant Discharge Elimination System) is an EPA program resulting from the Clean Water Act, and is meant to reduce the amount of pollutants, particularly sediment, entering streams, lakes and rivers. In Colorado, the program is administered under the CDPHE, Water Quality Control Division and is referred to as the Colorado Discharge Permit System or CDPS instead of NPDES.

Floodplains are land areas adjacent to rivers and streams that are subject to recurring inundation. Floodplains typically help moderate flood flow, recharge groundwater, spread silt to replenish soils, and provide habitat for a number of plant and animal species. Executive Order 11988, Floodplain Management, requires Federal agencies to insure its actions minimize the impacts of floods on human health and safety and restore the natural and beneficial values of floodplains. DOE regulations at 10 CFR part 1022 require public notification of floodplain involvement.

3.6.1 Affected Environment

Surface Water

Larger watersheds crossed by the existing transmission line include Beaver Creek, Badger Creek, Muddy Creek, and Bijou Creek along the Beaver Creek-Hoyt corridor; and Antelope Creek, Box Elder Creek, South Platte River, and Big Dry Creek along the Hoyt-Erie corridor. The transmission line crosses 25 streams and 26 irrigation ditches or canals. Natural flows in these streams are heavily impacted by the operation of irrigation systems, including the implementation of augmentation plans, within the project area. Many streams remain dry in the spring runoff season, while others have flow diverted to them from irrigation that would not naturally occur. Several of the larger streams, including Beaver Creek, Badger Creek and Bijou Creek have very sandy channels and surface flow is not apparent. Flows in these channels tend to be within the sands in the shallow alluvium. Table A-3.6-1 found in Appendix A is a comprehensive listing of all streams and irrigation canals or ditches crossed by the existing transmission line.

The Beneficial Use Water Quality Classification System is designed to implement the Colorado Water Quality Control Act and to ensure the suitability of Colorado's water for beneficial uses, including terrestrial and aquatic life, recreation, agriculture, and water supply. Streams or stream segments, lakes, and reservoirs can be classified for current or reasonably expected uses, and for uses for which the waters would become more suitable when a water quality goal is attained. All

existing and classified uses are to be protected. The classifications are to be for the highest water quality attainable through effluent limitations for point sources and through implementation of cost-effective and reasonable "best management practices" for non-point sources (CDPHE, 2004a). Table 3.6-1 displays the beneficial uses for streams in the project area. The project area lies within Region 3, in the Upper South Platte River, Big Dry Creek, and Middle South Platte River Basins (CDPHE, 2004b).

Beaver Creek is currently listed on the state of Colorado 303(d) impaired waters list (CDPHE, 2004c). This stream exceeds state water quality standards for selenium but has a low priority. Naturally occurring selenium can be found in areas with underlying shale, which is the case for Beaver Creek. All other streams within the project area are currently meeting water quality standards for the designated uses and, therefore, are not on the 303(d) impaired waters list.

Table 3.6-1. Colorado Designated Beneficial Uses for Streams in the Project Area

Stream Segment Description	Designation	Beneficial Use Classification
Big Dry Creek Basin, Segment 1. Mainstem of Big Dry Creek, including all tributaries, lakes, reservoirs and wetlands, from the source to the confluence with the South Platte River, except for specific listing in Segment 2, 3, 4a, 4b, 5 and 6.	Use Protected	Aquatic Life Warm 2 Recreation 1b Agriculture
Upper South Platte River Basin, Segment 15. Mainstem of the South Platte River from the Burlington Ditch diversion in Denver, Colorado, to a point immediately below the confluence with Big Dry Creek	Use Protected	Aquatic Life Warm 2 Recreation 1a Water Supply Agriculture
Middle South Platte River Basin, Segment 3a. All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, from a point immediately below the confluence with Big Dry Creek to the Weld/Morgan County line, except for specific listings in the sub basins of the South Platte River, and in segments 3b, 4, 5a, 5b, 5c, and 6.	Use Protected	Aquatic Life Warm 2 Recreation 1a Agriculture
Middle South Platte River Basin, Segment 5a and 5b. Mainstems of Lone Tree Creek, Crow Creek and Box Elder Creek from their sources to their confluences with the South Platte River, except for specific listings in Segment 5b. Mainstem of Box Elder Creek from the confluence with Coyote Run to the Denver Hudson Canal.	Use Protected	Aquatic Life Warm 2 Recreation 2 Agriculture
Lower South Platte River Basin, Segment 2b. All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, and the mainstems of Beaver Creek, Bijou Creek and Kiowa Creek from their sources to the confluence with the South Platte River.	Use Protected	Aquatic Life Warm 2 Recreation 1a Agriculture

Table 3.6-1 continued

These beneficial uses have the following definitions:

Aquatic Life Warm 2: Waters that are not capable of sustaining a wide variety of warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

Recreation 1a: Existing Primary Contact. Class 1a waters are those in which primary contact uses have been documented or are presumed to be present. 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. Uses include, but are not limited to swimming, rafting, kayaking, tubing, windsurfing, and water-skiing.

Recreation 1b: Potential Primary Contact. This classification is assigned to water segments for which no use attainability analysis has been performed demonstrating that a recreation class 2 classification is appropriate, but existing class 1 uses have not been identified.

Recreation 2: These surface waters are not suitable or intended to become suitable for primary contact recreation uses, but are suitable or intended to become suitable for recreational uses on or about the water which are not included in the primary contact subcategory, including but not limited to wading, fishing and other streamside or lakeside recreation.

Agriculture: Waters that are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

Water Supply: Waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment these waters will meet Colorado drinking water regulations (CDPHE, 2004a).

All streams, lakes, reservoirs, and wetlands within the project area are designated as use protected waters. "These are waters that the Commission has determined do not warrant the special protection provided by the outstanding waters designation or the antidegradation review process" (CDPHE, 2004a).

Source: (CDPHE, 2004b)

Floodplains

The Federal Emergency Management Agency (FEMA) maps show 100-year floodplain delineations at five locations on the Beaver Creek–Hoyt corridor and seven locations of the Hoyt-Erie corridor. Table 3.6-2, Structures within Designated Flood Hazard Zones along Existing Transmission Line, shows the existing number of poles within each floodplain, and the distance along the line that falls within the floodplain in feet. Figures WATER-1 through WATER-5, found in Appendix A, show the location of the primary floodplains in the area (FEMA, 2005).

Table 3.6-2. Structures within Designated Flood Hazard Zones along Existing Transmission Line

Line	Structure Numbers within designated flood hazard zones	Number of Structures	Floodplain Hazard Zone Designation	River/Stream Name	Approximate Distance across Floodplain (feet)
BC-Hoyt	107-5, 107-6, 107-7, 107-8, 108-1, 108-2, 108-3, 108-4, 108-5	9	Zone A	Beaver Creek	6,300
BC-Hoyt	96-1, 96-2, 96-3, 96-4, 96-5, 96-6, 97-1, 97-2, 97-3, 97-4	10	Zone A	Badger Creek	7,600
BC-Hoyt	90-4, 90-5	2	Zone A	Sand Arroyo	1,260
BC-Hoyt	83-8, 84-1, 84-2, 84-3, 84-4	5	Zone A	Muddy Creek	3,240
BC-Hoyt	81-6	1	Zone A	Bijou Creek	1,070
Hoyt-Erie	77-4, 77-5, 7-7, 77-8 Hoyt Substation	4	Zone A	Antelope Creek	900, 1,870
Hoyt-Erie	76-2	1	Zone A	Rock Creek	440
Hoyt-Erie	51-6, 51-7	2	Zone A	Horse Creek	1,530
Hoyt-Erie	51-3, 51-4	2	Zone A	Box Elder Creek	1,460
Hoyt-Erie	38-5, 38-6, 38-7, 38-9, 39-1, 39-2, 39-3	7	Zone A	South Platte River	4,890
Hoyt-Erie	35-4, 35-5	2	Zone A	Big Dry Creek	700

Groundwater

The existing transmission line crosses the Beaver Creek basin south of the City of Brush. The Brush Prairie Ponds, located southwest of Brush, are used for recharge of Fort Morgan canal water under several augmentation plans for the City of Brush and the Fort Morgan Reservoir and Irrigation Company. Recent water levels at monitoring wells near the recharge ponds indicate that the depth to water is deepest during the months of June, July and August and at its most shallow during the months of December and January (Baker, 2005).

The existing transmission line crosses the Brush Prairie Ponds recharge area in Sections 22, and 21, T3N, R56W. The municipal well field for the city of Brush is located to the south of the Brush Prairie Ponds area, in Sections 27 and 26, T3N, R56W (HRS, 1994).

The predominant source of ground water in this area occurs in the Beaver Creek alluvium and in unconsolidated sand dune deposits. The Beaver Creek alluvium consists of interbedded layers of clay, silt, sand and gravel. There is a clay layer ranging in thickness from approximately 15 to 20 feet located at the bottom of the alluvium, immediately above the unconsolidated sand deposits. The depth to the top of the clay layer ranges from approximately 40 to 60 feet below ground surface. The unconsolidated sand dune deposits are located below the alluvium. The Pierre Formation underlies the unconsolidated sand dune deposits. This formation, consisting of bluish-black marine shale, underlies over 95 percent of the Beaver Creek basin and has very low permeability.

The water supply for the City of Brush originates from the unconsolidated sand dune deposits located immediately below the clay layer at the bottom of the alluvium. Ground water in this formation flows in a northerly direction toward the South Platte River. The well field for Brush is

located upgradient (south) of the Prairie Ponds recharge area in Section 27, T3N, R56W. Table 3.6-3 shows the depth to clay in seven wells (Boddie, 2005). The approximate location of the well field is shown in Figure 3.6-1, Approximate Locations of City of Brush Wells (from HRS, 1994).

Table 3.6-3. Top of Clay Layer from Ground Surface in Brush Well Field

Well	Top of Clay Layer from Ground Surface (feet)
M-7	43
MH-27286S	42(1)
MH-27286N	46
4	40
5	41
9	50
M-2	62

(1) Completed above clay layer to a depth of approximately 42 feet.
Source: Well Completion Logs, HRS Water Consultants (Boddie, 2005).

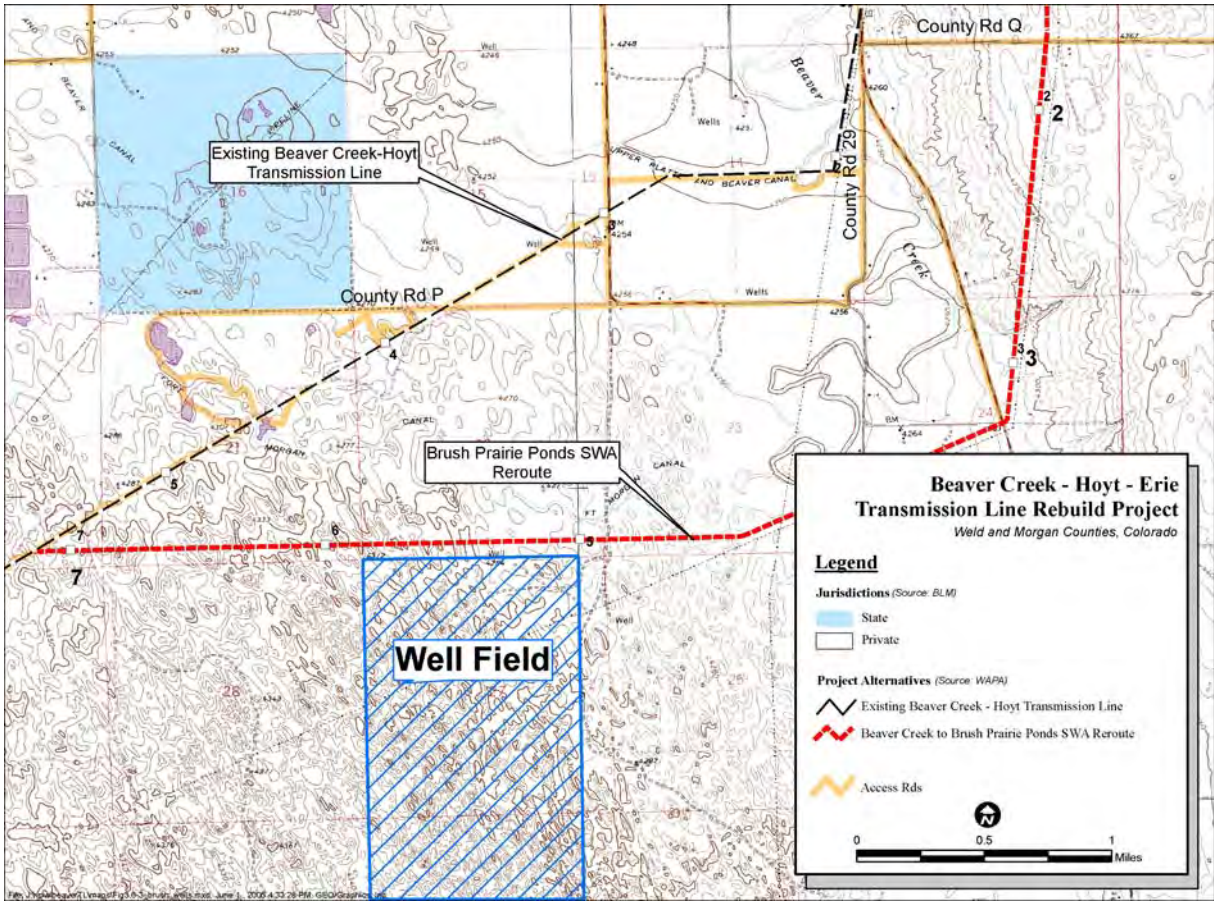

Figure 3.6-1. Approximate Locations of City of Brush Well Field

3.6.2 Environmental Impacts and Mitigation Measures

3.6.2.1 Issues and Significance Criteria

Impacts to surface water would be significant if:

- the quantity and quality of discharges from streams are modified by in-stream construction or accidental contamination (e.g. oil or gasoline spills) to the extent that water used by established users (e.g. public water supplies and irrigation) is measurably reduced, aquatic habitats support reduced fish populations, or the water quality is in violation of state water quality criteria;

- sedimentation downstream of the transmission line crossings affects water quality or the operation of irrigation water control structures.

Impacts to floodplains would be significant if:

- a flood event caused damage to the transmission line structures, or the construction of the transmission line structures in a floodplain would increase the potential for flooding or violate applicable floodplain protection standards.

Impacts to ground water would be significant if:

- construction of foundations for the transmission line structures impacts the quantity and quality of ground water used by established users (e.g. public water supplies and irrigation); the water quality is measurably reduced, or the water quality is in violation of state water quality criteria.

Direct impacts to water resources would potentially include the following types of short term and long term effects. 1) Disturbance during construction could cause erosion and sedimentation in surface waters potentially adversely affecting surface water quality. 2) Placement of structures could occur in delineated floodplain areas, however, structures would not impede the natural action or function of the floodplains. 3) Construction dewatering could occur during construction of some of the structures possibly resulting in short term impacts to ground water resources. These waters would be released directly after being filtered or allowed to settle, or replaced through land application. 4) Construction of structures in the vicinity of the Brush well fields has the potential for disturbing the natural clay layer overlying the aquifer used for municipal water supply. Geotechnical investigation and/or alternative structure design will insure that the clay layer is not compromised.

Indirect impacts to water resources could entail the following short term effects. 1) Disturbance during construction could cause erosion and sedimentation in surface waters along the proposed ROW, potentially adversely affecting surface water quality. 2) Accidental spills of petroleum products, hydraulic fluids, or antifreeze could adversely impact surface/and or ground water quality.

The project is not subject to National Primary or Secondary Drinking Water Regulations because these standards apply only to public water systems. A CDPS (Colorado Discharge Permit System) permit will be required for construction of this project. If any excavation during construction is to occur within or adjacent to a surface water body, Western would need to apply for a Section 404 Permit from the U.S. Army Corps of Engineers. The type of 404 Permit, Nationwide Permit 12 (Utilities) or Individual, required is dependent on the extent of wetland disturbance associated with the entire project (See Section 3.7.2.2, Vegetation, Wetlands). In the event that water is encountered during the construction of foundations at this location or any location along the corridor, a Colorado Discharge Permit System Permit for Construction Dewatering Wastewater Discharge would need to be obtained through the CDPHE and the Colorado State Engineers Office (SEO). Water from construction operations would be released directly after being filtered or allowed to settle, or replaced through land application.

In compliance with Department of Energy regulations at 10 CFR 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements, Western issued a Notice of Proposed Floodplain and Wetland Action and Request for Comments on July 13, 2005. The Notice was sent to local planning agencies, The U.S. Army Corps of Engineers, and the Federal Emergency Management Agency for comment. Information on potential floodplains and wetlands contained in this EA, along with the comments received in response to the Notice, will be considered by Western prior to issuing a Statement of Findings. A copy of the Notice, along with the distribution list and comments received can be found in Appendix B

3.6.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Surface Water

The Beaver Creek-Hoyt-Erie transmission line rebuild crosses 22 stream channels and 26 canals or ditches for total of 48 crossings (see Appendix A, Table A-3.6-1). All stream channels, canals and ditches would be spanned, thereby eliminating any direct impacts to surface water. The Beaver Creek-Hoyt-Erie transmission line crosses irrigated cropland, but the minor amount of potential sedimentation would not be expected to adversely affect the operation of irrigation water control structures. Surface water use is not proposed, so no direct impacts to surface water quantity are anticipated.

Indirect impacts could result from disturbance during construction. There are five project components that would involve surface disturbance. Surface disturbance could cause erosion and sedimentation in surface waters along the proposed ROW, thereby adversely affecting surface water quality. Table 3.6-4 shows the short term disturbance in acres for each type of disturbance.

Table 3.6-4 Short Term Disturbances for Beaver Creek-Hoyt-Erie Rebuild, Proposed Action

Project Component	Short term disturbance in acres
Removal of existing structures	88.8
Installation of new 230-kV structures	63.9
Stringing sites	31
Staging areas	15
Access roads	No new access roads to ROW. Short roads to new structure sites may be required within the ROW.
Total Acres of Short term Disturbance	198.7

Since the proposed project would be constructed in phases, not all of the 198.7 acres of potential construction disturbance would occur simultaneously, and mitigation measures would be implemented as construction progresses. The location of, and need for, new access roads within the ROW are unknown. Therefore, it is assumed that new access roads could be located anywhere within the ROW. In the event that new access roads are constructed across stream channels, sedimentation could result if storm runoff was to occur prior to stabilization in these areas.

Accidental spills of petroleum products, hydraulic fluids, or antifreeze could adversely impact surface water quality. Western would require the construction contractor to implement a plan to control spills and to clean up spills and minimize potential for water pollution. Significant surface-disturbing activities would not occur in stream channels or irrigation ditches. Construction activities in localized areas would be of short duration using best management practices to minimize erosion and sedimentation. Impacts to surface water quality would be minor and of short duration.

Long term disturbance from the proposed Beaver Creek-Hoyt-Erie transmission line would be limited to approximately 50 square feet per structure with an estimated 428 structures for a total of less than 0.5 acre. After construction, all short term disturbances, except less than 0.1 acre,

would be stabilized and reclaimed and only limited traffic would occur on the ROW, so potential for surface water quality impacts during operation would be negligible. Implementation of Western's Standard Practices 5, 6, 7 and 8 would minimize long term impacts from construction (Table 2.1-3).

The project would not impact municipal drinking water supplies. Western would conduct all excavation and structure removal in a manner that would not impact private drinking water supplies. Implementation of Western's Standard Practices 10, 11, 12, and 13 (Table 2.1-3) would minimize impacts to surface water.

Floodplains

The proposed spacing of structures along the Beaver Creek-Hoyt-Erie transmission line would be 1,000 to 1,400 feet. There are a total of twelve floodplain areas crossed by the proposed Beaver Creek-Hoyt-Erie corridor. Five of these floodplain areas would be spanned because the distance across them is less than or equal to 1,400 feet, and thus there would be no direct impacts to these floodplain areas. These areas include Big Dry Creek, Rock Creek, one crossing of Antelope Creek, Bijou Creek, and Sand Arroyo. Two additional floodplains have spans slightly longer than 1,400 feet that could still be spanned without constructing structures within the floodplains; Box Elder Creek has a span of 1,430 and Horse Creek has a span of 1,530 feet. There are six floodplain crossings that could not be crossed with a 1,400 – 1,500 foot span; including South Platte River, one crossing of Antelope Creek, Muddy Creek, Sand Arroyo, Badger Creek, and Beaver Creek. Table 3.6-2 shows the location and distance across each floodplain. Floodplain delineations for Beaver Creek-Hoyt and the Alternative Brush Prairie Ponds SWA Reroute are shown on Figures Water-1 through Water-3 in Appendix A.

Replacement structures would be located near existing structures and would span identifiable channels, as they do currently. Activity within the floodplains would include the removal of existing structures, auguring holes for replacement structures, and installation of replacement structures. Since the proposed spacing of the replacement 230-kVstructures is greater than the existing spacing of the 115-kV structures, actual numbers of structures located within the floodplain areas would be reduced. One structure is required to span the Antelope Creek floodplain delineation. Two structures could be required in the Muddy Creek floodplain delineation. The crossings for the Badger Creek, Beaver Creek and the South Platte River floodplains are approximately 7,600 feet, 6,300 feet, and 4,890 feet wide, respectively. This could require up to five structures to be installed within the floodplain delineation of Badger Creek and up to four structures to be installed within the Beaver Creek floodplain delineation and up to three structures to be installed within the South Platte River floodplain delineation.

Long term disturbance would be limited to the footprint of the structures (50 square feet per structure). The structures located within floodplains do not impede the natural action or function of the floodplains. Structures have existed in these floodplains since the early 1950's and have not been damaged by floods, so potential for the new structures to be damaged by floods is low. There is no potential for structures to cause flooding.

Indirect long term impacts would be similar to those described above, under surface water. Indirect impacts are expected to be negligible. Western's Standard Practices 5, 6, 7, 8, 10, 11, 12, and 13 would minimize impacts to floodplains (Table 2.1-3). Western will follow FEMA approved floodplain construction requirements. These requirements are also considered as General Conditions of the Nationwide Permit 12 (Utilities).

Ground Water

Ground water could be encountered during construction of foundations for structures located near the Brush Prairie Ponds recharge area. Necessary depth for foundation construction for structures could range from 10 to 30 feet depending on the soil conditions. Foundations for structures constructed in sandy soils could be as deep as 30 feet. Current water levels in a monitoring well 4-B, located near the Brush Prairie Ponds recharge area and in close proximity to the existing ROW were at 23.9 feet on February 25, 2005.

In the event that water is encountered during the construction of foundations at this location or any location along the corridor, a Colorado Discharge Permit System Permit for Construction Dewatering Wastewater Discharge would need to be obtained through the CDPHE and the Colorado State Engineers Office (SEO). Water from construction operations would be released directly after being filtered or allowed to settle, or replaced through land application. No injury to water quality or quantity is expected. Direct impacts to groundwater from construction would be minor and of short duration.

There is not expected to be an impact to municipal drinking water supplies as the Brush Municipal Well Field is located to the south of the proposed Beaver Creek-Hoyt-Erie corridor. Implementation of Western's Standard Practices 10, 11, 12, and 13 would minimize impacts to ground water.

Proposed Beaver Creek and Erie Substation Modifications

Beaver Creek Substation Expansion

There is no proposed use of surface or ground water, so there are no expected impacts to water quantity. The Beaver Creek Substation Expansion is to be constructed entirely in upland areas and there are no expected direct impacts to surface water, floodplains or ground water quality. The area required for the substation would increase from the existing 5.3 acres to approximately 10 acres.

Indirect impacts from substation construction could include erosion and sedimentation in downstream waters and potential spills from construction vehicles. Impacts are expected to be negligible and of short duration.

The project would result in more than 1.0 acre of disturbance and thus would require compliance with Colorado Discharge Permit System (CDPS) requirements. Western would develop and implement a Storm Water Pollution Prevention plan at the substation construction site to control storm water runoff and minimize the potential for project-related sedimentation in surface waters.

There are no long term impacts expected to surface, ground water or floodplains under this alternative.

Erie Substation Expansion

The proposed expansion at the Erie Substation would increase the facility acreage from approximately 1.5 acres to five acres, with the expansion from the existing fence line of the substation occurring to the east and/or north. A concrete irrigation canal runs east to west immediately to the south of the existing fence line. In order to avoid potential impacts to water

resources and impacts to the concrete canal, the expansion of this substation would not extend to the south or west (Hartman, 2005)

There would be no additional expected direct impacts to surface water, floodplains or ground water from the Erie Substation Expansion.

Indirect impacts from substation construction are expected to be similar to those for the Beaver Creek Substation Expansion and are expected to be negligible and of short duration.

There are no long term impacts expected to surface, ground water, or floodplains under this alternative.

3.6.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute

The Beaver Creek to Brush Prairie Ponds SWA Reroute would replace the proposed transmission line between existing pole numbers 110-4 to 104-7. This alternative would be approximately 1.5 miles longer than the proposed alignment, and would avoid crossing through the center of the Brush Prairie Ponds SWA by routing east and north of the southern boundary of the SWA.

Impacts to surface water under this alternative would be similar to those described for the proposed project and are anticipated to be minor and of short duration. This alternative route crosses four streams or canals, and the proposed project crosses five. Table A-3.6-2, Appendix A, lists the Stream and Wetland Crossings for Alternatives. Short term disturbance for this alternative would total 15 acres.

Impacts to floodplains under this alternative would also be similar to those described for the proposed project and are expected to be minor and of short duration. The alternative route would cross the Beaver Creek floodplain to the south of the existing transmission line and would require three structures to cross the floodplain rather than five structures required to cross the floodplain with the proposed project (see Table 3.6-5, Alternatives within Designated Flood Hazard Zones). Figure Water-1 shows the floodplain delineations for this alternative and the proposed project.

Table 3.6-5. Alternatives within Designated Flood Hazard Zones

Line	Approximate Location	Floodplain Hazard Zone Designation	River/Stream Name	Approximate Distance across Floodplain (feet)
Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative				
Beaver Creek-Hoyt	NW 1/4 of SW 1/4 Sec 24, T3N, R56W, beginning at approximately 1,150 feet SW of SH 71 and extending to SE 1/4 of SE 1/4 Sec 23, T3N, R56W	Zone A	Beaver Creek	4,370
Beaver Creek-Big Sandy Reroute Alternative (same as above)				
Bijou Creek Crossing Reroute Alternative				
Beaver Creek-Hoyt	NW 1/4 Section 19, T1N, R59W,	Zone A	Bijou Creek	1900

City of Brush Municipal Well Field

The Brush Prairie Pond SWA Reroute Alternative route would locate the transmission line in section 22 approximately 400 feet north of the north section line of Section 27, T3N, R56W. The municipal well field for the City of Brush is located in Section 27.

To protect the municipal water supply for the City of Brush, Western would avoid construction that would require structure foundations to be placed within or below the protective clay layer that lies over the aquifer. In the limited number of well construction logs available, the clay layer was not noted above a depth of 40 feet from ground surface. The deepest anticipated foundation depth under sandy soil conditions is expected to be 30 feet. In order to avoid potential impacts to groundwater resources, Western would conduct geological investigations at each proposed structure site prior to construction to insure that penetration of the clay layer would be avoided. In the unlikely event that the standard proposed foundations could impact the clay layer, alternative structure or foundations designs would be substituted that would allow for shallower foundation(s). (See Table 2.1-3, Western Standard Practices 10, 11, 12, and 13 and Table 2.1-4, Project Measure WATER-1.) One alternative is called a "pad and stem" foundation, which includes a significantly shallower depth than the augured foundation (approximately 18 to 22 feet vs. 30 feet for the typical augured foundation). This foundation design consists of a 3-foot-thick reinforced concrete pad in the bottom of the foundation excavation, with a 7- to 10-foot-diameter round pier anchored to the pad and extending 2 feet above ground surface. Other options are to use wider augured foundations that would be shallower, or to use alternative structure designs such as lattice structures, which have four legs, each with an expected depth of around 12 feet.

Storage of fuels or refueling within the vicinity of the well field will not be allowed.

Indirect impacts from construction are expected to be similar to those for the proposed project and are expected to be negligible and of short duration.

There are no long term impacts expected to surface water, ground water or floodplains under this alternative.

Beaver Creek-Big Sandy Reroute

This alternative follows the same route as the Brush Prairie Ponds Reroute Alternative and only heads to the south after crossing Beaver Creek. Since this alternative would be implemented in conjunction with the Brush Prairie Ponds SWA Reroute Alternative, all impacts to surface water, floodplains, and ground water would be the same as described above for the Beaver Creek-Brush Prairie Ponds SWA Reroute Alternative. A total of 10.7 acres of short term disturbance and less than 0.1 acre of permanent disturbance would occur under this alternative.

Indirect and long term impacts are also expected to be the same as the Beaver Creek -Brush Prairie Ponds SWA Reroute Alternative.

Bijou Creek Crossing Reroute

The Bijou Creek Crossing Reroute Alternative would replace the proposed transmission line between existing pole numbers 83-6 and 78-8. This alternative would be approximately 0.3 mile shorter than the proposed project.

Under this alternative, impacts to surface water, and ground water would be similar to those described for the proposed project and are anticipated to be minor and of short durations. Bijou Creek is the only floodplain crossing under this alternative (see Table A-3.6-2 and Figure Water-3 in Appendix A). Short term disturbance for this alternative would affect approximately 11 acres.

Impacts to floodplains under this alternative would also be similar to those described for the proposed project and are anticipated to be minor and of short duration. This alternative route would cross the Bijou Creek floodplain north of the existing line for a distance of approximately 1,900 feet. The approximate distance across Bijou Creek for the existing transmission line is 1,070 feet. The transmission line in the proposed project can span the floodplain; however, the alternative Bijou Creek crossing would require one intermediate structure. (See Appendix A, Figure Water-3).

Indirect and long term impacts are also expected to be the same as the proposed project.

No Action Alternative

Under the no action alternative, Western would continue to operate and maintain the existing 115-kv line in its present location. Activities would include typical transmission line maintenance activities such as replacement of unsafe structures, replacement of worn or damaged hardware, line patrols, and other activities. The impacts to floodplains, surface water and groundwater would be the same as they have been over the last 53 years. Some increased activity may be required as the transmission line continues to age and more maintenance is required. No significant impacts to surface water, floodplains, or ground water would occur under the No Action Alternative.

3.6.2.4 Mitigation Measures

Mitigation would be required if it is determined that the foundations of structures located near the Brush well field would impact the confining clay layer above the aquifer that serves the city of

Brush, Colorado. Alternative design of these structures that would allow for shallower foundations would be implemented in order to avoid penetrating the clay layer overlying the water supply for the municipal well field. Project Measure WATER-1 would be implemented to avoid impacts to groundwater resources (Table 2.1-4).

Project Measure WATER-1. In order to avoid potential impacts to groundwater resources, Western would conduct detailed geological investigations prior to construction in order to insure that penetration of the clay layer would be avoided or mitigated during the final engineering and design and installation of the new structures. Borings and logging of soils structure will be conducted at each new structure site within the City of Brush well field and/or Brush Prairie Ponds Recharge Area (structures within Sections 23, 22 and W ½ of Section 21 T3N, R56W,. Borings will extend five feet beyond the depth of the structure foundations to determine if the clay layer would be encountered. Monitoring of the test holes will be conducted by Western to determine if the clay layer is reached. In the unlikely event that foundations would reach the clay layer, the holes will be filled prior to penetrating the clay layer and an alternative design, requiring shallower foundation, will be used.

3.7 Vegetation

3.7.1 Affected Environment

Native and non-native vegetation communities, including wetlands, are described and evaluated in this section. Wetlands are defined under the Clean Water Act (CWA) as areas that are inundated with surface or groundwater to the extent that they sufficiently and regularly support a prevalence of aquatic, semi-aquatic, or wetland vegetation. Section 404 of the CWA protects wetlands by giving regulatory and permitting authority of wetlands to the U.S. Army Corps of Engineers (Corps). Executive Order 11990 requires Federal agencies to minimize the destruction or modification of wetlands and enhance the natural and beneficial values of them. DOE regulations found at 10 CFR 1022 require public notification of wetland involvement.

This section also discusses Conservation Areas. Conservation Areas may include a single occurrence of a rare element or a suite of rare elements or significant features. Conservation areas are identified by the Colorado Natural Heritage Program (CNHP) as containing ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance.

The project impact area for vegetation and wetlands includes areas that may be affected either directly or indirectly by the proposed action and alternatives. The project area encompasses the proposed and alternative transmission line ROWs, access roads, a 100-meter corridor buffer along these linear features, the substation expansion sites, and construction areas.

3.7.1.1 Vegetation

The principal vegetation types present are agricultural lands, native prairie, and non-native grassland (including livestock pasture). Minor amounts of wetlands, riparian habitat or cottonwood woodlands, and disturbed or developed areas also occur. Table 3.7-1 quantifies the miles of vegetation types crossed by the proposed action and project alternatives. Native prairie is present primarily along the Beaver Creek to Hoyt ROW segment. From the Hoyt Substation to the Erie Substation, agricultural land and non-native grasslands are predominant. There are no CNHP designated "Conservation Areas" within or near the project impact area.

Table 3.7-1. Extent of Vegetation Types Crossed by the Proposed Action Transmission Line and Project Alternatives

Vegetation/Habitat Type	Miles Crossed by Alternative			
	Proposed Action Beaver Creek-Hoyt-Erie	**Brush Prairie Ponds SWA Reroute Alt.**	**Big Sandy Reroute Alt.**	**Bijou Creek Crossing Reroute Alt.**
Agricultural Land	51.3	1.1	1.0	4.2
Non-native Grassland	16.7			
Native Prairie	8.2	6.0	3.2	
Wetlands	1.0			
Riparian	0.3			0.2
Disturbed/Commercial	0.7			
Totals	**78.2**	**7.1**	**4.2**	**4.4**

Agricultural Land. Agricultural land includes cultivated row cropland, irrigated hayfield, and fallow fields. Principal crops noted in agricultural areas within the ROWs were winter wheat, corn, and alfalfa. Fallow fields are often dominated by annual weed species such as Russian thistle (*Salsola australis*)[2], kochia (*Bassia sieversiana*), cheatgrass (*Anisantha tectorum*), field bindweed (*Convolvulus arvensis*), and Canada thistle (*Breea arvensis*).

Non-Native Grassland. Non-native grassland encompasses areas dominated by non-native grasses including irrigated and dryland livestock pasture. In some areas of non-native grassland, inclusions of native grasses are present, but they are not dominant. Non-native grassland areas are dominated by introduced pasture grasses such as smooth brome (*Bromopsis inermis*), intermediate wheatgrass (*Thinopyrum intermedium*), crested wheatgrass (*Agropyron cristatum*), and Kentucky bluegrass (*Poa pratensis*).

Native Prairie. Native prairie vegetation communities within the project area support bunchgrasses, sod-forming grasses, and a variety of forbs and small shrubs. Common native species on loamy and clayey soils include blue grama (*Chondrosum gracile*), buffalograss (*Buchloe dactyloides*), western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), sideoats grama (*Bouteloua curtipendula*), fourwing saltbush (*Atriplex canescens)*, American vetch (*Vicia americana*), winterfat (*Krascheninnikovia lanata*), and soapweed (*Yucca glauca*). Sites with sandy soils support needle-and-thread (*Hesperostipa comata*), blue grama, prairie sandreed (*Calamovilfa longifolia*), switchgrass (*Panicum virgatum*), little bluestem (*Schizachyrium scoparium*), sand bluestem (*Andropogon hallii*), sand dropseed (*Sporobolous cryptandrus*), and sand sagebrush (*Oligosporus filifolius*). Sandy soils are most prevalent along the Hoyt to Beaver Creek segment of the ROW, and sand sagebrush becomes more dominant in native prairie from west to east along this portion of the ROW.

Wetlands and Riparian. Wetlands are discussed separately in section 3.7.1.2. below. Riparian vegetation is limited in the project area. Minor vegetation types or features occurring in the project area include eastern cottonwood (*Populus deltoides*) woodlands along some of the drainages (in particular Bijou Creek), canals, and reservoir perimeters and tree stands associated with farmsteads and windbreaks. Eastern cottonwood is the most prevalent native tree along drainages, canals, and around reservoirs.

Disturbed/Commercial. Disturbed and commercial vegetation pertains to areas previously modified by livestock grazing, weeds, and development. Livestock grazing and the introduction of non-native grass and weedy species have modified most native prairie areas to some degree. Grazing pressure results in a shift in dominance from more palatable perennial grasses to less palatable or more grazing tolerant species such as blue grama, western wheatgrass, and three awn (*Aristida purpurea*) as well as other grazing and disturbed site increasers such as broom snakeweed (*Gutierrezia sarothrae*), plains pricklypear (*Opuntia polyacantha*), soapweed, cheatgrass, field bindweed, kochia, Russian thistle, Canada thistle, and musk thistle (*Carduus nutans*).

Noxious Weeds. Noxious weeds are non-native weeds that have been designated as "noxious" because of their invasiveness, aggressiveness, and the rate in which they spread. Noxious weeds are difficult to control, and most are very adaptable. These species are often the first to invade disturbed soils. They can withstand a variety of harsh conditions, including climate extremes,

[2] Scientific nomenclature for vegetation follows: Weber, W. A. and R. C. Wittmann. 1996. *Colorado Flora Eastern Slope*, revised edition. University Press of Colorado, Niwot, Colorado. 524 pp.

drought, and poor soils. Some of the more common noxious weeds in eastern Colorado are leafy spurge (*Tithymalus uralensis*), knapweeds (*Acosta* spp.), Canada thistle, musk thistle, Dalmation toadflax (*Linaria genistifolia dalmatica*), yellow toadflax (*Linaria vulgaris*), and field bindweed.

3.7.1.2 Wetlands

Wetlands are characterized by distinct soil types as well as by unique plant and wildlife communities (EPA, 2001). Wetlands enhance water quality and supply by retaining and removing sediment. They provide flood storage, groundwater recharge and discharge, shoreline anchoring, and unique habitat for plants and wildlife.

A total of 33 wetland crossings were identified within the proposed action transmission line ROWs and alternative ROWs. Most are associated with stream channels, ephemeral drainages, or irrigation ditches, and the most extensive wetland crossing are associated with Beaver Creek, the Upper Platte and Beaver Canal, Brush Prairie Ponds, Horse Creek, and South Platte River areas (see Figures 3.7-1a, 3.7-1f, and 3.7-1i). The characteristics of wetlands located within the ROW are summarized in Appendix A, Table A-3.6-1, *Proposed Action Stream and Wetland Crossings* and in Table A-3.6-2, *Stream and Wetland Crossings for Alternatives.* Wetlands and drainages assumed to be jurisdictional (i.e., regulated by the Corps) are noted as Waters of the U.S. (WUS) in the two tables. For ditches and canals where Corps jurisdiction was uncertain, these features are noted with a "WUS?" The Corps will usually take jurisdiction over irrigation ditches or canals if they intercept Waters of the U.S. and also drain back into Waters of the U.S. This was determined to be the case for the Morgan Canal, which is used to fill the Brush Prairie Ponds. The jurisdictional status of most other irrigation ditches and canals was not determined, however, since it was assumed all these irrigation features would be spanned by the transmission line, and there would be no impacts to wetlands or waters of the U.S. within these irrigation features. Isolated wetlands and drainages with no defined bed or bank (no defined channel as noted in the tables) or continuous wetlands are noted as lacking WUS characteristics.

3.7.2 Environmental Impacts and Mitigation Measures

3.7.2.1 Issues and Significance Criteria

Impacts to vegetation would be significant if:

- construction or operation results in a loss of or substantial impact to a CNHP designated Conservation Area;

- construction or operation results in the establishment of noxious weeds that inhibit or reduce agricultural productivity for a landowner.

Impacts to wetlands would be significant if:

- construction resulted in a wetland fill impact of 0.5 acre or greater thereby requiring a Section 404 Individual Permit application to the U.S. Army Corps of Engineers.

Direct impacts to vegetation would occur during construction. Direct impacts would result from the removal of vegetation at transmission structure sites, substation expansion sites, and where new access spur roads to new structure sites require grading within the ROW. Direct impacts would also occur where the removal of the existing 115-kV structures, hardware and conductors result in the disturbance of vegetation within the ROW. Most direct impacts to vegetation would

be short term since areas disturbed during construction would be reclaimed (Table 2.1-3, Standard Practice 3, 4, 5, 6, 7, 8, 9; Table 2.1-4, Measure SOILS-1). Long term direct impacts would occur in locations permanently used for the project facilities (e.g. structure bases, substation sites), and where trees may need to be removed along the ROW due to electrical clearance requirements. Indirect impacts to vegetation would occur if the project resulted in the spread of noxious weeds, or impacted vegetation off-site due to increased runoff and sedimentation or accidental spills into wetlands or undisturbed vegetation. These types of indirect impacts are not anticipated since Western would implement a number of standard practices and project-specific measures to avoid and mitigate these types of effects (Table 2.1-3, Standard Practices 2, 3, 6, 10, 13, 19; Table 2.1-4, Project Measures VEG-1, VEG-2).

There are no construction or operation related permits required for vegetation resources unless there would be fill or discharge impacts to wetlands or other waters of the U.S. With implementation of Project Measure VEG-1, Western would avoid impacts to wetlands, if feasible. If it is determined that an impact to wetlands is unavoidable, Western would apply for a Section 404 permit from the U.S. Army Corps of Engineers. The type of 404 permit needed would depend on the extent of wetland disturbance associated with the entire project. A Nationwide 12 permit would be required for wetland and other waters of the U.S. disturbances of less than 0.5 acre. An Individual Permit would be required for disturbances 0.5 acre or larger.

3.7.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Short term and long term direct impacts to vegetation/habitat types along the proposed rebuild project ROWs are summarized in Table 3.7-2. Short term impacts are direct disturbance effects (such as vegetation removal or crushing) associated with the construction phases of the proposed action and alternatives. Long term impacts are those that remain following revegetation of disturbed sites (i.e. sites where new permanent structures are established).

Table 3.7-2. Short term and Long term Impacts to Vegetation from the Proposed Transmission Line Rebuild

Vegetation/Habitat Types	**Beaver Creek-Hoyt-Erie Rebuild**	
	Short term (acres)	*Long term (acres)*
Agricultural Lands	138.3	0.1
Non-native Grassland	19.1	
Native Prairie	39.7	less than 1 acre
Riparian	some tree removal possible	0
Wetlands/WUS	0	0
Disturbed/ Developed	1.6	less than 1 acre
Total	**198.7 acres**	**less than 3 acres**

Project construction would result in removal and reclamation of existing transmission line structures (595 total) and the construction 428 new structures. Most disturbances associated with structure removal and construction would be short term since all of the old structure sites, the majority of each new structure site, and staging and stringing areas would be reclaimed shortly after construction is completed. Construction would result in a total short term disturbance of 138.3 acres of agricultural lands, 39.7 acres of native prairie, 19.1 acres of non-native grassland, and 1.6 acres of disturbed/developed sites (see Table 3.7-2). However, since the project would be constructed in phases, only a fraction of this amount would be disturbed at any one time. No wetlands would be disturbed since all wetland areas along the ROW are small enough to be

spanned by the minimum required distance between structures (Standard Practice 19, Project Measure VEG-1).

No new access roads would be built to the ROW, but some minor access spur roads within the ROW may be required to new structure sites. Western's standard practices and project measures would preclude the placement of access roads in riparian or wetland vegetation (Table 2.1-3, Standard Practice 19, and Table 2.1-4, Project Measure VEG-1). Access spurs would be constructed in non-sensitive agricultural, non-native grassland or native prairie habitats and would be returned to pre-existing conditions following reclamation.

Once reclamation is complete, long term loss of vegetation associated with transmission structures would be less than 3 acres. Approximately two-thirds of this long term disturbance would be in agricultural land with the remaining one-third in native prairie and non-native grassland habitats.

Cottonwoods and other trees that could impact the safe operation of the transmission line would be removed. Trees growing too close to the energized conductors present a hazard to the safe operation of transmission lines. The line could arc to the tree, if there is not sufficient separation from the conductors, causing a fire or an interruption of electrical service. Riparian/cottonwood woodlands would be cleared where they present a hazard. Construction equipment would avoid wetland vegetation to the extent practicable. (Table 2.1-3, Standard Practice 19).

After completion of construction, all work areas except access trails will be scarified or left in a condition to facilitate natural revegetation, provide for proper drainage, and prevent erosion (Table 2.1-3, Standard Practice 6). Agricultural lands would be returned to conditions similar to preconstruction.

Surface disturbance may indirectly result in the introduction or spread of weeds. Weeds can be introduced or spread from one location to another by equipment, or weeds may opportunistically invade disturbed areas. Western would implement Project Measure VEG-2 (Table 2.1-4) to minimize the introduction and/or spread of weeds: (1) by washing all equipment at a commercial facility prior to the start of construction each year, (2) by avoiding vehicle traffic in known weedy areas, and (3) by rewashing equipment if weeds are encountered prior to moving along the ROW. Western would reclaim all disturbed areas as soon as practical after construction each year and would implement a weed control program (in consultation with private landowners) if the project causes the spread of weeds. With implementation of Project Measure VEG-2, indirect impacts associated with introducing or spreading noxious weeds would be short term and less than significant.

Indirect effects could also result if increases in erosion and/or sedimentation impacted wetlands in the project area. This would be an indirect impact since construction would avoid wetlands, but runoff from disturbed sites could impact nearby wetlands. This risk would likely be highest across the Brush Prairie Ponds SWA where the existing ROW crosses nearly a mile of wetlands and aquatic habitat (when the ponds are filled) intermixed with upland berms. Even though wetlands and ponds would be spanned and there are sufficient upland areas for construction of the new structures, the extent of wetlands and ponds in this area could make it difficult to avoid all direct and indirect impacts to wetlands at the Brush Prairie Ponds SWA. Western would implement Standard Practices 3, 4, 5, 6, 7 and 8 (Table 2.1-3) to avoid or minimize these types of indirect impacts to levels less than significant.

Accidental spills of petroleum products, hydraulic fluids, or antifreeze could also adversely impact wetlands Western would require the construction contractor to implement a plan to respond promptly to spills and to clean up any spills and minimize potential for water pollution. (Table 2.1-3, Standard Practice 10).

Proposed Beaver Creek and Erie Substation Modifications

During construction, the expansion of the Beaver Creek and Erie substations would result in the short term disturbance or loss of agricultural land and native prairie vegetation, as well as previously disturbed and weedy areas. The majority of land would be reclaimed following construction, with the long term or permanent vegetation loss from the substation expansions expected to be approximately 15 acres. The Beaver Creek Substation would permanently impact 10 acres of previously disturbed weedy areas and minor amounts of native prairie. The Erie Substation would permanently impact 5 acres of agricultural land. All peripheral disturbance sites would be reclaimed as soon as practicable following completion of construction (Table 2.1-3, Standard Practice 6).

No wetland impacts or loss of CNHP Conservation Areas would result from the proposed substation expansions. In addition, weed infestations are not likely to affect agricultural productivity with the implementation of Project Measure VEG-2. Therefore, impacts to vegetation and wetland resources would not be significant.

3.7.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Rebuild Alternatives

The short term and long term impacts of the alternatives on vegetation are summarized on Table 3.7-3.

Table 3.7-3. Summary of Short term and Long term Direct Impacts of the Alternatives on Vegetation (acres)

Vegetation / Habitat Types	**Beaver Creek to Brush Prairie Ponds SWA Reroute Alt.**		**Beaver Creek-Big Sandy Reroute Alt.**		**Bijou Creek Crossing Reroute Alt.**	
	Short term	*Long term*	*Short term*	*Long term*	*Short term*	*Long term*
Agricultural Lands	3.8	< 0.1	3.7	< 0.1	10.9	< 0.1
Non-native Grassland	2.4	< 0.1	0.8	< 0.1		
Native Prairie	8.5	< 0.1	5.7	< 0.1		
Riparian					0.1 (some tree removal possible)	< 0.1
Wetlands	0	0	0	0	0	0
Disturbed/ Developed	0.6	< 0.1	0.4			
Total	**15.3**	**< 0.1**	**10.6**	**< 0.1**	**11.0**	**< 0.1**

There would be no direct or indirect impacts on any CNHP conservation areas since none exist within the project areas of the alternatives.

Beaver Creek-Brush Prairie Ponds SWA Reroute

This alternative would replace the portion of the proposed project that passes through the Brush Prairie Ponds SWA. The alternative reroute is 7.1 miles long and would replace 5.6 miles of the proposed Beaver Creek-Hoyt transmission line rebuild segment. The alternative would result in approximately eight additional structures (or less than 0.1 acre) of short term disturbance over the proposed action. Existing 115-kV structures would be removed and their footprints reclaimed. Short term disturbance associated with reclamation of the removed segment and construction of the new reroute (including stringing sites) would total 15.3 acres. This disturbance would be comprised of 3.8 acres of agricultural land, 2.4 acres of non-native grassland, 8.5 acres of native prairie, and 0.6 acre of disturbed/developed sites. The alternative would have the potential for short term indirect impacts to wetlands and aquatic habitat in the SWA during the removal of the existing line and structures. Removal of structures in wetlands areas would result in the short term impacts to vegetation. The long term impacts would be beneficial, however, since the existing transmission line would be removed from the wetlands areas. The only wetlands or riparian habitat located along the Brush Prairie Ponds SWA Reroute are relatively narrow segments of these habitats within the Beaver Creek drainage that can be easily spanned.

No new access roads would be built to the ROW; however, some minor access spur trails or roads may be required to new structure sites. Western's standard practices and project mitigation measures would preclude the placement of access roads in riparian or wetland vegetation (Table 2.1-3, Standard Practice 19, and Table 2.1-4, Project Measure VEG-1). Roads would be constructed in non-sensitive agricultural, non-native grassland or native prairie habitats and would be returned to pre-existing conditions following reclamation.

Once reclamation is complete, long term disturbance associated with the proposed transmission structures would be reduced to less than 0.5 acre (or 50 square feet per structure). Most of this long term disturbance would be in native prairie with an additional minor amount in agricultural land.

Riparian/cottonwood woodlands and wetlands would be spanned and construction equipment would avoid riparian and wetland vegetation, wherever possible. However, cottonwoods and other trees within the ROW that could impact the safe operation of the transmission line would be removed. Overall disturbance to riparian and wetland areas would be negligible. In addition, weed infestations are not likely to affect agricultural productivity with the implementation of Project Measure VEG-2 (Table 2.1-4). Therefore, impacts to vegetation and wetland resources would not be significant.

Beaver Creek-Big Sandy Reroute

This alternative would not replace the proposed project, but would relocate a portion of Beaver Creek-Big Sandy Transmission Line to parallel the Beaver Creek to Brush Prairie Ponds SWA Reroute alternative. The Beaver Creek-Big Sandy Reroute alternative is 4.2 miles long and would relocate 3.4 miles of the existing transmission line. The alternative would result in approximately four additional structures compared to the existing alignment. Existing transmission structures would be removed and their footprints reclaimed. Short term disturbance associated with reclamation of the terminated segment and construction of the new reroute (including stringing sites) would total 10.7 acres. This disturbance would be comprised of 3.7 acres of agricultural land, 0.8 acre of non-native grassland, 5.7 acres of native prairie, and 0.4 acre of disturbed/developed sites. The only wetlands or riparian habitat located along the Beaver Creek-Big Sandy Reroute are relatively narrow segments of these habitats within the Beaver

Creek drainage that can be easily spanned. Other impacts would be similar to those described for the Beaver Creek to Brush Prairie Ponds SWA Reroute.

Once reclamation is complete, long term disturbance associated with the alternative reroute structures would be reduced to approximately 50 square feet per structure. Most of this disturbance would be in native prairie with a minor amount in agricultural land. With this alternative, there would be no impacts to wetlands and weed infestations are not likely to affect agricultural productivity. Impacts to vegetation and wetland resources would not be significant.

Bijou Creek Crossing Reroute

This alternative would replace a portion of the proposed action near Bijou Creek. The Bijou Creek Reroute would be 4.5 miles long and would replace 4.8 miles of the proposed action. The alternative would remove 37 of the existing 115-kV structures and would install 24 new 230-kV structures. Existing structures would be removed and their footprints reclaimed. Short term construction-related disturbance associated with the removal of the 115-kV structures, conductor and hardware and the installation of new 230-kV structures and hardware (including stringing sites) would total 11.1 acres. This disturbance would affect 10.9 acres of agricultural land and 0.1 acre of possible riparian habitat in the Bijou Creek floodplain.

No wetlands are located within the existing and alternative route ROW crossings of Bijou Creek; however, riparian habitat exists along the edges of both sides of the drainage. The existing 115-kV transmission line crosses the Bijou Creek drainage for approximately 1,000-feet. This crossing would be removed and replaced by an approximate 2,500-foot crossing, including adjacent riparian woodlands (see Appendix A, Tables A-3.6-1 and A-3.6-2). Since maximum spans between the 230-kV structures are estimated to be 1,400 feet, it is assumed that at least one structure would need to be constructed within the Bijou Creek drainage, and may impact riparian/cottonwood woodland vegetation. In addition, trees that could interfere with the safe operation of the transmission line would be removed.

No new access roads would be built to the ROW, but some spur access trails or roads may be required to new structure sites. Western's standard practices and project measures would avoid the placement of access roads in riparian or wetland vegetation. (Table 2.1-3, Standard Practice 19, and Table 2.1-4, Measure VEG-1). Roads would be constructed in non-sensitive agricultural, non-native grassland or native prairie habitats and would be returned to pre-existing conditions following reclamation.

Once reclamation is complete, long term vegetation loss associated with the proposed structures would be reduced to only 50 square feet per steel pole structure. The majority of this long term loss would be in agricultural land.

Riparian/cottonwood woodlands and wetlands would be spanned and construction equipment would avoid riparian and wetland vegetation wherever possible. Therefore, disturbance to riparian and wetland areas are expected to be negligible. In addition, weed infestations are not likely to affect agricultural productivity with implementation of Project Measure VEG-2. Impacts to vegetation and wetland resources would not be significant.

No Action Alternative

Under the no action alternative, Western would continue to operate and maintain the existing 115-kV transmission line and substations. There would be no upgrades of the existing

transmission line segments or expansions of existing substations. Long term, increased maintenance of the line could result in increased impacts to vegetation cover. Riparian woodlands would continue to be removed under the existing transmission line if they would interfere with the safe and reliable operation of the transmission line. Impacts would be similar to those already produced by ongoing operation and maintenance of the line.

3.7.2.4 Mitigation Measures

Western would avoid and minimize impacts to vegetation, to the extent practicable and feasible, with Standard Practices 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, and 19 (Table 2.1-3) and Project Measures VEG-1, VEG-2 (Table 2.1-4). No additional measures are required.

Project Measure VEG-1: The contractor will span wetland areas located along the ROW and avoid physical disturbance to wetland vegetation and aquatic habitat. Equipment and vehicles will not cross wetlands along the ROW during construction and operation activities. Existing uplands, bridges, etc. will be used to access the ROW on either side of wetlands.

Project Measure VEG-2: The contractor will minimize the introduction and/or spread of weeds by washing all equipment at a commercial facility prior to the start of construction each year, by avoiding vehicle traffic in known weedy areas, and by rewashing equipment if weeds are encountered. Western or its contractor will reclaim all disturbed areas as soon as practical after construction each year and would implement a weed control program as necessary.

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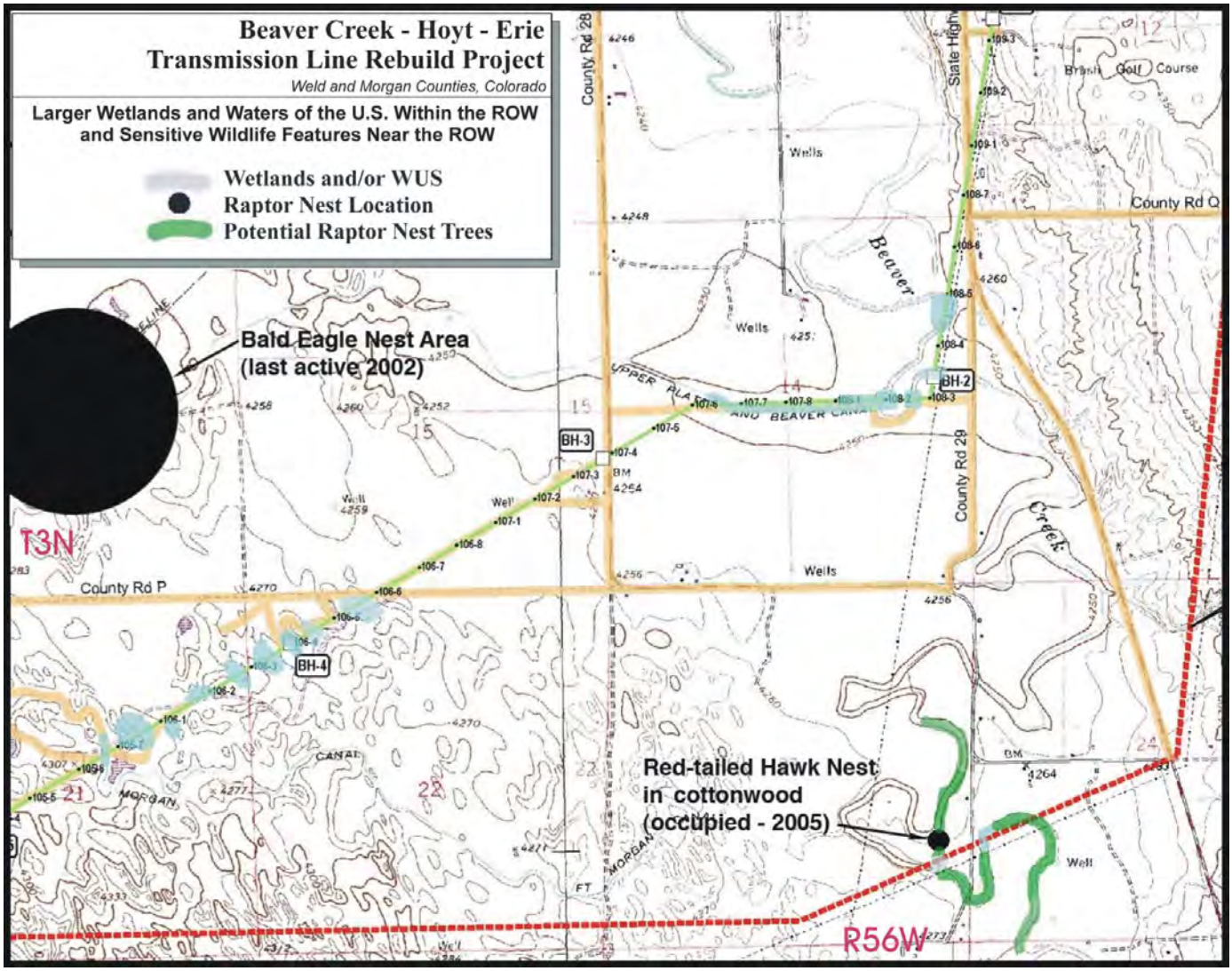

Figure 3.7-1a. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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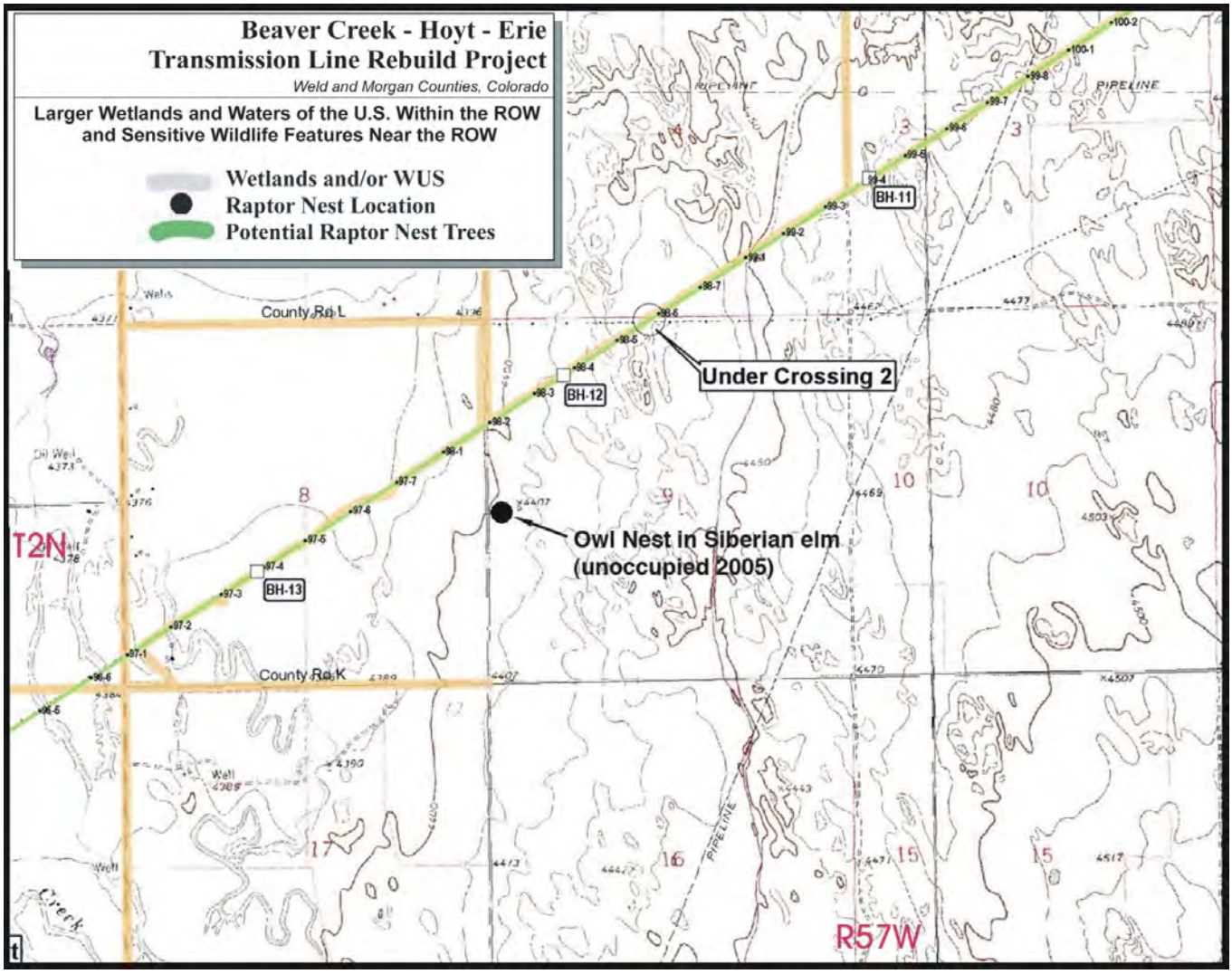

Figure 3.7-1b. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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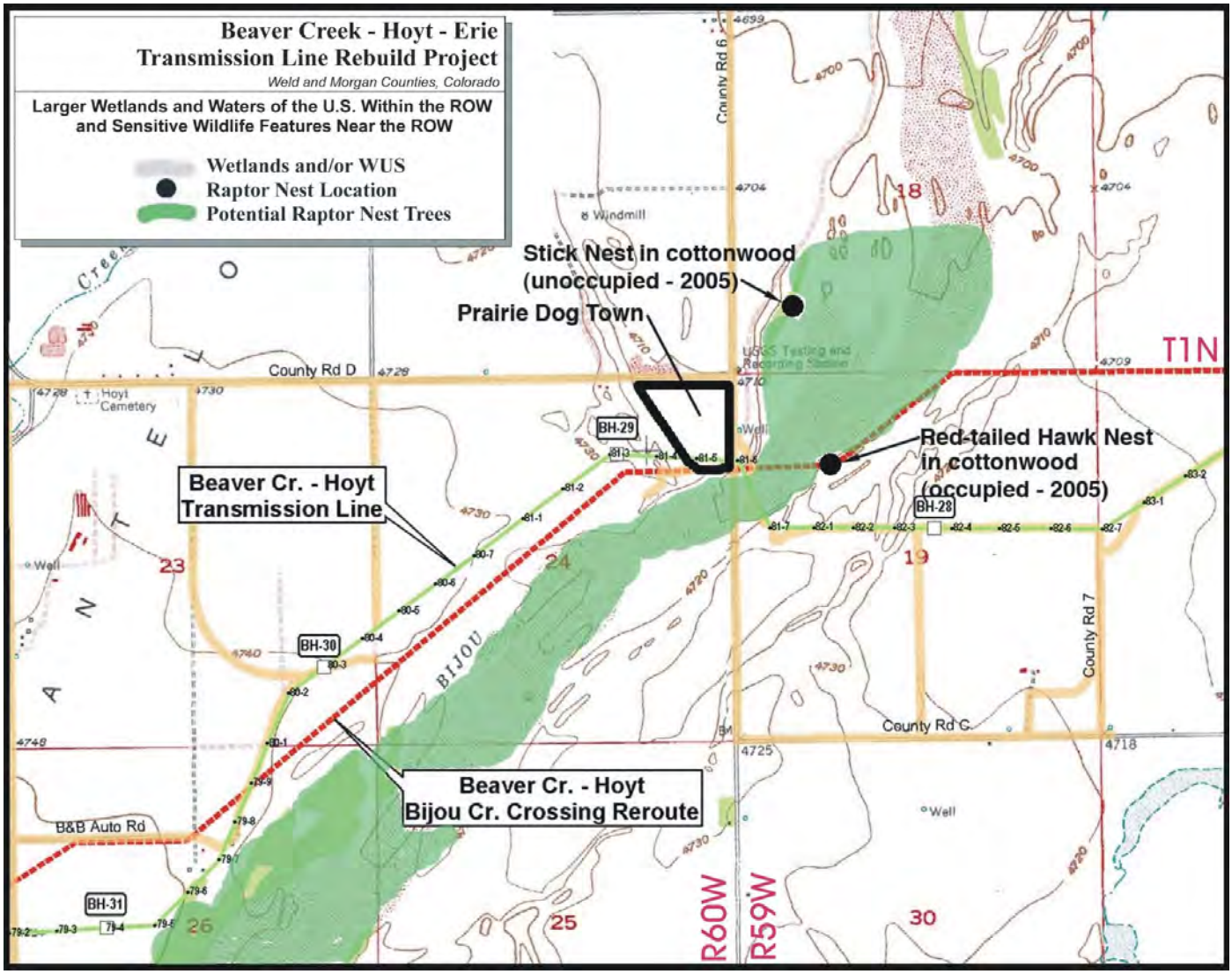

Figure 3.7-1c. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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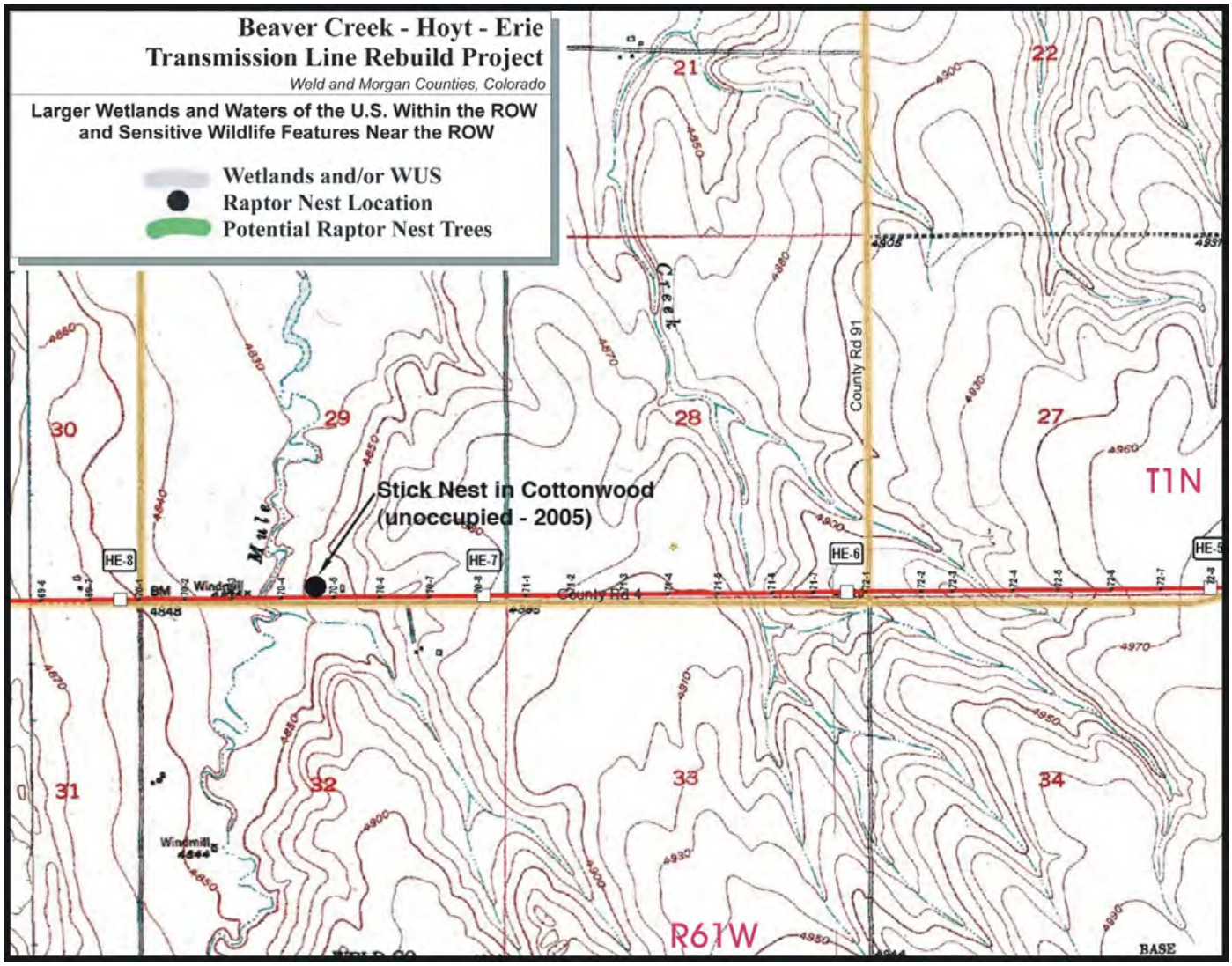

Figure 3.7-1d. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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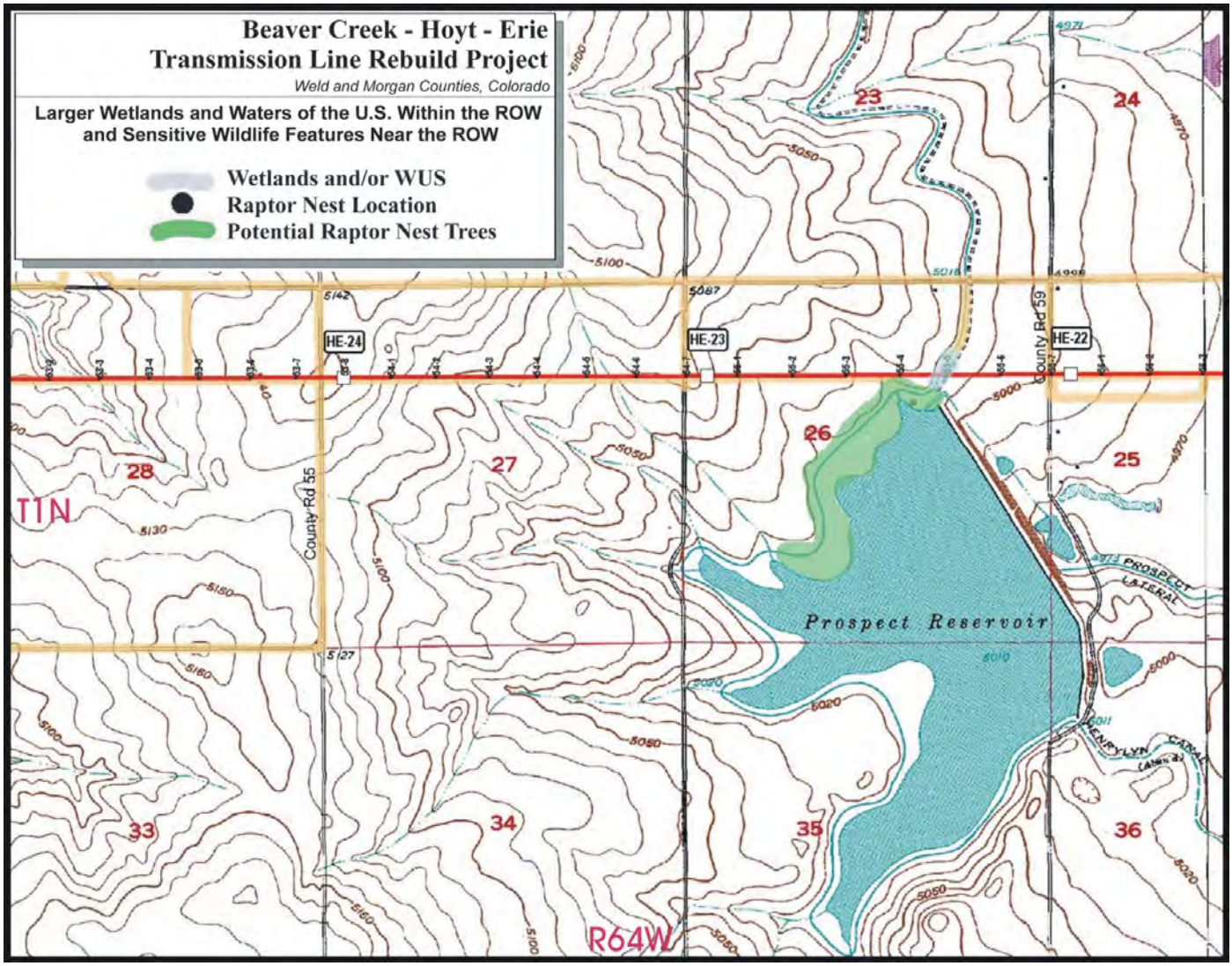

Figure 3.7-1e. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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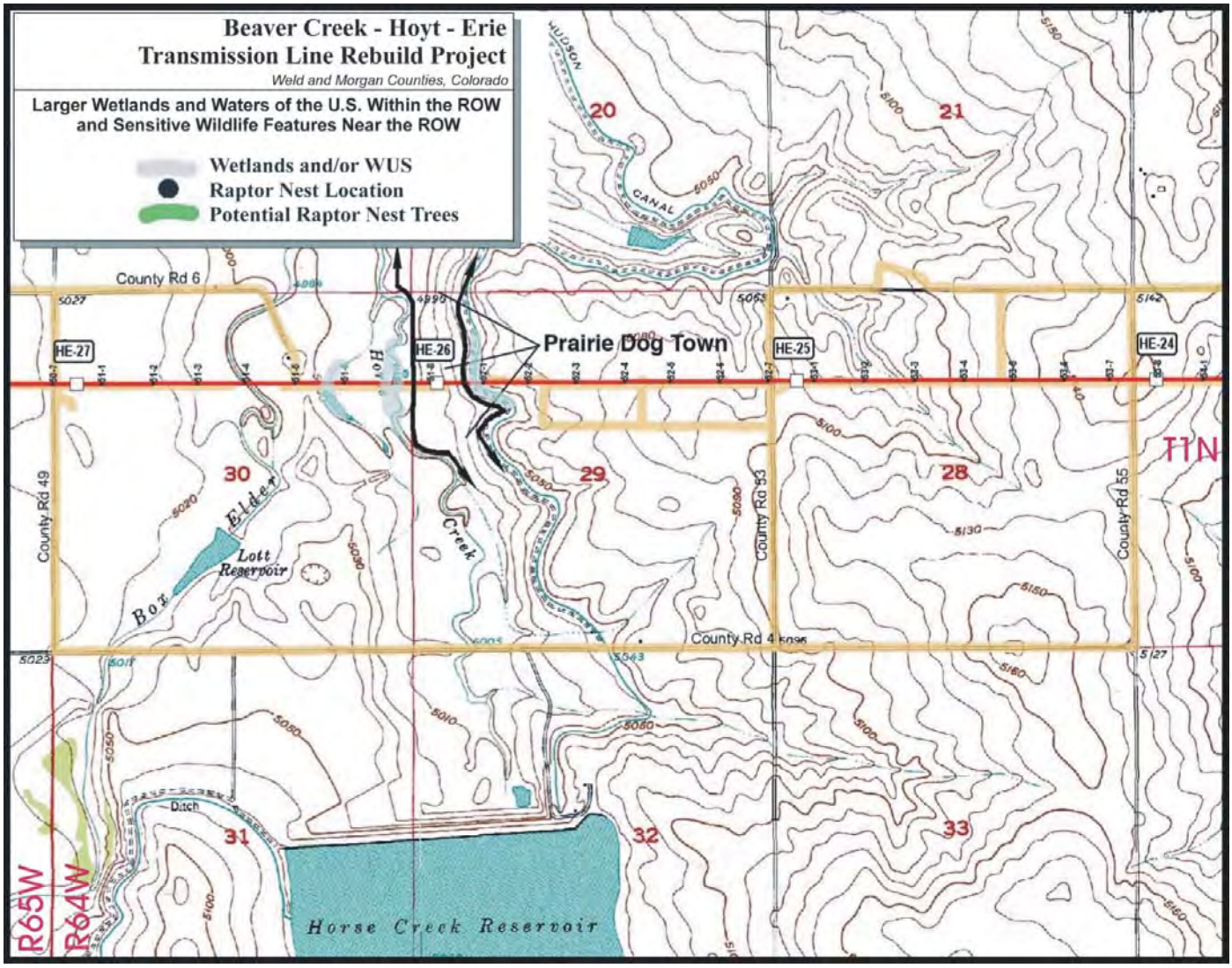

Figure 3.7-1f. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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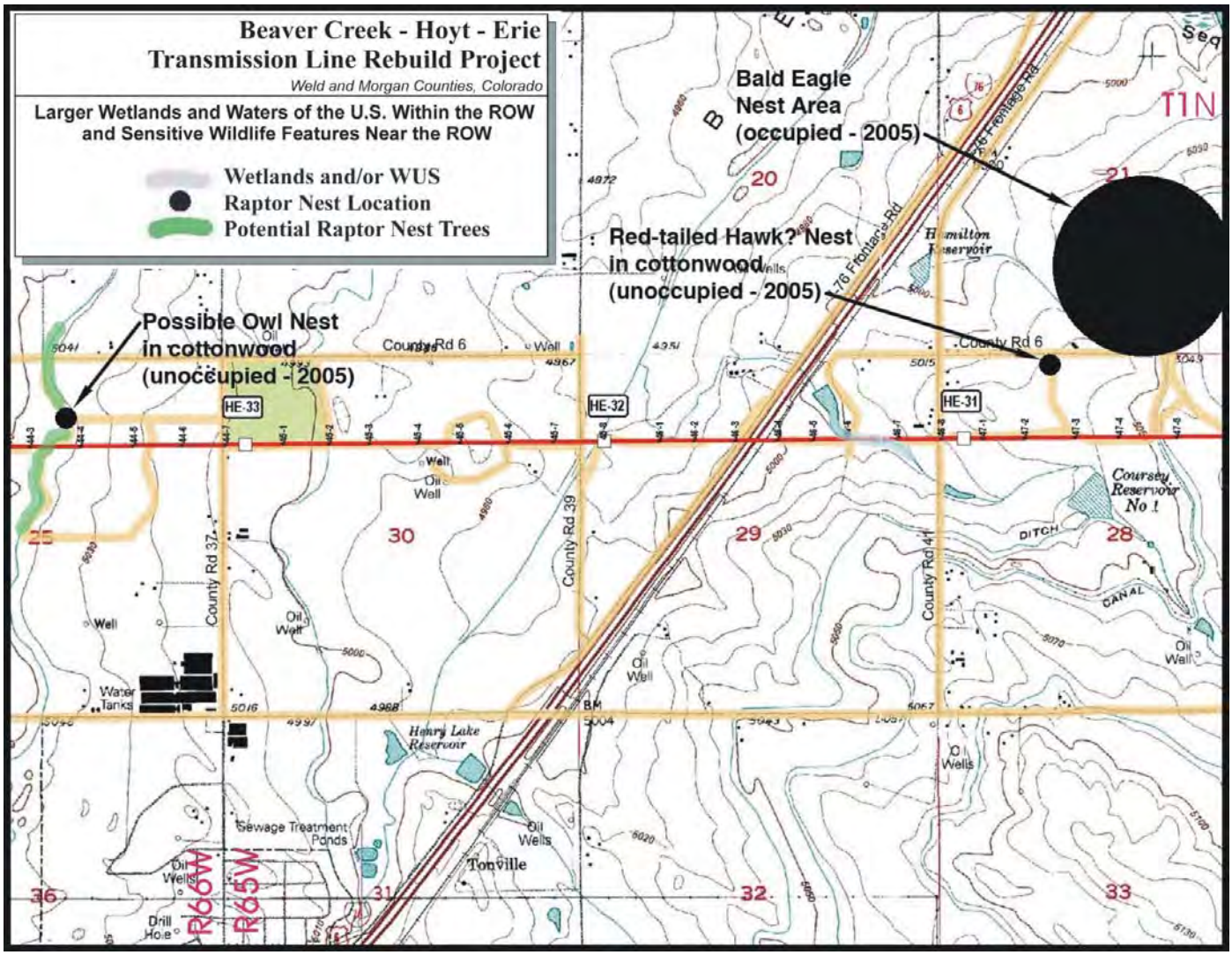

Figure 3.7-1g. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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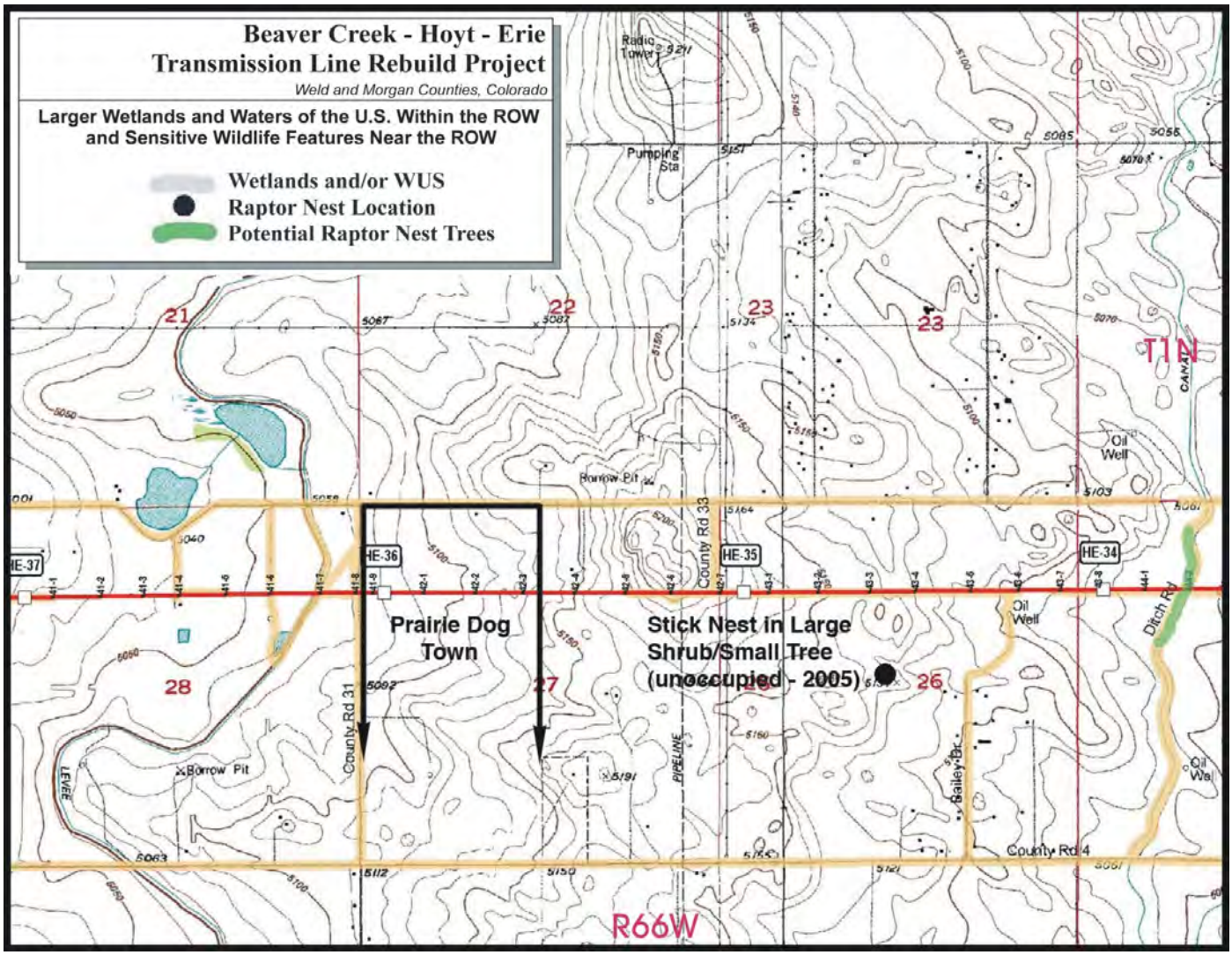

Figure 3.7-1h. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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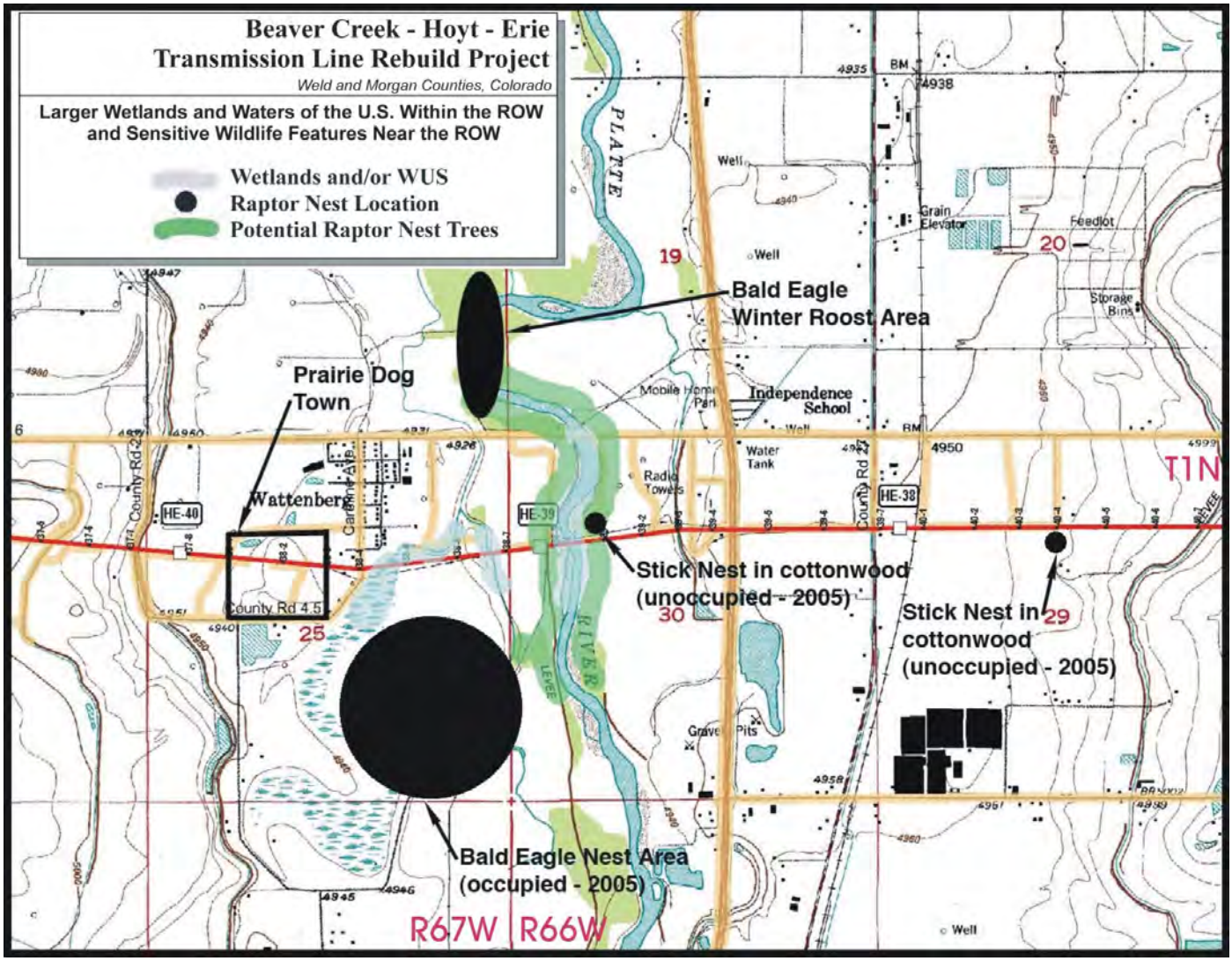

Figure 3.7-1i. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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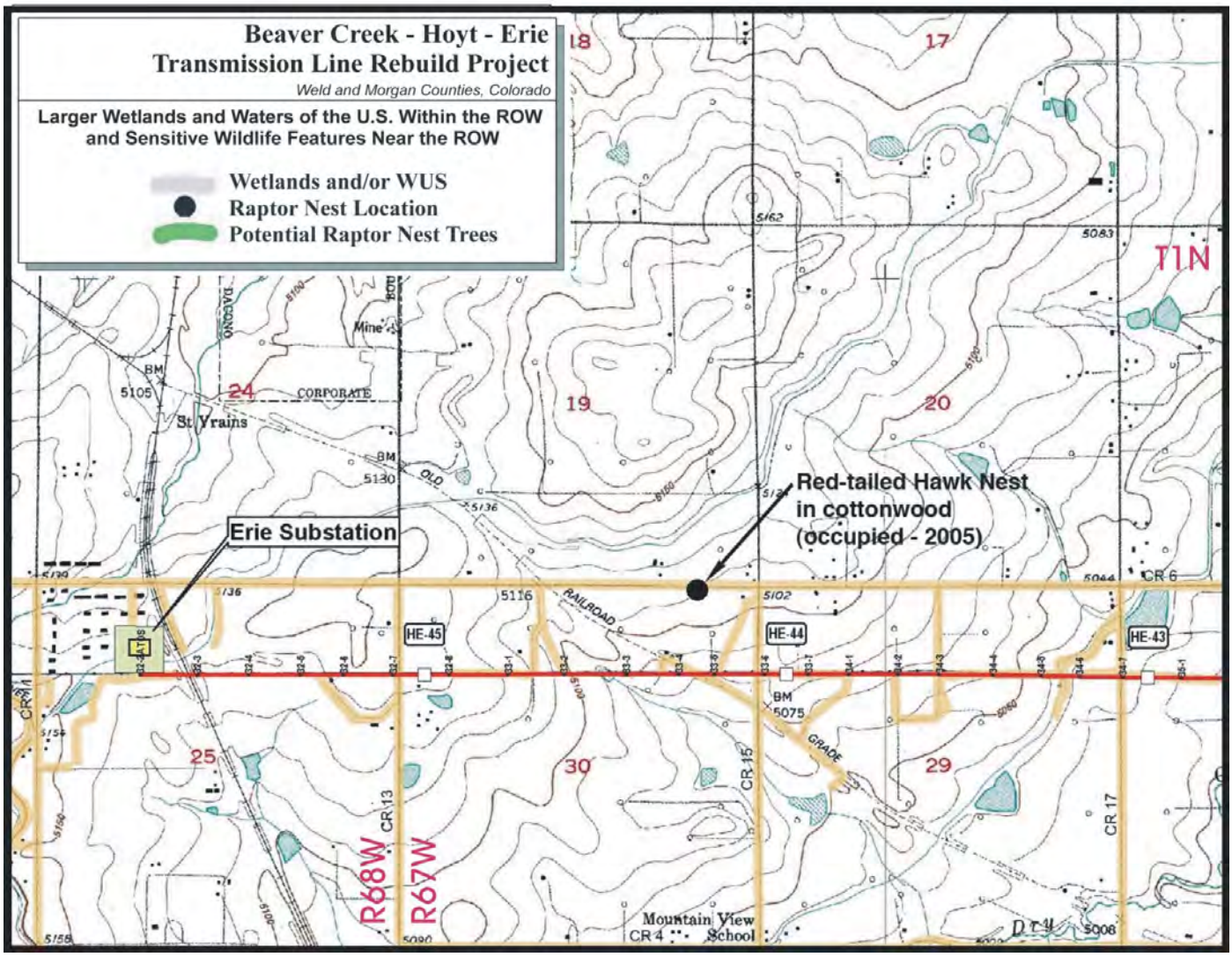

Figure 3.7-1j. Wetlands and Waters of the U.S. and Sensitive Wildlife Features

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3.8 Wildlife

Wildlife species, including big game, other mammals and avian species associated with waterbirds and raptors are described and evaluated in this section. Special status and sensitive species, including species protected under the Endangered Species Act (ESA), are addressed separately in section 3.9. Wildlife protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act are described herein.

The project impact area analyzed for wildlife species and their habitats includes the proposed and alternative transmission line ROWs, access roads, a one-mile corridor buffer along these linear features, the substation expansion sites, and the project construction areas.

3.8.1 Affected Environment

The topography, water resources, and vegetation along the transmission line corridor provide habitat for numerous wildlife species. Much of the existing project area has been altered by agricultural conversion, with native habitats restricted primarily to the Beaver Creek – Hoyt segment of the project area and along existing drainages.

3.8.1.1 Big Game

Three big game species, mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), and pronghorn (*Antilocapra americana*) are relatively common in the project area region. The project area is located within the CDOW's Game Management Unit (GMU) 99. Mule deer occupy all ecosystems in Colorado from grasslands to alpine tundra (Fitzgerald et al., 1994). They are most abundant in shrub land habitats in broken terrain that provide abundant forage and cover. The project area lies entirely within the overall range for mule deer (Colorado Natural Diversity Information Source, CNDIS, mapping, http://www.ndis.nrel.colostate.edu/), indicating they occur in the area year-round.

White-tailed deer inhabit the eastern plains of Colorado but are most common along the bottomlands of the major rivers drainages such as the South Platte, Arkansas, and Republican rivers (Fitzgerald et al., 1994). They are typically associated with riparian woodlands and associated irrigated agricultural lands. They do not inhabit areas of open prairie (Fitzgerald et al., 1994). CNDIS mapping indicates, that near the project area, the white-tailed deer overall range corresponds to the South Platte River drainage and floodplain as well as most of the larger tributaries to the South Platte River.

Pronghorn inhabit most of eastern Colorado, and CNDIS mapping indicates the majority of the ROW is within the pronghorn overall range except in the vicinity of the Beaver Creek substation as well as in the area west of an approximate north-south line through Keenesburg. Pronghorn prefer native grasslands and semi-desert scrublands and are not common in areas converted to agricultural uses.

No portions of the project area are located within mule deer, white-tailed deer, or pronghorn concentration areas, severe winter range, or winter concentration areas.

3.8.1.2 Other Mammals

Based on known ranges and habitat preference, a variety of mammalian predators and small mammal species, including bats, are present in the project area. Most of these species are

relatively widespread and common; and are not likely to be management concerns with respect to the proposed action or other action alternatives development. One exception is the black-tailed prairie dog (*Cynomys ludoviciana*).

The U.S. Fish and Wildlife Service (USFWS) had been petitioned to list the black-tailed prairie dog as threatened or endangered. On February 4, 2000 the USFWS published a notice in the Federal Register that the status of the black-tailed prairie dog warranted its listing, but that higher priority species deserving of more immediate attention precluded the listing of the prairie dog at that time. Since that notice was published, most western states, including Colorado, have updated population and distribution information for the species and have developed habitat and species management plans to address conservation of the black-tailed prairie dog. Colorado's *Conservation Plan for Grassland Species* was finalized in November 2003 (CDOW, 2003). In light of the updated information provided by many western states, the USFWS has removed this species from its list of Candidate species for listing (http://ecos.fws.gov/tess_public/TESSWebpageNonlisted?listings=0&type=C). The black-tailed prairie dog is currently listed by Colorado as a species of *Special Concern* (http://wildlife.state.co.us/).

Black-tailed prairie dogs inhabit grasslands and sparse shrub lands. Their colonies are important to a variety of wildlife, and more than 60 vertebrate species are associated with prairie dog colonies (Campbell and Clark, 1981). These include species such as the burrowing owl (state threatened), mountain plover (state special concern), and black-footed ferret (Federal and state endangered). Black-tailed prairie dogs are also preyed on by a variety of predators including eagles, hawks, badgers, coyotes, and foxes.

Prairie dogs feed on a variety of grasses, forbs, and woody plants. Overgrazing by livestock may favor increases in prairie dog density on favorable sites (Fitzgerald et al. 1994). Because of their potential to damage crops as well as compete with livestock for forage, private landowners often employ eradication methods in agricultural areas. In addition, conversion of native grasslands to agricultural uses, and commercial and residential developments, has reduced available habitat for prairie dogs. As a result, the range and population numbers of prairie dogs have been reduced substantially in the northern Great Plains and Colorado. Recent studies completed by EDAW (2000) for the CDOW indicate there are still nearly 2,600 active prairie dog colonies in eastern Colorado, the largest of which covers more than 4,100 acres.

Prairie dog mapping completed by EDAW (2000) indicates there are no black-tailed prairie dog towns within one mile of the Hoyt-Erie transmission line ROW segment in Weld County. However, the EDAW (2000) mapping does indicate there are prairie dog towns of unknown status within one mile of the Beaver Creek-Hoyt transmission line ROW segment, southeast of Brush as well as two large colonies near the ROW segment a few miles northeast of the Hoyt Substation. These towns/colonies are well outside of the project impact area, and project construction would not have any direct or indirect effects on these towns/colonies. Cedar Creek field surveys located two small and two relatively large black-tailed prairie dog towns within the transmission line ROWs. One small town is located between structures 81-4 and 81-6 on the Beaver Creek-Hoyt transmission line segment, near the Bijou Creek crossing and milepost BH-29 (see Figure 3.7-1c) and occupies approximately 26 acres. The other three towns are located on the Hoyt-Erie transmission line segment between structures 51-7 and 52-1 near milepost HE-26, between structures 41-8 and 42-4 near milepost HE-36, and between structures 38-1 and 38-3 near milepost HE-40 (see Figures 3.7-1f, 3.7-1h, 3.7-1i). The town depicted on Figure 3.7i occupies approximately 40 acres while the other two towns exceed 80 acres in size.

3.8.1.3 Waterbirds

Waterbirds include waterfowl, shorebirds, and other wading birds typically associated with wetlands and bodies of surface water. The project area is located within the Central Flyway for waterfowl. Although waterbird habitat is limited within the project area, wet meadows, farm ponds, wetlands, and streams serve as resting and stopover sites for migratory waterbirds as well as foraging and breeding habitat for summer residents. The Brush Prairie Ponds SWA represents the most important waterbird habitat within the project area. The nearby South Platte River corridor receives considerable waterbird use year-round and the Brush Prairie Ponds SWA attracts birds from the South Platte River to the north and from the power plant cooling ponds to west when the SWA ponds contain water (Conger, pers. comm. and Bay, pers. comm., 2005).

Several species of wading/shore birds and waterfowl may occur along the rivers and creeks and around small perennial ponds along the ROW project area. Wading/shore birds may include great blue heron (*Ardea herodias*), black-crowned night heron (*Nycticorax nycticorax*), American white pelican (*Pelecanus erythrorhynchos*), killdeer (*Charadrius vociferous*), American avocet (*Recurvirostra americana*), and spotted sandpiper (*Actitis macularia*). Waterfowl species probably occurring along the line include pied-billed grebe (*Podilymbs podiceps*), American coot (*Fulica americana*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), northern pintail (*Anas acuta*), blue-winged teal (*Anas discors*), northern shoveler (*Anas clypeata*), gadwall (*Anas strepera*), American widgeon (*Anas americana*), and ruddy duck (*Oxyura jamaicensis*). Any of these species may nest in suitable habitat along the corridor (Kingery and Dillon, 1988).

The project area is within the breeding range of long-billed curlew (*Numenius americanus*), a Bird of Conservation Concern (see Section 3.8.1.5). This neotropical migrant winters along beaches and mudflats on the California coast and as far south as Honduras and Costa Rica (Ehrlich et al., 1988). Long-billed curlews typically nest in shortgrass prairie, rangeland and meadows usually near water but will also occasionally nest in agricultural land and fallow fields near water (Andrews and Righter, 1992). Grasslands near the ponds in the Brush Prairie Ponds SWA represent the only possible breeding habitat for long-billed curlew within the project area.

3.8.1.4 Raptors

Raptors are protected under State and Federal laws including the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Raptor use of the project area is restricted primarily to open-country associated species. Raptor species potentially present as year-long residents or summer breeders within the project area include golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsonii*), American kestrel (*Falco sparverius*), burrowing owl (*Athene cunicularia*), great-horned owl (*Bubo virginianus*), and short-eared owl (*Asio flammeus*) (Kingery and Dillon, 1988). Burrowing owl is State listed as threatened and bald eagle is State and Federal listed as endangered. These species are discussed in Section 3.9, *Special Status and Sensitive Species.*

In the project area, golden eagle, red-tailed hawk, Swainson's hawk, and great horned owl typically nest in relatively large trees with open crowns. Great horned owls do not build their own nests and often occupy old nests of eagles, hawks, ravens, and crows in larger trees. Turkey vultures nest on cliff ledges, in hollows in snags or stumps, or in caves. Because of a lack of suitable nesting habitat, turkey vultures are not expected to breed in the project area but may be present as summer visitors. All of these species prefer primarily open shrublands and grassland

areas for hunting. Suitable nesting habitat for these species is provided primarily by large cottonwood trees along drainages and possibly at some tree stands associated with farmstead sites. Northern harriers and short-eared owls nest on the ground or in low shrubs in pockets of dense shrub and grass cover, often near wetlands. Other preferred habitats include shortgrass prairie, agricultural areas, and marshes (Andrews and Righter, 1992; Ehrlich et al., 1988).

Raptor nests found within one mile of the ROW are listed in Table 3.8-1 and shown on Figures 3.7-1a through 3.7-d and 3.7-1g through 3.7-1j. Species with occupied nests located near the ROW were red-tailed hawk and bald eagle.

Table 3.8-1. Raptor Nest Locations Within 1 mile of the Proposed Action and Alternatives

Species	Location	Comments
Red-tailed hawk	Beaver Creek to Brush Prairie Ponds SWA Reroute Alt.; 250 feet north of ROW ~ 0.7 mile WSW of ROW crossing of SH 71	Stick nest in cottonwood on Beaver Creek drainage; occupied in 2005; female in incubation posture on nest
Bald Eagle	Between BH-4 and BH-5; within 1 mile of north side of ROW	Location and nest information sensitive; CDOW indicates nest was last active in 2002
Owl nest	Between mileposts BH-12 and BH-13 and pole numbers 98-1 and 98-2; ~ 0.2 mile south of ROW	Stick nest in Siberian elm; owl pellets found below nest; unoccupied in 2005
Red-tailed hawk	Bijou Creek-Bijou Creek Crossing Reroute; NE ¼ of NW ¼, Section 19, T1N, R59W	Stick nest in cottonwood; occupied in 2005; female in incubation posture on nest.
Stick Nest (raptor species unknown)	Bijou Creek-Bijou Creek Crossing Reroute; SW ¼ of SW ¼, Section 18, T1N, R59W	Stick nest in decadent cottonwood; nest in poor condition; unoccupied in 2005
Stick Nest (possible Swainson's hawk or great horned owl	Between HE-7 and HE-8 and pole numbers 70-5 and 70-4; within ROW	Stick nest in cottonwood; unoccupied on March 21, 2005
Bald Eagle	Between HE-30 and HE-31; within 0.5 mile of north side of ROW	Location and nest information sensitive; nest occupied in 2005
Stick Nest (probable Red-tailed hawk)	Between HE-30 and HE-31 and pole numbers 47-3 and 47-2; ~ 0.2 mile north of ROW	Stick nest in cottonwood; unoccupied in 2005
Owl nest (possible)	Between mileposts HE-33 and HE-34 and pole numbers 44-3 and 44-4; just north of ROW	Stick nest in cottonwood (unoccupied in 2005)
Stick Nest (possible owl or Swainson's hawk)	Between HE-34 and HE-35 and pole numbers 43-4 and 43-3; ~ 0.2 mile north of ROW	Stick nest in large shrub/small tree; unoccupied on March 22, 2005
Stick Nest (possible Red-tailed hawk)	Between HE-37 and HE-38 and pole numbers 40-4 and 40-3; ~ 250 feet south of ROW	Stick nest in cottonwood in cluster of trees near residences; unoccupied in 2005
Stick Nest (raptor species unknown)	Between HE-38 and HE-39 and pole numbers 39-1 and 38-9; ~ 250 feet north of ROW	Stick nest in cottonwood adjacent to east side of South Platte River; unoccupied in 2005
Bald eagle	Between HE-39 and HE-40; within 0.5 mile of south side of ROW	Location and nest information sensitive; nest occupied in 2005
Red-tailed hawk	Between HE-44 and HE-45 and pole numbers 33-5 and 33-4; ~ 0.2 mile north of ROW	Stick nest in cottonwood adjacent to south side of Weld County Road No. 6; occupied in 2005

3.8.1.5 Other Birds

A number of songbird and other bird species may also occur within the project area, although songbird diversity is restricted by relatively low vegetation species diversity and structure. Most are open-country species associated with grassland and agricultural habitats, and most songbirds migrate to and from the area and occur only as summer residents. Yearlong residents and breeders include horned lark (*Eremophila alpestris*), American crow (*Corvus brachyrhynchos*), black-billed magpie (*Pica pica*), American robin (*Turdus migratorius*), and western meadowlark (*Sturnella neglecta*).

Summer breeders include common nighthawk (*Chordeiles minor*), vesper sparrow (*Pooecetes gramineus*), western kingbird (*Tyrannus verticalis*), barn swallow (*Hirundo rustica*), song sparrow (*Melospiza melodia*), red-winged blackbird (*Aeglaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), and common grackle (*Quiscalus quiscula*) (Kingery and Dillon, 1988).

Many of the summer residents are Neotropical migrants that winter in Central and South America. The Migratory Bird Treaty Act (MBTA) provides Federal legal protection for all migratory bird species listed at 50 CFR 10.13. The USFWS places the highest management priority on Birds of Conservation Concern (BCC) identified in USFWS (2002). The BCC list was developed as a result of a 1988 amendment to the Fish and Wildlife Conservation Act. This Act mandated that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The goal of the BCC list is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions, and that these species would be consulted on in accordance with EO 13136, Responsibilities of Federal Agencies to Protect Migratory Birds (USFWS 2002).

The listings of BCC for the Shortgrass Prairie (USFWS 2002) and habitats and ranges of these species were reviewed to create a list of BCC potentially occurring in habitats supported within the project area. Birds on this list that are potential breeders in the project area include northern harrier, long-billed curlew, burrowing owl, Lewis's woodpecker (*Melanerpes lewis*), Cassin's sparrow (*Aimophila cassinii*), and lark bunting (*Calamospiza melanocory*). The remainder of the other species on the BCC list for shortgrass prairie have ranges outside of the project area or would occur only as occasional migrants in the area during spring and fall migration. Burrowing owl and northern harrier are discussed in Section 3.8.1.4. Long-billed curlew is discussed in Section 3.8.1.3.

Cassin's sparrow and lark bunting are migrants that winter in the southwestern United States and farther south into Mexico. These birds breed in grassland and prairie habitats of the Northern Great Plains (Ehrlich et al., 1988). Lewis's woodpecker is a year-round resident that inhabits open woodlands (often burned or logged), riparian areas, and orchard edges (Ehrlich et al., 1988). None of these species are likely to be common within the project area.

3.8.1.6 Amphibians and Reptiles

No amphibian or reptiles were identified as an issue or species of concern during the scoping process for the proposed project, and these species groups are not addressed in this analysis.

3.8.2 Environmental Impacts and Mitigation Measures

3.8.2.1 Issues and Significance Criteria

Impacts to wildlife resources would be considered significant if project construction and operation results in:

- a long term decrease in economically or ecologically important wildlife populations, or
- a population trend warranting a species listing as Federal threatened or endangered

Direct, short term impacts to wildlife would include temporary losses of native habitats, including native prairie, non-native grasslands and riparian habitats during project construction; minor reductions in small mammal and ground nesting songbirds, if species are disturbed during the breeding season; and construction-related losses of prairie dog burrows and possible minor reductions in prairie dog populations. Long term impacts would include the permanent loss of minor habitat amounts for the transmission structures and substation expansion sites, as well as the long term potential for waterbird and raptor collisions. These long term impacts to avian species would be similar to the no action alternative, and any on-going effects from Western's Beaver Creek-Hoyt and Hoyt-Erie 115-kV transmission lines.

There are no construction or operation related permits required for wildlife resources unless there would be the need for the removal, or "take," of a raptor nest. Western or its contractor would conduct a raptor nest survey each year prior to construction and would implement measures to prevent the project from disrupting occupied nests during the breeding season (Project Measure WILDLIFE-1, Table 2.1-4). With implementation of this measure, it is unlikely any take of a raptor nest would occur. If it is determined that the take of a raptor nest is unavoidable, Western would need to apply for an "Incidental Take" permit from the U.S. Fish and Wildlife Service.

3.8.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Big Game

Direct impacts to big game could include mortality due to collisions with vehicles; however, this type of impact would occur rarely, if at all, and thus is expected to be minimal. Indirect impacts to big game would include loss of 198.7 acres of habitat during construction and temporary displacement from adjacent habitats due to human activity. Long term impacts would be relatively minor and would occur in agricultural land, native prairie, and disturbed/developed habitats (see Table 3.7-1).

Other Mammals

Project construction could result in direct mortality of small, less mobile mammals within the corridor. Small mammals would be more subject to mortality from construction than big game, but impacts would be minor because overall disturbance would be small and of short duration. Impacts could include indirect displacements as well as direct, temporary loss of habitat. Many of these species have high reproductive potential and are common in surrounding habitats. Any population losses would be restored within one or two reproductive seasons (Western, 1991). Construction-related impacts to other mammals would be of short duration. Operational impacts

would be negligible since there would be less long term loss of habitat with the rebuild than that which currently exists with the existing ROW and structures.

One area of concern is the potential for impacts from structure construction within occupied black-tailed prairie dog towns. Structures at the town near milepost BH 29 would be on the edge of the town so impacts to this town would be minimal. Prairie dog towns near mileposts HE 26, HE 36, and HE 40 would require the construction of one or more structures within the boundaries of the prairie dog towns. Short term construction disturbance and long term disturbance for permanent structures for each town would be as follows.

- Figure 3.7-1c town: 0.3 acre short term; 25 square feet long term
- Figure 3.7-1f town: 0.3 acre short term; 25 square feet long term
- Figure 3.7-1h town: 1.0 acre short term; 100 square feet long term
- Figure 3.7-1i town: 0.8 acre short term; 75 square feet long term

In addition to these direct habitat losses, overland travel by construction equipment is likely to crush or cave-in some burrows and may result in a few losses of prairie dogs.

It is unknown how many burrows or prairie dogs might be actually impacted by the short term and long term habitat losses. It may not be feasible to try and avoid burrows during construction since the construction footprint would likely always encompass at least a few burrows based on the typical burrow spacing of black-tailed prairie dogs. However, minor modifications in structure placement could minimize the number of burrows impacted.

Overall, direct losses of prairie dogs would be relatively minor in relation to the size of the towns, and due to their high reproductive potential, prairie dogs would quickly expand back into reclaimed areas once construction activities are completed.

Raptors

Existing raptor nests and potential nesting habitat have been identified along the Beaver Creek-Hoyt-Erie transmission line (see Section 3.8.1.4 and Figures 3.7-1a through 3.7-1j). If transmission line construction occurs adjacent to a known or newly occupied raptor nest during the breeding season, it is possible that individual production could be lost for that year, and this would constitute an adverse impact as well as a violation of the Migratory Bird Treaty Act. In order to avoid or minimize impacts to raptors, Western would conduct raptor surveys prior to construction and implement appropriate mitigation measures to preclude disturbance of raptor nests (see Table 2.1-4, Project Measure WILDLIFE-1). With implementation of this measure, construction-related impacts are not likely. During operation, raptors may be susceptible to power line strikes (Olendorff and Lehman, 1986; Thompson, 1978). Collisions are expected to be rare events, so impacts from collisions would be minor but would persist for the life of the transmission line. Western would design and construct the transmission line in conformance with *Suggested Practices for Protection of Raptors on Powerlines* (Avian Power Line Interaction Committee, 1994) to eliminate the potential for raptor electrocution (Standard Practice 20, Table 2.1-3).

Waterbirds and Other Birds

Impacts to waterbirds and other avian species could occur from mortality associated with collisions with transmission lines. Collision potential would be a long-term effect, and is

dependent upon variables such as habitat type, line orientation to migratory flyways and foraging flight patterns, numbers of migratory and resident bird species, species composition and familiarity with the area, visibility, types of disturbance, and line design (Beaulaurier et al., 1982; Anderson, 1978). Since the proposed action is a rebuild of an existing transmission line that is already part of the landscape, the proposed project would not pose risks to birds above and beyond current conditions. Some mortality is likely to occur but is not expected to adversely impact bird populations. The highest potential for waterbird collisions is currently where the existing 115-kV transmission line is in proximity to the wetlands of the Brush Prairie Ponds SWA. Larry Conger, Colorado Division of Wildlife (pers. com., 2005) indicated that collisions with the existing 115-kV transmission line near the SWA have not been a big problem, although some collision mortalities have occurred (Bay, pers. comm., 2005). Consequently, long-term impacts associated with collision potential are considered less than significant.

Ground-disturbing activities during the nesting season could result in the inadvertent destruction of nests, but since disturbance would be small relative to the amount of potential nesting habitat, the potential for adverse impacts would be minor. In addition, impacts to BCC species would be unlikely because of a lack of suitable habitat for these species within the ROW. Western would minimize impacts to migratory birds by avoiding construction in the SWA during the breeding season, from April through June (Table 2.1-4, Project Measure WILDLIFE-2). Western would also avoid construction activities during the waterfowl hunting season (September through January), per CDOW recommendations, to preclude conflicts with hunting use in the SWA (Table 2.1-4, Project Measure WILDLIFE-3). In summary, the proposed transmission line rebuild would not result in a long term decrease in economically or ecologically important wildlife populations, or result in a population trend for any species that would require its listing as Federal threatened or endangered.

Proposed Beaver Creek and Erie Substation Modifications

The general types of impacts on wildlife, resulting from the expansion of the Beaver Creek and Erie Substation expansions, would be similar to those described for the proposed transmission line. Short term disturbances would result during project construction, and were assessed based on a potential 31.2 acre disturbance area at the Beaver Creek Substation site, and 9.5 acre disturbance area at the Erie Substation site. Impacts to black-tailed prairie dogs, nesting raptors, and waterbirds would not occur with the substation modifications since suitable habitat for these wildlife species is lacking in the proposed expansion areas. The proposed substation expansions would not result in a long term decrease in economically or ecologically important wildlife populations, or result in a population trend for any species that would require its listing as Federal threatened or endangered.

Long term impacts at the Beaver Creek Substation expansion site would consist of 10 acres of habitat loss. Most of this area is previously disturbed weedy areas, with minor amounts of native prairie present. Consequently, the 10 acres of loss habitat would have minimal effect on resident wildlife populations. There would be a relatively minor loss of habitat for small mammal and songbird species associated with weedy/disturbed and grassland habitats.

Long term disturbance associated with the Erie Substation would consist of 5 acres, all in existing agricultural lands. Impacts to wildlife would be minor to nonexistent since all impacts would occur within cultivated land.

3.8.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute

This alternative would relocate a portion of the proposed 230-kV transmission line along the southern edge of the Brush Prairie Ponds SWA, and would remove the existing 115-kV transmission line that currently passes through the center of the SWA. Overall, this alternative would minimize the existing risk of waterbird collisions with the 115-kV transmission line since most birds flying into the Brush Prairie Ponds SWA approach from the South Platte River to the north and the power plant cooling ponds to the west (Conger, pers. comm., 2005; Bay, pers. comm., 2005). The reroute would place the proposed 230-kV transmission line to the east and south of the SWA and out of the flight path of birds coming into the SWA from the north and west. With implementation of CDOW timing recommendation (Project Measures WILDLIFE-2 and WILDLIFE-3) for the decommissioning of the existing transmission structures in the SWA, removal and reclamation activities should not impact nesting waterbirds or conflict with the waterfowl hunting season.

This reroute alternative would have no affect on black-tailed prairie dogs since no prairie dog towns were located along this part of the ROW. One existing red-tailed hawk nest and potential nesting habitat for other raptors have been identified in the Beaver Creek drainage near the reroute ROW (see Figure 3.7-1a). If transmission line construction occurs adjacent to a known or newly occupied raptor nest during the breeding season, it is possible that individual production could be lost for that year, and this would constitute an adverse impact as well as a violation of the Migratory Bird Treaty Act. Raptor surveys would be implemented prior to construction and appropriate mitigation measures would implemented to preclude disturbance of raptor nests. Construction-related impacts are therefore not likely (See Table 2.1-4, Measure WILDLIFE-1).

This reroute alternative would not result in a long term decrease in economically or ecologically important wildlife populations, or result in a population trend for any species that would require its listing as Federal threatened or endangered. No significant impacts would therefore occur.

Beaver Creek-Big Sandy Reroute

The Beaver Creek-Big Sandy Reroute Alternative would parallel a portion of the Beaver Creek to Brush Prairie Ponds SWA reroute, for 4.2 miles south of the Beaver Creek Substation. Since this alternative would only be implemented in conjunction with the Brush Prairie Ponds SWA Alternative, the potential impacts to waterfowl, raptors, and black-tailed prairie dog would be the same as those described above.

Bijou Creek Crossing Reroute

From a wildlife perspective, this reroute alternative would have similar wildlife impacts as the proposed action, except for the following two differences. First the reroute would shift the location of the proposed 230-kV transmission line south of the southern edge of an existing black-tailed prairie dog town near milepost BH 29, and potential impacts to this town would be eliminated. Second, the reroute alternative would place the new 230-kV transmission line ROW in very close proximity to a red-tailed hawk nest that was occupied in 2005 (see Figure 3.7-1c); and would cross a wider expanse of the Bijou Creek drainage and associated riparian/cottonwood woodland habitat. Western would avoid disturbance of riparian/cottonwood woodland, to the

extent feasible, except where safety and operational concerns require tree trimming or removal (Standard Practice 19, Table 2.1-3). Western would also avoid disturbance of raptor nests (Table 2.1-4, Measure WILDLIFE-1), consequently, construction-related impacts to riparian/cottonwood woodland habitat and nesting raptors are not likely.

This alternative would not result in a long term decrease in economically or ecologically important wildlife populations, or result in a population trend for any species that would require its listing as Federal threatened or endangered.

No Action Alternative

Under the no action alternative, there would be no upgrades of the existing line segments or expansions of existing substations, and there would be no associated short or long term direct impacts or indirect effects to wildlife resources. Western would continue to operate and maintain the existing 115 kV line, and the crossing of the Brush Prairie Ponds SWA would remain in place within the SWA boundaries. Consequently, there would be no change in long term wildlife impacts, including the risk for waterbird/powerline strikes along this portion of the line.

3.8.2.4 Mitigation Measures

Western would avoid and minimize potential wildlife impacts through implementation of several standard practices and project measures. Potential impacts to raptors would be minimized through Standard Practice 20 (Table 2.1-3), which ensures the project design would eliminate the potential for raptor electrocution; and Project Measure WILDLIFE-1 (Table 2.1-4), which would entail conducting pre-construction surveys and avoiding disturbances to active raptor nests during the breeding season. Western would also implement Project Measures WILDLIFE-2 and WILDLIFE 3 (Table 2.1-4) to minimize impacts to wildlife near the Brush Prairie Ponds SWA. With implementation of these measures, no additional mitigation is necessary to avoid or minimize wildlife effects.

Project Measure WILDLIFE-1. Western or its contractor will conduct a raptor nest inventory each year prior to construction and will implement mitigation (avoidance, screening, and timing of construction) to prevent the project from disrupting any occupied nests during the breeding season as per CDOW recommended buffer zones and seasonal restrictions.

Project Measure WILDLIFE-2. Ground-clearing activities will not occur from April through June, in the Brush Prairie Ponds SWA, per CDOW recommendation. Construction restrictions will lessen the potential for inadvertent loss of migratory bird nests during the avian breeding season.

Project Measure WILDLIFE-3. No construction activities will occur in the Brush Prairie Ponds SWA during the waterfowl hunting season (September through January 31) to preclude conflicts with hunting use of the SWA, per CDOW recommendation.

3.9 Special Status and Sensitive Species

3.9.1 Affected Environment

Special status and sensitive species include listed and candidate species and their critical habitat protected under the Endangered Species Act of 1973, as amended (ESA). State-listed species and species of concern listed with the Colorado Heritage Program are also addressed in this section. The project impact area for special status and sensitive species includes the proposed action and alternative transmission line ROWs, access roads, substation expansion sites and construction areas. The regional setting and surrounding areas of the project facilities and activities are also considered in this assessment.

3.9.1.1 Threatened, Endangered, Proposed, and Candidate Species

The ESA protects plants and animals listed as threatened, endangered, proposed, and candidate species and their critical habitats. The U.S. Fish and Wildlife Service (USFWS) provided a list of threatened, endangered, proposed, and candidate species potentially present in Morgan and Weld counties in its August 26, 2004, and March 10, 2005 letters on the proposed action (USFWS, 2005). The USFWS also provided a follow-up letter dated August 17, 2005, regarding survey issues for the black-footed ferret. The CNDIS (http://www.ndis.nrel.colostate.edu/) was also accessed to obtain listings of state listed threatened and endangered species by county. Finally, the Colorado Natural Heritage Program (CNHP 2005) was queried for any records of threatened, endangered, and other species of concern along the ROW corridor. Table 3.9-1 provides a summary of the results of these listings as well as an initial level of screening to determine which species would be carried forward in this EA document.

Black-footed Ferret

Black-footed ferrets were historically distributed throughout the high plains of the Rocky Mountain and western Great Plains regions. Historically, the black-footed ferret has always been very closely associated with prairie dog colonies (Fagerstone, 1987). Ferrets depend almost exclusively on prairie dogs for food and they also use prairie dog burrows for shelter, parturition, and raising their young (Fagerstone, 1987). Black-footed ferrets were considered extinct until a small population was discovered near Meeteetsee, Wyoming in 1981. Much of the current knowledge of this species is based on studies completed on the Meeteetsee population. Following an outbreak of distemper, all surviving ferrets were brought into captivity, and a captive breeding program was initiated. Since 2001, experimental populations of black-footed ferrets have been introduced to two areas in Colorado near the Colorado-Utah border (http://wildlife.state.co.us/species_cons/ferret.asp). The project area, and existing 115-kV transmission lines that would be rebuilt, are within historical black-footed ferret range; however, populations of ferret are believed to extirpated on the eastern plains of Colorado.

Table 3.9-1. Threatened and Endangered Species Potentially Occurring Within the Project Area

Species Common Name	Scientific Name	Status	Exclusion from Analysis?	Reason for Exclusion from or Inclusion in Analysis
Mammals				
Black-footed ferret	*Mustela nigripes*	Federal and State Endangered	No	Potential habitat (prairie dog towns) exists for this species in project area
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	Federal and State Threatened	No	Potential wetland/riparian habitat exists in project area
Birds				
Least tern	*Sterna antillarum*	Federal and State Endangered	No	Vulnerable to water depletions in Platte River system
Piping plover	*Charadrius melodus*	Federal and State Threatened	No	Vulnerable to water depletions in Platte River system
Whooping crane	*Grus americana*	Federal and State Endangered	No	Vulnerable to water depletions in Platte River system
Bald eagle	*Haliaeetus leucocephalus*	Federal and State Endangered	No	Possible winter resident near study area
Plains sharp-tailed grouse	*Tympanuchus phasianelllus jamesii*	State Endangered	Yes	No suitable habitat in project area
Mexican spotted owl	*Strix occidentalis lucida*	Federal and State Threatened	Yes	No suitable habitat in project area
Burrowing owl	*Athene cunicularia*	State Threatened	No	Potential habitat (prairie dog towns) exists for this species in project area
Fish				
Pallid sturgeon	*Scaphirhynchus albus*	Federal Endangered	No	Vulnerable to water depletions in Platte River system
Plants				
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	Federal Threatened	No	Potential wetland/riparian habitat exists in project area
Colorado butterfly plant	*Gaura neomexicana coloradensis*	Federal Threatened	No	Potential wetland/riparian habitat exists in project area

Black-tailed prairie dog towns represent potential habitat for black-footed ferret in the ROW project area. According to USFWS guidelines (1989), black-tailed prairie dog towns or complexes greater than 80 acres in size represent potential habitat for black-footed ferrets. A town complex is defined as two or more neighboring towns each less than 7 kilometers (approximately 4 miles) from the other. Five prairie dog towns were located along the proposed project and alternative ROWs. Of these only two, one near milepost HE-26 and one near milepost HE-36 (see Figures 3.7-1f and 3.7-1h), may meet the criteria for potential habitat for black-footed ferret.

Preble's Meadow Jumping Mouse

Preble's meadow jumping mouse is a small rodent that occurs in low undergrowth consisting of grasses and forbs in wet meadows and riparian corridors and where tall shrubs and low trees provide adequate cover. It prefers lush vegetation along watercourses or herbaceous understories in wooded areas with close proximity to water (Armstrong et al., 1997). Based on field surveys of the proposed and alternative ROW corridors, wet meadow and riparian habitats preferred by Preble's meadow jumping mouse are essentially lacking. In addition, there are no areas of suitable wetland or riparian habitat that would link the ROWs to other areas of suitable riparian movement corridors. Therefore, the presence of Preble's meadow jumping mouse is highly unlikely.

Bald Eagle

Bald eagles occur throughout Colorado, primarily as wintering birds, but breeding pairs are also present. Bald eagles require cliffs or large trees associated with concentrated food sources (e.g., fisheries, waterfowl concentration areas) or sheltered canyons for nesting or roosting areas (Edwards, 1969; Call, 1978; Steenhof, 1978; Peterson, 1986). Nesting and winter night roost sites are known to occur along and near the South Platte River corridor, and three nest sites and one winter roost area are known to occur within one mile of the transmission line ROWs (see Figures 3.7-1a, 3.7-1g, and 3.7-1i) (Bibles, pers. comm., 2005).

Burrowing Owl

Burrowing owls, a state listed threatened species, are migratory in Colorado. They occur in the state from early March through October. During winter, Colorado burrowing owls migrate to Mexico and Central America. Burrowing owls are primarily found in grasslands and mountain parks, usually in or near prairie dog towns. They use abandoned prairie dog holes for cover and nesting and often hide in burrows when they feel threatened. Burrowing owls are active and hunt for food anytime during the day or night. They are often observed standing on prairie dog mounds surrounding a burrow. Families of owls usually remain together in a prairie dog town into September. Prairie dog towns within the project area represent potential habitat for breeding burrowing owls.

Platte River Species

Suitable habitats for least tern, piping plover, whooping crane, and pallid sturgeon do not exist within the project area, and these species would not occur along the proposed action or alternative ROWs. These species would only be affected if the project resulted in surface water depletion to the Platte River. No water use from the Platte River is proposed, therefore, no such depletions would occur and there would be no effect on any of these listed species. Therefore, these species are not discussed further in this EA.

Colorado Butterfly Plant

The Colorado butterfly plant is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, north-central Colorado, and extreme western Nebraska. This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains with vegetation that is relatively open and not overly dense or overgrown. It is found on sub-irrigated, alluvial soils of drainage bottoms

surrounded by mixed grass prairie at elevations of 5,000 to 6,400 feet (Spackman et al., 1997; Federal Register, 1998). Populations of this species are often found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel. The plant requires early to mid-seral riparian habitats. Typical habitat is relatively open without dense or overgrown vegetation. It commonly occurs in communities dominated by redtop (*Agrostis stolonifera*) and Kentucky bluegrass on wetter sites and by wild licorice (*Glycyrrhiza lepidota*), Flodman's thistle (*Cirsium flodmanii*), curlycup gumweed (*Grindelia squarrosa*), and smooth scouring rush (*Hippochaete laevigata*) on drier sites. These areas are usually intermediate in moisture between wet, streamside communities dominated by sedges, rushes, and cattails, and dry shortgrass prairie (Federal Register, 1998).

Suitable habitat for Colorado butterfly plant is essentially lacking within the project impact area. All drainages crossed, except the South Platte River, are intermittent or ephemeral and do not support the mid-seral floodplain communities preferred by Colorado butterfly plant. At the South Platte River crossing, steeply incised banks prevent the creation of habitat conditions preferred by Colorado butterfly plant.

Ute Ladies'-Tresses Orchid

Habitat for the Ute ladies'-tresses orchid consists of seasonally moist soils and wet meadows near lakes, springs, or perennial streams and their associated floodplains below 6,500 feet. Associated vegetation species typically include those with a "FACW" Corps of Engineers classification (*Equisetum, Asclepias, Calamagrostis, Solidago,* etc. genera) occurring in relatively open and not overly dense, overgrown, or over-grazed areas. This species prefers comparatively well-drained, high moisture content wetland soils that are not strongly anaerobic or composed of heavy clays. Conversely, sites consisting entirely of dense stands of reed canarygrass (*Phalaroides arundinacea*), those characterized by standing water including monocultures of cattails (*Typha* spp.) or three-square (*Schoenoplectus pungens*), or highly saline soils supporting a dense community of inland saltgrass are not considered to be habitat for this species (U. S. Fish and Wildlife Service memorandum: Plants - *Spiranthes diluvialis*, Ute ladies'-tresses orchid, dated November 23, 1992).

Current USFWS (1992) guidelines call for surveys in areas of suitable habitat in the South Platte River 100-year floodplain and perennial tributaries from the Front Range as far east as the Town of Brush in Morgan County. This would include portions of the project area. However, suitable habitat for Ute ladies'-tresses orchid is essentially lacking within the proposed project and alternative ROWs and at the Beaver Creek and Erie Substation sites. All drainages crossed, except the South Platte River, are intermittent or ephemeral and do not support the seasonally moist soils and other wetland habitat conditions preferred by Ute ladies'-tresses orchid. In addition, isolated wetlands along the ROWs are typically dominated by cattail, reed canarygrass, or inland saltgrass that do not represent suitable habitat for the orchid. At the South Platte River crossing, steeply incised banks prevent the creation of wetland habitat conditions preferred by Ute ladies'-tresses orchid.

3.9.2 Environmental Impacts and Mitigation Measures

3.9.2.1 Issues and Significance Criteria

Impacts to special status and sensitive species would be significant if effects from transmission line construction or operations, such as loss of individuals or long term loss of habitat for Federally listed species, result in any of the following:

- "jeopardy" Biological Opinion under Section 7 of the ESA, or
- a population reduction in a vulnerable species that could result in its listing as Federal threatened or endangered

.

There are no construction or operation related permits required for special status and sensitive species, unless there would be the need for the "take" of a threatened or endangered species. Western would implement several measures (Project Measures SS-1 and SS-2, Table 2.1-4) to ensure that impacts to special status species would be minimized to levels less than significant. If it is determined that the take of a threatened or endangered species is unavoidable, Western would apply for an "Incidental Take" permit from the U.S. Fish and Wildlife Service.

3.9.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Black-footed ferrets are believed to be extirpated in eastern Colorado. Western consulted with the USFWS (Western, July 12, 2005) regarding whether surveys of prairie dog towns are required for this project. The USFWS has determined that clearance surveys for black-footed ferrets are not warranted, since under certain conditions, the Service believes there is very little chance that ferrets could occur at a specific prairie dog town. Limiting conditions have been determined by the USFWS to be applicable to the project area. (USFWS, S. Linner, August 17, 2005).

Riparian and wetland habitats would be spanned, and as a consequence, impacts to marginally suitable wetland or riparian areas for Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly habitats would be avoided. Impacts to these species or their potential habitats would not occur.

Bald eagle mortality due to collisions with structures or transmission lines would constitute an adverse effect, but it would not be any more likely to result for the proposed project than for the existing transmission line. Bald eagle nesting or winter roosting activity may be adversely affected, if construction occurs within 0.5 mile of a nest site during the nesting season between November 15 and July 31 or within 0.25 mile of a winter night roost site between November 15 and March 15 (CDOW, 2002). In order to avoid and minimize impacts to bald eagles, Western would implement timing and surface occupancy restrictions, as recommended by the CDOW (2002) (See Table 2.1-4, Project Measure SS-1). With this measure, construction along the ROW is unlikely to affect bald eagle nesting or use of winter night roosts.

Federal and state laws prohibit the killing of burrowing owls. If a prairie dog town is being used by burrowing owls, these birds can be killed inadvertently during earth moving for construction or by prairie dog poisoning or removal projects. The CDOW recommends that prairie dog towns be surveyed on two consecutive mornings for burrowing owl presence if a prairie dog town is to be disturbed between March 1 and October 31. If burrowing owls are determined to be present, construction or prairie dog removal activities should be completed between November 1 and the end of February to ensure burrowing owls are not inadvertently killed. Depending on the location and timing of construction activities, additional surveys to update prairie dog burrow locations and determine presence or absence of burrowing owls may be necessary. Burrowing owl surveys would be completed if construction would impact prairie dog towns between March 1 and October 31 (Table 2.1-4, Project Measure SS-2). With implementation of this measure, adverse effects on burrowing owls are unlikely.

With implementation of the proposed transmission line rebuild project, a USFWS jeopardy opinion for any listed threatened or endangered species is unlikely, and the project would not result in a trend toward listing for any vulnerable species.

Proposed Beaver Creek and Erie Substation Modifications

No habitat for threatened or endangered species exists at the proposed Beaver Creek or Erie substation modification sites, and these modifications would not have any effect on listed species or result in a trend toward listing for any vulnerable species.

3.9.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute and Beaver Creek-Big Sandy Reroute

No habitat for threatened or endangered species exists within the project impact area of the alternatives, and implementation of these alternatives would not have any effect on listed species or result in a trend toward listing for any vulnerable species.

Bijou Creek Crossing Reroute

No habitat for threatened or endangered species exists within the project impact area of the alternative. The understory in riparian/cottonwood woodland habitat along Bijou Creek consists of upland communities dominated by species such as cheatgrass, three-awn, sand dropseed, and Russian thistle growing on dry sand and gravel deposits, which do not constitute suitable habitat conditions for Preble's meadow jumping mouse, Ute ladies'-tresses orchid or Colorado butterfly plant. Therefore, implementation of this alternative would not have any effect on listed species or result in a trend toward listing for any vulnerable species.

No Action Alternative

Under the no action alternative, there would be no upgrades of the existing line segments or expansions of existing substations, and there would be no associated potential for short or long term direct impacts or indirect effects to threatened or endangered species. Western would continue to operate and maintain the existing 115 kV line, which has had no identified effect on threatened or endangered species, and its continued operation is unlikely to have any effect on listed species.

3.9.2.4 Mitigation Measures

Western would implement a number of standard practices and project measures to avoid and minimize impacts to special status plant and animal species. Measures include Standard Practice 4 (Table 2.1-3) and Project Measures SS-1 and SS-2 (Table 2.1-4).

Project Measure SS-1. Western will adhere to "Recommended buffer zones and seasonal restrictions for Colorado raptor" (CDOW, 2002) to preclude impacts to bald eagle nest and winter night roost sites. Measures will be implemented to avoid/minimize construction activities within 0.5 mile of a nest site during the nesting season between November 15 and July 31 or within 0.25 mile of a winter night roost site between November 15 and March 15.

Project Measure SS-2. If construction cannot avoid prairie dog towns between March 1 and October 31, burrowing owl surveys will be completed, per Colorado Division of Wildlife guidelines to ensure construction activities would not impact breeding burrowing owls.

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3.10 Cultural Resources

Cultural resources are fragile and nonrenewable remains of prehistoric and historic human activity, occupation, or endeavor as reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human history. Cultural resources comprise the physical remains themselves, the areas where significant human events occurred even if evidence of the event no longer remains, and the environment surrounding the actual resource. The cultural resources inventory and analysis were prepared by Alpine Archaeological Consultants, Inc. in 2004 and 2005. Because of the sensitive nature of cultural resources, the technical report for this project is on file with Western in Loveland, Colorado, and is not included with the EA. These reports are protected from public disclosure and are exempt from the Freedom of Information Act.

The National Historic Preservation Act (NHPA) of 1966 and the Archaeological Resource Protection Act of 1979 provide for the protection of significant cultural resources. Section 106 of the NHPA describes the process that Federal agencies must follow to identify, evaluate, and coordinate their activities and recommendations concerning cultural resources. Significant cultural resources are defined as those listed on, or eligible for listing on, the National Register of Historic Places (NRHP). Significant cultural resources are generally at least 50 years old and meet one or more of the criteria presented in 36CFR60. The quality of significance in American history, architecture, archeology, 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.

Prehistoric cultural resources are generally evaluated with respect to criterion d, which pertains to a site's potential for yielding scientifically valuable information. The measure of the importance of the scientific data is based upon research questions widely recognized as appropriate by the scientific community. Sites most likely to yield these important data are those with intact cultural deposits, where artifacts and features are relatively undisturbed. In additional to retaining contextual integrity, sites with the highest research value are those likely to contain cultural features. Features such as hearths, storage or habitation structures, or living structures often yield charcoal for radiocarbon dating; macrobotanical, palynological, and faunal evidence of subsistence practices; and associated datable artifact assemblages. Sites with artifacts diagnostic of a particular temporal period or cultural group are also regarded as having higher research potential than those lacking diagnostic artifacts. Sites attributable to a specific unit can be used to address specific research questions and are regarded as important resources.

Historic sites can potentially meet any of the four criteria for eligibility to the NRHP. Frequently, however, the focus is upon architectural significance or association with events or individuals of historical importance. Although site-specific historical research is often warranted after a site is identified to determine whether it was associated with an important individual or event, a site's value as an archaeological resource should not be overlooked. When considering a historic site's archaeological value, the condition or structures or burial of cultural deposits are not as important as whether information exists on the site in the form of artifacts or cultural features that can

answer questions of particular interest about the past. Sites that can be confidently ascribed to a particular historic theme and subtheme are generally regarded as having more research value than sites that cannot be ascribed to a theme. Significant historic archaeological resources are those that are relatively undisturbed, can be attributed to a specific theme, and retain sufficient artifacts and features to permit further study. Linear cultural resources such as roads, trails, and ditches generally possess little archaeological value, though in some instances they may retain engineering significance or be associated with important historic events. Roads, trails, and railroad grades, however, may have other historic site types associated with them that are important archaeological resources, the proper interpretation of which may depend upon identification of the linear site.

The significance of traditional cultural properties is usually assessed by talking with elders and other knowledgeable individuals of a cultural group and through historical documentation. Some traditional cultural properties may be significant to an entire cultural group, whereas others may be significant to an individual or family.

3.10.1 Affected Environment

The project impact area surveyed for cultural resources encompasses: (1) the proposed and alternative transmission line corridors, 200 to 400 feet wide centered on the transmission lines, (2) access road corridors, 50-foot-wide (15-m-wide) corridors centered on the access roads, and (3) the substation construction expansion areas, 31.2 acres and 9.5 acres, respectively, for the Beaver Creek Substation and the Erie Substation.

3.10.1.1 Regional Cultural Overview

The earliest inhabitants of northeastern Colorado may have been representative of the Paleoindian stage, which emphasized the exploitation of large animal and plant resources during the period of transition from the Pleistocene to the Holocene dating between 10,000 B.C. and 7800 B.C. This stage has traditionally been identified by a number of distinctive, diagnostic lanceolate projectile points and tool assemblages indicative of a big game hunting economy by what have been termed the Clovis, Folsom, and Plano traditions. Paleoindian components are infrequent in the vicinity of the project area; and are mostly represented by surface finds of isolated diagnostic projectile points. The Clovis, Goshen, and Folsom hunters of northeastern Colorado were probably highly mobile and were able to retain a subsistence focus on the hunting of large game. The wide range of projectile point types found at these sites suggests increased diversity in human adaptations, and probably an adaptive shift to localized environments. Pitblado's (2003) analysis of late Paleoindian projectile points suggests possible technological differences between the Colorado Plateau systems and those found on the Plains. Plains projectile point types tend to evidence a greater investment of labor during manufacture. This observation suggested to Pitblado that Plains groups practiced a more collector-type settlement/subsistence system than contemporaneous groups in western Colorado.

Warming of the environment to essentially modern conditions resulted in the end of the Pleistocene and extinction of several large animal species upon which Paleoindian cultures relied. The Archaic stage represents adaptation to the changing environment, mainly by efficiently focusing on a more diverse subsistence base. The Archaic of northeastern Colorado is commonly divided into three periods: Early, Middle, and Late. Early Archaic (dating between 5500 and 3000 B.C.) sites are uncommon on the Plains, as compared to sites of the later periods. Artifacts diagnostic of the Early Archaic include forms of corner- and side-notched projectile points (Gilmore et al., 1999). During the Middle Archaic period (dating between 3000 and 1000 B.C.),

bison and other large game were intensively hunted, and an increase in the frequency of milling stones suggests greater reliance on plant resources. The Late Archaic (dating from 1000 B.C. to A.D. 150) continues the pattern of increased utilization of a variety of resources, a diverse tool assemblage, and continued mobility.

Some time around A.D. 150 the introduction of the bow and arrow and the appearance of ceramic vessels indicates a shift into the Late Prehistoric stage in northeastern Colorado. Although use of these new tools marks a lifeway shift, it was largely a continuation of the previous hunting and gathering way of life. Gilmore (1999) divides the Late Prehistoric stage into two periods, termed the Early (A.D. 150 – 1150) and Middle (A.D. 1150 – 1540) Ceramic. Early Ceramic period sites are well represented in northeastern Colorado, and yield arrow points, low frequencies of ceramics, and, occasionally, evidence of corn. A few habitation structures have been investigated; these include basin houses, stone circles, and lean-tos within rock shelters. Habitation structures occur most frequently in the foothills west of the project area, suggesting that winter activities were focused there. Radiocarbon data suggest a decline in the intensity of occupation of northeastern Colorado during the Middle Ceramic period (Gilmore, 1999). Sites tend to be in similar settings as Early Ceramic sites, and material items seem generally similar, suggesting continuity of basic adaptations. As in the previous period, corn occurs in small quantities at some sites. Habitation structures include circular stone structures, generally 4 to 6 m in diameter, and basin houses. Gilmore (1999) notes similarities between many of the Middle Ceramic sites in northeastern Colorado and Upper Republican sites to the east.

Most Protohistoric sites identified in northeastern Colorado have been attributed to the Dismal River aspect, a unit commonly believed to be affiliated with the Plains Apache. A few Shoshone, Kiowa-Apache, and Cheyenne/Arapaho sites have also been identified (Clark, 1999). According to Gunnerson (1987), Dismal River sites generally date from A.D. 1675 to 1725 and are characterized by small side-notched or unnotched projectile points and pottery. Eastern Dismal River sites were villages where corn, squash, and gourds were grown. However, agriculture seems to have been a supplement to hunted and gathered foods, with bison being the focus of hunting. Western Dismal River sites, including the vicinity of the project area, evidently represent short term resource procurement activities (Clark, 1999). Rapid culture change after 1725 resulted in the characteristics of the dismal River phase becoming unrecognizable; cultural association have been made with the historically known Jicarilla, Lipan, and Kiowa Apache (Gunnerson, 1987).

During historic times, the High Plains of eastern Colorado were utilized by diverse aboriginal groups, with the Plains Apache, Arapaho, and Northern Cheyenne being the primary inhabitants of northeastern Colorado. The Plains Apache were the primary inhabitants between about 1500 and 1700 (Clark,1999) and acted as intermediaries for trade between the Spanish and other Native American groups. Increased mobility resulting from widespread adoption of the horse enabled Native American groups from outside the region to expand into northeastern Colorado. The Comanche made their way along the Front Range of Colorado in the early 1700s, the Arapaho probably appeared on the Colorado Plains in the late 1700s, and the Northern Cheyenne entered the region by about 1800. All were mobile hunters and gatherers that depended largely on bison hunting.

The Spanish of New Mexico made sporadic forays northward into the Plains of Colorado beginning in the middle 1600s. Spanish territory was reduced after the Louisiana Purchase in 1803, with demarcation between Spanish and American territories set at the Arkansas River. French fur trappers first ventured into northeastern Colorado by way of the South Platte River in the late 1700s. Beginning in the 1810s, with the entry of Americans into the fur trade, fur

trapping became fully developed in the region, particularly after Mexican Independence in 1821, with considerable participation of Native American groups. Taos, New Mexico and St. Louis, Missouri were the primary supply points for the fur trade, and trails from both extended into the region. Beaver were the initial focus of the fur trade, but trade in buffalo hides became an integral part of the trade, particularly after demand for beaver pelts declined precipitously in the late 1830s. Numerous trading posts and forts, such as Fort Lupton and Fort Saint Vrain were established to capitalize on the fur and hide trade. The buffalo hide trade remained strong until it became unprofitable due to near extermination of the buffalo in the late 1870s. In addition to the fur and hide trade, the Plains of Colorado were the subject of several government exploring expeditions, beginning with an expedition led by Zebulon Pike in 1806 and 1807. This was followed by investigations led by Colonel Henry Dodge in 1815, Major Stephen Long in 1820, Captain Benjamin Bonneville in 1832, and John Fremont from1842 to 1844. These expeditions did little to encourage settlers to immigrate to Colorado (Mehls, 1984:1, 7-8, 13-14).

The opening of the Oregon Trail in the middle 1840s, crossing through far northeastern Colorado and passing through Wyoming to the north, led to numerous conflicts with Native Americans. In an effort to protect travelers, a peace treaty was negotiated near Fort Laramie in 1851 that required that the tribes of the Northern and Central Plains to reduce intertribal warfare, refrain from attacking U.S. citizens, and permit the establishment of military posts. The treaty assigned the Arapaho and Cheyenne to the area east of the Rockies in parts of Colorado, Kansas, Nebraska, and Wyoming. Discovery of gold in Colorado in 1859 brought numerous settlers to the Colorado Rocky Mountains and initiated agricultural settlement on the plains of northeastern Colorado. The principal route to the gold fields was the South Platte Trail (also known as the Overland Trail), which branched from the Oregon Trail at Julesburg, Colorado. A second route was the Cherokee Trail, which branched from the Santa Fe Trail near Bent's Fort and headed northward (Autobee et al., ca. 2002:E-8-10; Mehls, 1984:34-35). Conflicts with Native Americans escalated, resulting in and increased U.S. Military presence on the Plains. When the U.S. military presence decreased during the Civil War, the Colorado Volunteer Militia took hold and began a program of extermination, which culminated in the Sand Creek Massacre of 1864. After considerable conflict, a treaty was negotiated in 1865 that eventually resulted in expulsion of Plains Indian groups to reservations outside Colorado.

With the arrival of the Union Pacific Railroad in Wyoming in 1869, travelers to Colorado's Front Range country generally traveled southward from Cheyenne. Connection of Denver with Cheyenne by railroad further facilitated travel to Colorado and initiated 20 years of railroad building throughout the state. The railroad stimulated mining in the mountains of Colorado and industrial development in Denver and other Front Range cities. Coincident with this was growth of agriculture to supply the growing towns and mining areas and as an industry of its own. The railroad enabled coal mines in the region to be developed with their output used to fuel smelters in Denver and Pueblo. In the early 1900s, as oil began to supplant coal as the dominant fuel in the United States, northeastern Colorado experienced its first oil boom in what was known as the Wattenberg Field. The Wellington Dome just north of Fort Collins also began producing oil in 1923 and continued through the World War II era (Mehls, 1984:119-120).

Much of the Eastern Plains was used by large-scale cattle raising operations following the Civil War taking advantage of the open range afforded by the unclaimed public domain. Cattle ranching was facilitated by the railroad, but was increasingly in conflict with settlement by farmers. Homesteading along with a precipitous drop in cattle prices in the late 1880s and 1890s brought an end to the large-scale, open-range cattle industry. Farmers began expanding onto the Eastern Plains using irrigation water from the South Platte and its tributaries in the 1860s. Beginning in the 1870s, the agricultural potential of the Plains was recognized and large irrigation

projects began to be financed with outside capital. These ventures were often wrapped up in land speculation intended to increase the value of land along new irrigation canals and ditches. Investors profited by selling both water and land to eager farmers entering the region. Lands where irrigation water was not available were often suitable for ranching, but beginning in the 1890s, dry farming began to be understood and resulted in additional areas being put under cultivation particularly in the 1910s and 1920s. One of the most successful cash crops raised in the region, beginning in the early 1900s, was sugar beets, used in the manufacture of sugar. The economic downturn of the Depression of the 1930s hit the rural agricultural areas of northeastern Colorado quite hard. Desiccation of the land as a result of drought at the same time resulted in the failure of many farms. Those who were able to survive often were able to acquire adjoining lands, resulting in large aggregated farms that began to be worked with mechanized farm equipment. More marginal lands, particularly those damaged by drought, were taken out of production, with some of those lands acquired by the Federal government and incorporated into the Pawnee National Grassland. Since the 1940s, agriculture in the area has become increasingly corporate in its structure.

3.10.1.2 Class I Inventory

In order to assess potential impacts to significant cultural resources in the project area, a Class I inventory (site file search) was conducted at the Office of Archaeology and Historic Preservation (OAHP), and General Land Office (GLO) records were checked at the Colorado State BLM office in Denver. Locations of previously recorded sites and historic sites shown on GLO maps within 0.5 mile of the project corridor and access roads were plotted on project maps, and the following site data were compiled: site type, cultural affiliation, and NRHP status. The Class I research results are a direct reflection of previous cultural resource investigations; i.e., little or no site data exist for those portions of the project area that have not been previously inventoried. Numerous cultural resource inventories have been conducted within or adjacent to the project area. Most of these inventories were conducted for other linear projects such as pipelines and highways. These previous projects have resulted in the recordation of numerous historic linear sites, such as irrigation canals and railroad grades.

3.10.1.3 Class III Inventory

An intensive ("Class III") cultural resource inventory was conducted by Alpine Archaeological Consultants, Inc. in the fall of 2004 and the spring of 2005. The inventory of 108.5 linear miles of transmission line corridors, 33.1 linear miles of access roads, and 64.9 acres of substation sites recorded 30 sites in the project area. Twenty-six of the sites are historic Euroamerican, three are prehistoric, and one is mixed prehistoric and historic. Of these, 20 are officially eligible or have been recommended eligible for the NRHP, and eight are officially not eligible or have been recommended not eligible for the NRHP. Nineteen of the officially eligible or recommended eligible sites are historic, and one is prehistoric.

3.10.1.4 Native American Consultation

Western contacted Native American tribes with a potential interest in the project, and historical ties to the project area, to inform them of the proposal and request any comments or information they would like to provide. The first letter was sent on October 22, 2004. Subsequent letters were sent describing the results of the cultural resources surveys and the recommendations for eligibility for historic properties. The following tribes were contact about the project:

Apache Tribe of Oklahoma
Concho, OK

Cheyenne and Arapaho Tribes of Oklahoma
Anadarko, OK

Cheyenne River Sioux
Eagle Butte, SD

Comanche Tribe of Oklahoma
Lawton, OK

Crow Creek Tribal Council
Fort Thompson, SD

Jicarilla Apache Tribe
Dulce, NM

Kiowa Tribe of Oklahoma
Hobart, OK

Northern Arapaho Tribe
Fort Washakie, WY

Northern Cheyenne Tribe
Lame Deer, MT

Northern Ute Tribe
Fort Duchesne, UT

Oglala Lakota Tribe
Pine Ridge, SD

Pawnee Nation of Oklahoma
Pawnee, OK

Rosebud Sioux Tribe
Rosebud, SD

Shoshone Tribe
Fort Washakie, WY

Southern Cheyenne
Watonga, OK

Southern Ute Tribe
Ignacio, CO

Uintah and Ouray Tribal Business Committee
Fort Dushesne, UT

Ute Mountain Ute Tribe
Towaoc, CO

3.10.2 Environmental Impacts and Mitigation Measures

3.10.2.1 Issues and Significance Criteria

Impacts to cultural resources that are caused directly or indirectly by project activities would be significant only if:

- they occur to a cultural resource that is considered eligible for or is listed on the National Register of Historic Places (NRHP). As discussed above, sites are evaluated for the NRHP in regard to their research value and tangible links to important persons or historical events. Disturbance to eligible or listed resources, referred to as historic properties, is an adverse effect, and should be avoided or the adverse effects mitigated.

Direct impacts to cultural resources could occur from ground-disturbing activities associated with the proposed transmission line rebuild (i.e. earth moving activities needed for the construction of the new proposed transmission line and substation expansions, and dismantling of the existing transmission line), as well as the upgrade and use of existing access roads, and the construction of new roads to structure sites within the ROW. Cultural resources may also be subject to indirect impacts that may result from increased access due to new or upgraded access roads and/or vandalism to sites by the general public.

3.10.2.2 Impacts of the Proposed Project

Twenty cultural sites were encountered during the archaeological survey that are considered to be eligible for nomination to the NRHP (Andrews and Horn 2005, Andrews 2005). Potential impacts to those properties are evaluated in the following sections. Four types of impacts have been evaluated in association with this undertaking:

1. removal of existing transmission structures;
2. construction of new transmission structures;
3. use and maintenance of access roads; and,
4. expansion of the Beaver Creek and Erie substation sites.

Removal of Existing Transmission Structures. The removal of existing transmission lines and structures would result in ground disturbances. The removal of aging, in-place transmission structures would require vehicular traffic to and around each of the existing structures to be removed, the excavation and removal of the structures themselves, and the gathering of materials to recontour the landscape. No in-place transmission structures lie within the boundaries of any historic property in this project area. Consequently, the potential for direct or indirect impacts to cultural resources resulting from the removal of the existing transmission structures is considered extremely unlikely.

Construction of New Transmission Structures. The construction and installation of the new transmission structures could cause direct impacts to cultural resources. These types of impacts may originate from excavation necessary for structure construction, from construction/excavation equipment or vehicles, and from disposal and/or dispersion of excavated earthen materials. The EA analysis assumes that all sites identified within the project area of the proposed and alternative transmission lines have the potential to be impacted by new structure placement since specific structure locations have not been identified at this time. Although all sites have the potential to be impacted, all but one (5MR840) of the historic properties in the project area are in-use features (e.g., canal, ditches, railroads) and the likelihood that new transmission structures will be placed within those features is negligible.

Use and Maintenance of Access Roads. As is the case with any existing transmission system, cultural resources are potentially subject to destruction and disturbance from the use and maintenance of access roads. Each time a road is used, widened or improved for maintenance activities, direct impacts may occur to cultural resources crossed by that road. Potential direct impacts to cultural resources resulting from periodic use of roads for maintenance activities are the same for all alternatives, including the No Action Alternative. Direct impacts to cultural resources from maintenance activities would be avoided or mitigated to less than significant levels by limiting traffic to the existing and/or improved access roads and at structure sites. Indirect, or secondary, impacts resulting from increased access by the general public could also occur if increased access and visibility to resources results in looting and/or artifact collection. Since the proposed project entails replacement and/or upgrading of an existing transmission line and existing access roads, these types of secondary indirect impacts are not anticipated.

Expansion of the Beaver Creek and Erie Substations. The expansion of the Beaver Creek and Erie Substations would involve ground disturbing activities including site clearing, grading and installation of new substation equipment. Direct and/or indirect impacts to cultural resources are not anticipated to result from the substation expansions, however, since no sites were identified within the substation project areas and existing access would be used to access these faciltities.

Western has adopted a number of standard practices that would avoid and minimize impacts to cultural resources (see Table 2.1-3). In addition to these standard practices, Western would implement project measures CULT-1 and CULT-2 to ensure direct impacts to cultural resources are avoided (see Table 2.1-4). Project Measure CULT-1 provides for transmission structures being sited and placed to avoid archaeological sites and for monitoring activities to occur where structures would be near cultural sites. Project Measure CULT-2 addresses the upgrading and maintenance of access roads and upgrading or construction of culverts near significant archaeological resources. Project Measure CULT-2 outlines avoidance or mitigation measures, including photo-documentation.

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Nineteen historic sites and one prehistoric site on the Beaver Creek-Hoyt-Erie section of the project were recommended as eligible to the NRHP. Table 3.10-1 summarizes the potential impacts to each of these properties. The Fulton Ditch (5WL2245.4) would be crossed by the proposed project within a segment of the site that is considered to be noncontributing to its eligibility. Potential impacts to this property are, therefore, considered to be of no adverse effect and not included in the following impact discussions. Project impacts to the remaining 19 historic properties (eligible sites), however, have the potential to cause adverse effect.

All 19 of the historic properties would be crossed by the proposed transmission line. Specific structure placements and new access road spurs have not been identified and, therefore, each of these sites could be impacted from construction within the ROW. These potential impacts would be avoided by implementing Western's Standard Practices and Project Measure CULT-1. As mentioned above, the likelihood that new transmission structures or access spurs being placed within the boundaries of 18 of these properties is negligible because they are in-use agricultural water features or railroads.

Thirteen of the historic properties are crossed by, next to, or under the proposed transmission line access roads. Eleven of these sites lie along the edges of project access roads, and would not be impacted by road usage. These sites may be impacted inadvertently impacts by access road maintenance. These potential impacts would be avoided by implementing Western's Standard Practices and Project Measure CULT-2. One of the 13 sites (5WL4843.1) is crossed by a project access road using a culvert. Use of the culvert poses no additional impacts; Replacement, removal, or additional construction of the culvert would require avoidance or mitigation of impacts through photo-documentation. One of the 13 sites (5WL4844.1) is planned for use as an access road. Maintenance or upgrading of the road to Pole 34-1 or the road to Poles 33-4 and 33-5 would require avoidance or mitigation of impacts through photo-documentation.

None of the historic properties in the Beaver Creek-Hoyt-Erie section of the project currently have existing transmission structures within the site boundaries.

Table 3.10-1. Potential Impacts to Sites, Beaver Creek-Hoyt-Erie Transmission Line

Site No.	Site Name	Owner	Potential Impacts	
			Access Road Maintenance	New Construction
5MR480.7	Fort Morgan Canal	State Wildlife	Road between 105-6 and 105-7	X†
5MR825.1	Upper Platte & Beaver Canal	Private	Road between 107-6 and 108-2‡	X†
5MR840	Prehistoric Camp	Private		X
5WL1317.11	Dent Branch of the Union Pacific Railroad	Private		X†
5WL1423.11	Burlington Northern Railroad	Private		X†
5WL1485.8	Speer Canal	Private	Road to 44-2	X†
5WL1966.8	Bull Ditch of the Bull Canal	Private		X†
5WL2245.4	Fulton Ditch	Private		X*
5WL2649.2-.3	Brantner Ditch	Private	Road to 35-5 and 6 Road to 37-5 Road to 37-6	X†
5WL2651.2	Fulton Lateral	Private		X†
5WL2753.4	Beebe Seep Canal	Private		X†
5WL2947.5	Denver Pacific Railroad/ Union Pacific Railroad	Private	Road to 40.1	X†
5WL4078.2-.5	Denver-Hudson Canal	Private	Road to 49-3	X†
5WL4843.1	Bowles Seep Canal	Private	Roads to 45-2‡	X†
5WL4844.1	Denver & Boulder Valley Railroad	Private	Road to Pole 34-1 Road to Poles 33-4 and 33-5	X†
5WL4845.1-.2	Box Elder Lateral	Private	Road to Pole 49-6	X†
5WL4846.1	Prospect Lateral Ditch	Private	Road to Pole 60-5 Road to Pole 60-6 and 7	X†
5WL4847.1	Big Dry Creek Ditch	Private	Road to Pole 34-5	X†
5WL4848.1	Neres Canal	Private	Road to Pole 47-3 and 47-4	X†
5WL4853.1	West Burlington Extension Ditch	Private	Road to Pole 44-5	X†

† Structures, staging areas, and stringing sites are not likely to be constructed within the site (i.e., within canals or ditches)

‡ Special attention to areas where access road may cross the resource

* Potential project impacts occur in noncontributing sections of this site

Proposed Substation Modifications

Beaver Creek and Erie Substation Expansions

No archaeological sites or historic properties exist within the expansion areas evaluated for the Beaver Creek and Erie Substations. Consequently, no impacts to cultural resources would occur.

3.10.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute and Beaver Creek-Big Sandy Reroute Alternatives

No archaeological sites or historic properties exist within the project areas affected by these alternatives. Consequently, there would be no impacts to cultural resources.

Bijou Creek Crossing Reroute

One prehistoric site (5MR840) on the Bijou Creek Crossing Reroute of the project is recommended as eligible to the NRHP. Table 3.10-2 summarizes the potential impacts to this property.

Table 3.10-2. Potential Impacts to Sites, Bijou Creek Crossing Reroute section.

Site No.	Site Name	Owner	Potential Impacts	
			Access Road Maintenance	New Construction
5MR840	Prehistoric Camp	Private		X

This historic property is crossed by the transmission centerline. Specific structure placements and new access road spurs have not been identified. Potential impacts to the site would be avoided by implementing Western's Standard Practices and Measure CULT-1.

The historic property is not crossed by an access road and has no existing transmission structures within the site boundaries.

The historic property crossed by this alternate is also crossed by the proposed project route. As such, based solely on cultural resource the Bijou Creek Crossing Reroute Alternate has equal impacts on cultural resources.

No Action Alternative

The no action alternative would result in continued use of the transmission structures and access roads. Natural processes would continue to affect cultural resources, including the transmission line itself, although this alternative eliminates any direct project-related impacts. Continued use of the access roads across eligible sites and any needed maintenance of the roads would be an adverse effect of the no action alternative

3.10.2.4 Mitigation Measures

Western's Standard Practices (Table 2.1-3) and Project Measures CULT-1, and CULT-2 (Table 2.1-4) would be implemented to avoid or minimize impacts to cultural resources to the extent feasible. The project-specific mitigation measures for the 20 eligible or recommended as eligible sites would depend on the nature of disturbance within the site boundaries caused by the proposed transmission line work.

Project Measure CULT-1. Impacts to eligible cultural sites caused by construction of new towers will be mitigated by planning, design and avoidance. Whenever possible, transmission structures placement will be planned outside of site boundaries. In cases where avoidance is not possible, a mitigation plan will be formulated. If new structures are to be placed within 100 feet of an eligible site, an archaeological monitor may be present to ensure that the site is not impacted during construction. Western will clearly mark eligible sites within the ROW that must be avoided and instruct the contractor to avoid them.

Project Measure CULT-2. Maintenance and upgrading of access roads along the borders of eligible irrigation sites will be done with caution, to avoid filling historic irrigation systems with sediment from the roadbed. Construction or maintenance of culverts or bridges allowing access roads to cross eligible sites will be avoided wherever possible. Maintenance and upgrading of access roads on eligible sites will be avoided. Where avoidance is not possible, mitigation through photographic documentation to Athearn's (1990) Level II standards will be implemented prior to any construction or roadwork. This will mitigate adverse effects. These guidelines apply not only to roads surveyed as project access roads, but also to roads beneath the transmission lines that were subsumed in the transmission line survey.

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3.11 Land Use – Existing and Planned

3.11.1 Affected Environment

Land use topics described in this section are related to land jurisdictions and ownership, existing and planned land uses and local land use plans and policies. This section also addresses Prime and Unique Farmlands in accordance with the Farmland Protection Policy Act. The Farmland Protection Policy Act provides provisions for the identification and conservation of prime farmland.

The project impact area for land use encompasses the proposed and alternative transmission line ROWs, existing access roads, substation sites, construction areas and surrounding land uses within two miles of the project facilities. Impacts issues include direct changes or disruptions to existing and planned land uses that may occur during the construction and operation of the proposed project and alternatives, impacts to prime and unique farmlands, and temporary increases in noise levels that would result during project construction. Other land use related issues are discussed elsewhere in the EA, including Section 3.12 Visual Resources and Section 3.14 Transportation.

Land Jurisdictions and Ownership

The project area encompasses portions of Morgan and Weld Counties, Colorado. Figures 2.1-2 and 2.1-3 show the relationship of the proposed project and alternatives to jurisdictions within the project area. Approximately 98 per cent of the project area is in private land ownership. Cities and communities include Brush, Lochbuie, Wattenberg and Brighton. The State of Colorado Division of Wildlife (CDOW) manages several state wildlife areas (SWA), including the Brush Prairie Ponds SWA. The Brush Prairie Ponds SWA property is owned by the City of Brush, and managed by the CDOW. Private lands are typically owned by individuals, as well as larger organizations, such as Morgan County REA; Burlington Northern Railroad and Consolidated Mutual Water Company. There are no federal lands that would be affected by the proposed project or alternatives. Table 3.11-1 shows land jurisdictions by county, state and private lands that are crossed by the proposed project.

Table 3.11-1. Ownership of Lands Crossed by the Beaver Creek-Hoyt-Erie Transmission Line (miles)

	Private	**State**	**Total**
Morgan	33.9	1.5	35.4
Weld	42.9		42.9
Total	**76.8**	**1.5**	**78.3**

Existing Land Uses

Major land uses in the project area consist of agricultural lands and related industries, rural communities and residential developments, transportation systems, utility corridors for transmission lines and substation facilities, and industrial and mineral developments related to coal and oil and gas resources.

Most agricultural property is in cultivated crops with a substantial portion irrigated. Agricultural production includes corn, wheat, alfalfa, and hay. Agricultural lands are most concentrated along

the Hoyt-Erie transmission line segment of the proposed project, although dispersed agriculture is also crossed by the Beaver Creek to Hoyt segment. Between the Beaver Creek and Hoyt substations, the project area is characterized by large expanses of mixed grasses and short-grass prairie along with some irrigated and dryland farmland. Some of the farms have pivot irrigation systems near the existing 115-kV transmission line. The landscape along this transmission line segment is typical of northeastern Colorado with rolling plains, irrigation ditches, wetlands, and river beds abundant. Most of the land is cultivated cropland, with few native vegetative species evident. From the Hoyt to Erie substations, the majority of the project area is characterized as irrigated agriculture and classified as prime farmland. (See discussion of Prime Farmlands below). Horse Creek and Prospect Irrigation Reservoirs are located in close proximity to the transmission line and many irrigation canals and ditches traverse the project area.

Communities within the project area include the City of Brush, and the communities of Wattenberg, Lochbuie and Brighton. The City of Brush is in Morgan County and is situated approximately one mile west of the Beaver Creek Substation. The communities of Wattenberg, Lochbuie and Brighton are in Weld County. Wattenberg is adjacent and south of the Hoyt-Erie transmission line segment, near milepost HE 40. The communities of Lockbuie and Brighton are located at distances of one to two miles south of the proposed project, respectively, near mileposts HE 33 and HE 38. Developed land uses, located closer to these communities, include commercial, gravel and sand mining operations, storage, office warehouse, general highway commercial and some large acreage rural residential homes including some new high-end estates with acreages up to 20 acres.

Interstate 25 and 76, in Weld County, State Routes (SR) 71, 52, and 79 in Morgan and Weld counties, and U.S. Highways 85 and 34 in Weld County are the major transportation corridors in proximity of the proposed rebuild project and alternatives. Utility corridors for electrical transmission and distribution, and oil and gas pipelines are located in the project area, as well as oil and gas pumping units and drilling operations in Weld County. In addition to Western's existing Beaver Creek-Hoyt-Erie transmission line, other transmission lines within the project area, include Western's Beaver Creek-Big Sandy transmission line, Western's Beaver Creek-Deering Lake Transmission Line, Western's Hoyt-Wiggins transmission line and Xcel Energy's 230-kV Pawnee-Story, 230-kV Pawnee-Smoky Hill, 230-kV Pawnee-Daniels Park, 230-kV Pawnee-St. Vrain, 230-kV Fort St Vrain-Reunion, 230-kV Fort Lupton-Green Valley, and 230-kV Rocky Mountain Center-Green Valley transmission lines, Xcel Energy's 115-kV Fort Lupton-Platte Valley transmission line, and Public Services' 115-kV transmission line near milepost HE-39. Other substation facilities in the project area include the Story Substation, the Adena Substation, the Hoyt Substation and the Brighton Substation.

Mineral and industrial developments in the project area include large oil and gas fields around Erie, Broomfield and Dacono. Mineral resources abound in this area and represent an important land use within the study area boundaries. From U.S. Highway 85 west to the Erie substation is an actively producing oil and gas field. The fields represented here include the Wattenberg and Spindle fields. In particular, Township 1N Range 67W has a large number of producing oil and gas wells, many within close proximity of the existing transmission line ROW. Other producing wells exist throughout the study area as well, but the number of wells substantially declines east along the transmission line route. The Pawnee Power Plant is a coal-fired power plant, is located several miles from the proposed project, southwest of Brush.

Recreational land uses are limited in the project area. The Brush Prairie Ponds SWA provides hunting and fishing opportunities and wildlife habitat for migratory waterfowl and shorebirds. The SWA is a primary water supply for the City of Brush, with its secondary use being for

wildlife conservation. The area encompasses 1,600 acres and is located approximately two miles south of the City of Brush. The site consists of restored prairie grassland with an irrigation ditch running through it. Approximately 840 acres have been planted with tall grass species for wildlife cover. The site also contains 30 ponds at various sites along the ditch, which are controlled by inlet and outlet gates (www.audubon.org). There are no Wilderness Areas, Wilderness Study Areas or Wild and Scenic Rivers located in the project area. There are no Areas of Critical Environmental Concern located within the project area.

Farmlands

Prime farmlands are those lands that have the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed and other agricultural crops with the minimum of fertilizer, fuel, pesticides, and labor, and without intolerable erosion. Unique farmlands are composed of land other than prime farmland that is used for producing specific high value food and fiber crops (www.nrcs.usda.gov/). According to the Natural Resources Conservation Service (NRCS) in Weld County, CO (Wicky, 2005) prime farmland (irrigated) exists throughout all segments of the transmission line corridor. Figure 3.11-1, at the end of this section, shows the distribution of prime farmland soils based on soil survey data.

Soil surveys show that much of the agricultural land traversed by the proposed project is considered prime or unique farmland by the NRCS, if irrigated. Approximately 4% of land along the Beaver Creek-Hoyt transmission line segment is considered potential prime farmland; while 74% of land along the Hoyt-Erie segment is considered potential prime farmland. The Beaver Creek-Hoyt segment crosses dispersed cropland with predominately fallow land or grasslands. The Hoyt-Erie transmission line segment crosses approximately 35.5 miles of lands classified as prime farmland.

Land Use Regulations

Land use plans and regulations for private lands in the project area are administered by the counties and cities. The proposed project is exempt from local land use regulations, however, Western prefers to meet local government standards and land use regulations whenever possible. The Land Use regulations which pertain to the transmission line route throughout the project area include the Guidelines and Regulations for Areas and Activities of State Interest, Morgan County, Colorado Adopted May 16, 1994, Chapter 3 Site Selection and Construction of Major Facilities of a Public Utility, Morgan County Zoning Regulations, updated February, 2003 and Weld County Code Chapter 21: Section 21-3-20 Ordinance - 2000, 2001, 2002. The existing Beaver Creek-Hoyt-Erie transmission line currently conforms to all applicable land use codes and regulations.

Planned Land Uses and Developments

Section 3.16.1, Reasonably Foreseeable Projects, describes the most recent submittals to the respective planning departments of upcoming projects near the transmission line.

Development activity occurring in Morgan County includes residential development located throughout the more urban areas of the county (Brush, Wiggins, Fort Morgan) and a few low density rural residential projects. None of these projects are in close proximity to the proposed project. Planned land uses near the transmission line rebuild are limited in Morgan County. A power line was proposed from a wind turbine in Washington County to the Pawnee Power Plant in Brush, Colorado, but the proposal was not approved for 2005. This project may resurface in

2006. The Hoyt-Wiggins 115-kV transmission line will be rebuilt with conductor replacement and new wood pole H-frames. The rebuild of the Hoyt-Wiggins 115-kV line will be in the same ROW as the existing line.

In Weld County, residential development activity is proposed or under construction near the western section of the transmission line. Most of the activity is close to the urban areas around Brighton and Lochbuie. Two annexations to the Town of Lochbuie are occurring near the line. The Blue Lakes subdivision (320 acres) is planned to break ground in 2005. This subdivision is located between WCR 35 and 37, and WCR 6 and WCR 4, portions of which would be adjacent to the transmission line. Another annexation is on the drawing board just south of the Blue Lakes subdivision. Portions of this project would be less than a quarter mile from the transmission line. Along WCR 39, in the northwest corner of Section 29 T1N R65W, a new sewer treatment facility is 90 percent complete. This is adjacent to the existing line. There will be two additional phases of expansion at the plant in the future. Potential for some industrial development exists in and around Lochbuie and Fort Lupton near the transmission line.

3.11.2 Environmental Impacts and Mitigation Measures

3.11.2.1 Issues and Significance Criteria

Impacts to land use would be significant if the proposed action or alternatives:

- were inconsistent with adopted land use plans or regulations of local, state, or Federal agencies;

- resulted in long term measurable impacts to the region's prime farmlands productivity; or caused long term loss of economic viability of a farm or other business due to construction.

Land use impacts would primarily consist of localized direct effects to existing land uses within and adjacent to the proposed and alternative ROWs and at the substation expansion sites. Direct impacts would mainly entail short term disruptions to existing agricultural lands and irrigation system during construction, resulting from the periodic presence of construction equipment, crews and vehicles within the ROW. These types of construction impacts would be temporary, and less than significant, since the proposed rebuild project and alternatives would be constructed in phases within an existing utility corridor for most of its distance.

Other short term impacts to land uses would include construction-related noise that is produced by the machinery and vehicles. Noise levels would be typical of diesel powered machinery and gasoline or diesel powered vehicles. Cement trucks, cranes, and auguring equipment would produce noise during their operation; and increased noise would be noticeable to local residents and others in the vicinity of construction activities. Overall noise levels would be similar in type and degree to noise currently produced by farm machinery, trucking, highway noise, and other construction projects. Due to the temporary and intermittent nature of noise effects, and the presence of similar noise sources within the project area, noise impacts would be less than significant.

Long term land use restrictions resulting from new or increased ROW easements or transmission structures would be similar to the existing conditions, since the proposed action and alternatives would result in a slight widening of existing ROWs (i.e. from 75 feet to 85 feet or 110 feet), along the majority of the project. No land use related structures would need to be removed from the

widened or new ROW easements. Consequently, these types of direct land use impacts would not occur.

Other long-term impacts that would occur include the direct loss of agricultural land, including prime farmland, for structure foundations; and long term effects on agricultural equipment operations around the proposed 230-kV structures and under conductors. These types of impacts are discussed below, and would be partially off-set by the removal of the 115-kV transmission lines and H-frame structures through agricultural and prime farmlands.

3.11.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Existing Land Uses. Construction of the Beaver Creek-Hoyt-Erie transmission line rebuild would occur within Western's existing and expanded ROWs. The width of the ROW would increase, on average, from 75 feet to 85-110 feet. Since the proposed rebuild project would entail replacing the existing wood H-frame structures with new single pole steel structures, the proposed action would not change the types of on-going easement restrictions on land use that are in place. All current uses within and adjacent to the existing ROW are allowable uses according to Attachment 80-LM-04A, Allowable Uses Under Western ROW. Consequently, there would be no direct land use impacts to land uses from the proposed action. The extent of land use restrictions would increase somewhat, however, due to the widening of the ROW for electrical clearances and safety standards. There are no existing residential homes or related structures that would need to be removed for the proposed rebuild project.

Existing access roads outside the ROW are adequate, however, new spur roads or overland construction methods would be required to access new structure sites within the ROW. Western would notify and coordinate with affected landowners prior to construction to avoid and minimize access-related construction related effects to private lands to the extent feasible (Table 2.1-3, Measures 1 and 2). Oil and Gas development within the study area, particularly between U.S. Highway 85 and the Erie substation, may incur short term traffic and access impacts due to the presence of construction equipment and activities. These types of impacts would be most likely between mileposts HE-38 and HE-45. It is not anticipated that the proposed project would have a long term impact on oil and gas development, however, since the project would be located within the existing Hoyt-Erie transmission line corridor.

Compared to the existing H-frame structures which would be removed, the single pole steel structures would result in similar, or reduced, long term impacts on existing public and private land uses, including the Brush Prairie Ponds SWA, agricultural lands, and related rural land uses. Long term direct impacts to the Brush Prairie Ponds SWA and agricultural lands would be reduced over the existing conditions since a fewer number of structures would be required, and the change in structure design would require less land dedicated to the project facilities.

The Brush Prairie Ponds SWA provides waterfowl hunting opportunities and is located between milepost posts BH-3.7 and BH-5.7 (structures 106-6 and 104-7). The existing transmission line crosses diagonally through the SWA, and the proposed project would retain and slightly widen this ROW. Consequently, the proposed project would largely result in the continuation of any on-going long term land use effects caused by the existing transmission line and ROW. The proposed rebuild project would increase the span of the structures, however, thereby resulting in fewer structures being located within the Brush Prairie Ponds SWA than exist today. In total, there are 9 hunting blinds located in the SWA. Two of the blinds (1 and 7) are located along the transmission line ROW,

therefore, depending upon when this section of the transmission line is built, the wildlife area may be directly impacted by construction activity for the short term construction period. Once construction has been completed and the transmission line is operational, none of the hunting blinds would be impacted by the increased ROW.

Western would implement Project Measures WILDLIFE-2 and WILDLIFE-3 (Table 2.1-4) to minimize construction-related impacts to the SWA. With implementation of these measures, construction impacts to the SWA would be short term and less than significant. Long term impacts would remain essentially the same, or similar to, effects that exist today. Potential impacts related to avian and waterfowl species are discussed separately in this EA, in Section 3.8.

Farmlands. Impacts to prime farmlands would result during construction and operation of the proposed project. Western's policy is to coordinate with landowners early-on prior to construction, and during construction as necessary, in order to minimize impacts to farmlands and farming operations to the extent feasible. Western also compensates landowners for any loss of crops that may occur during construction. Direct short term impacts to farmlands would result within the existing and expanded ROW where equipment and crews would need to access the ROW, structure sites and stringing sites. As described in Chapter 2, construction would entail construction crews and equipment moving along the ROW, and short access roads to structure sites may be required. Impacts to agricultural lands would occur due to both the removal of the existing structures and equipment, and the installation of the new structures, insulators, and conductors. The presence of Western's construction crews and equipment may also cause some short term impacts to agricultural lands and operations off the ROW. Off-site impacts could result if activities within the ROW cause impacts to irrigation systems and/or to agricultural operations or improvements adjoining the ROW (e.g. existing gates or fences that may need to be removed or relocated). Overall, these types of direct impacts to agriculture would last no more than one season in any one location, during construction. Soil compaction from construction equipment would also occur, and would be short term in nature, potentially lasting one to two years after construction. Due to the short term nature of construction-related impacts, and Western's policies for landowner coordination and compensation of crop losses, these types of impacts would be adverse and less than significant.

The long term direct effects of the proposed action on prime farmlands would be similar to, or less than, the on-going impacts of the existing 115 kV transmission line. In total, the proposed action would result in a reduction in the number of structures that would need to be located in irrigated agriculture, and the amount of land permanently removed from agricultural production at each structure site. As described in Section 2, the average span length between structures would increase from 700 feet to 1,000 feet. Long term the single pole steel structures would remove approximately 50 square feet of agriculture per pole structure, compared to the existing H-frame structures that remove 45 square feet from production. Combined, these factors would result in a net increase in land available for agricultural production, compared to the existing conditions. There would also be greater height clearance under the conductors for farm equipment; and weeds would also be easier to control around single pole steel structures, compared to the existing H-frame structures that can create uncultivated islands between the structures. Figure 3.11-1 shows the distribution of farmlands in the project area and Table 3.11-2 quantifies the amount of land, classified as prime and unique if irrigated, that is crossed by the proposed transmission line and routing alternatives.

Table 3.11-2 Prime Farmlands Crossed by Proposed Project and Alternatives (miles)

Farmland Classification	Proposed Project		Alternatives		
	Beaver Creek-Hoyt Segment	Hoyt-Erie Segment	Big Sandy Reroute	Bijou Crossing Reroute	Brush Prairie Ponds Reroute
Farmland of local importance	0.0	1.5	0.0	0.0	0.0
Farmland of statewide importance	5.9	5.6	0.8	0.9	0.8
Prime farmland if drained and protected from flooding	0.0	1.5	0.0	0.0	0.0
Prime farmland if irrigated	0.5	26.9	0.1	0.0	0.1
Prime farmland if irrigated and reclaimed of excess slats and sodium	0.6	0.0	0.0	0.0	0.0
Total	7.0	35.5	0.9	0.9	0.9

Compared to the existing conditions, the proposed project would have similar or reduced direct impacts on agricultural lands, although some adverse impacts to agricultural lands, equipment operations and irrigation systems would occur. In particular, existing pivot irrigation systems may require additional modifications in operation and design. Table 3.11-3 identifies the location of pivot irrigation systems that may be affected by the proposed action. Western or its contractors would coordinate with landowners to reduce operational conflicts with irrigation systems to the extent practicable (Standard Practice 1, Table 2.1-3).

Table 3.11-3 Locations of Existing Pivot Irrigation Systems.

Transmission Line Segment	Milepost Marker/Structure
Beaver Creek-Hoyt	BH 3 to BH 4 / 107-4 to 106-5
	BH 27.5 to BH 28.0 / 82-7 to 82-3
	BH 30 / 80-4 to 80-2
Hoyt–Erie	HE 0 to HE 0.1 / 77-8 to 77-5
	HE 9 to HE 10 / 88-6 to 88-1
	HE 17 to HE 18 / 80-4 to 80-1

Long term impacts may also occur in agricultural lands, if and where fields become more difficult to spray. Impacts to aerial spraying operations would mainly occur where the 230-kV transmission line would be located near and cross under other transmission lines (e.g. at the four transmission line undercrossings). These impacts would be adverse but less than significant due to the small amount of agricultural land affected.

Long term adverse impacts to prime farmlands and agricultural operations would not be significant since the overall amount of land taken out of production would decrease over the existing conditions. Because the proposed transmission line would operate more efficiently than the existing 115-kV line that would be removed, routine maintenance would occur less frequently, therefore minimizing impacts to existing land uses during the life of the project.

Land Use Plans and Regulations. The transmission line rebuild would conform to land use regulations for Morgan and Weld Counties in Colorado. Citations for land use conformance include:

1. Morgan County Zoning Resolution, 2003, Guidelines and Regulations for Areas and Activities of State Interest, Morgan County, Colorado Adopted May 16, 1994, Chapter 3 Site Selection and Construction of Major Facilities of a Public Utility, Morgan County Zoning Regulations, updated February, 2003;
2. Weld County Code citation is Article III - Zone District Division 1A zone Section 23-3-20, Uses Allowed by Right. A Special Use Permit may be required as a 1041 - Special Use Permit Section 21-3-20 or Section 23-1-90.

These land use regulations state that essential service utilities are a use by right, but may require board approval to ensure that disruption to existing land users is minimized by the location of the line.

Planned Land Uses and Developments. Planned land uses identified in Section 3.16.1, Reasonably Foreseeable Projects, would not be directly impacted with the construction or operation of the proposed transmission line rebuild, since the line would be built along the same transmission line ROW centerline. However, short term construction impacts, such as increased noise and dust, would potentially occur to nearby developments. These projects are discussed and locations of the projects identified in Section 3.16.1 Reasonably Foreseeable Projects. The proposed or developing projects are located near the existing transmission line; therefore, the long term impacts would be similar to current conditions. Access to the transmission line rebuild would not impact planned land uses or developments.

Proposed Beaver Creek and Erie Substation Modifications

Beaver Creek Substation Expansion

Expansion of the Beaver Creek substation would disturb vacant land, therefore no direct impacts would result on developed land uses. Surrounding land uses include other electrical transmission lines, the Story Substation and scattered rural residential homes**.** Short-term noise impacts would result to nearby residents during construction. The current land uses in the immediate vicinity of the expansion area are office and substation operations. The Story Substation is located directly to the east of the proposed Beaver Creek Substation expansion area. The proposed facility would conform to all Morgan County Planning and Zoning regulations as cited above.

Erie Substation Expansion

Expansion of the Erie substation would directly affect land previously used as a feed lot with small storage sheds. The current land uses in the immediate vicinity are mixed industrial and agricultural uses. Land owner(s) would be compensated for the fair market value of the land as well as any damages that may occur during construction activities. The proposed facility would conform to all Weld County Planning and Zoning regulations as cited above. Short-term noise impacts would result on area residents during construction.

3.11.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute

The Beaver Creek to Brush Prairie Ponds SWA Reroute would have reduced impacts to agricultural lands and operations, as well as to the Brush Prairie Ponds SWA. This alternative

would accommodate farming practices by avoiding a pivot irrigation system near milepost BH 3 to BH 4 (structures 107-4 to 106-6). Compared to the proposed action and existing conditions, this alternative would reduce the long-term direct impacts to agricultural lands and operations. The alternative would also mitigate potential long term impacts on hunting and wildlife habitat-related values in the SWA by routing the new 230-kV transmission line parallel to the southern boundary of the SWA, rather than crossing diagonally through the center of the SWA near the ponds and hunting area. Impacts to the SWA, resulting from the removal of the existing 115-kV transmission line structures and hardware would be short term and adverse during the construction phase, but beneficial long term. Impacts to the SWA would be minimized to the extent practicable by implementing Project Measures WILDLIFE-2 and WILDLIFE-3 (see section 3.8 and Table 2.1-4).

Potential short term impacts to the City of Brush water supplies and well fields could also occur if new structures foundations were placed within or below the protective clay layer that lies over the aquifer. These impacts are discussed in Section 3.6 of the EA, and would be avoided by Western implementing Project Measure WATER-1. (Table 2.1-4).

This reroute alternative would conform to all Morgan County planning and zoning regulations. No planned land uses would be impacted.

Beaver Creek-Big Sandy Reroute

Impacts from the Beaver Creek-Big Sandy reroute would be the same as, or similar to, the Brush Prairie Ponds SWA alternative for the first 4.2 miles, south of the Beaver Creek Substation. The Beaver Creek-Big Sandy reroute alternative would only occur in conjunction with the Beaver Creek-Brush Prairie Ponds SWA Reroute alternative. Currently, the Beaver Creek-Big Sandy transmission line parallels the Beaver Creek-Hoyt line through predominantly irrigated agricultural areas. Approximately 3.4 miles of the existing transmission line would be removed and relocated to the east, parallel to the Brush Prairie Ponds SWA alternative. The alternative route would largely avoid irrigated agriculture, thereby measurably reducing the on-going impacts of the Beaver Creek-Big Sandy transmission line.

Construction activities from the Beaver Creek-Big Sandy reroute would have some short term impacts on agricultural lands and operations, as well as area residents (e.g. noise impacts) where the existing line is removed through agricultural lands south of the substation. Short term impacts to land uses that would occur from the removal of existing transmission lines would be the same as describe for the proposed action.

No other existing or planned land uses would be directly or indirectly impacted by this alternative. The alternative route would not potentially impact the City of Brush well fields, as the alternative would reconnect to its existing ROW and continue southbound east of the SWA.

The alternative route would reduce the impacts on existing land uses and would conform to Morgan County planning and zoning regulations. The consolidated ROW would allow land owners more efficient use of their agricultural land.

Bijou Creek Crossing Reroute

The alternative crossing of the Bijou Creek floodplain was suggested by land owners as a way to increase the efficiency of their irrigation systems, and allow expansion of their businesses. The

Bijou Creek Crossing reroute alternative would reduce on-going impacts to agricultural lands and operations, as well as to local residents.

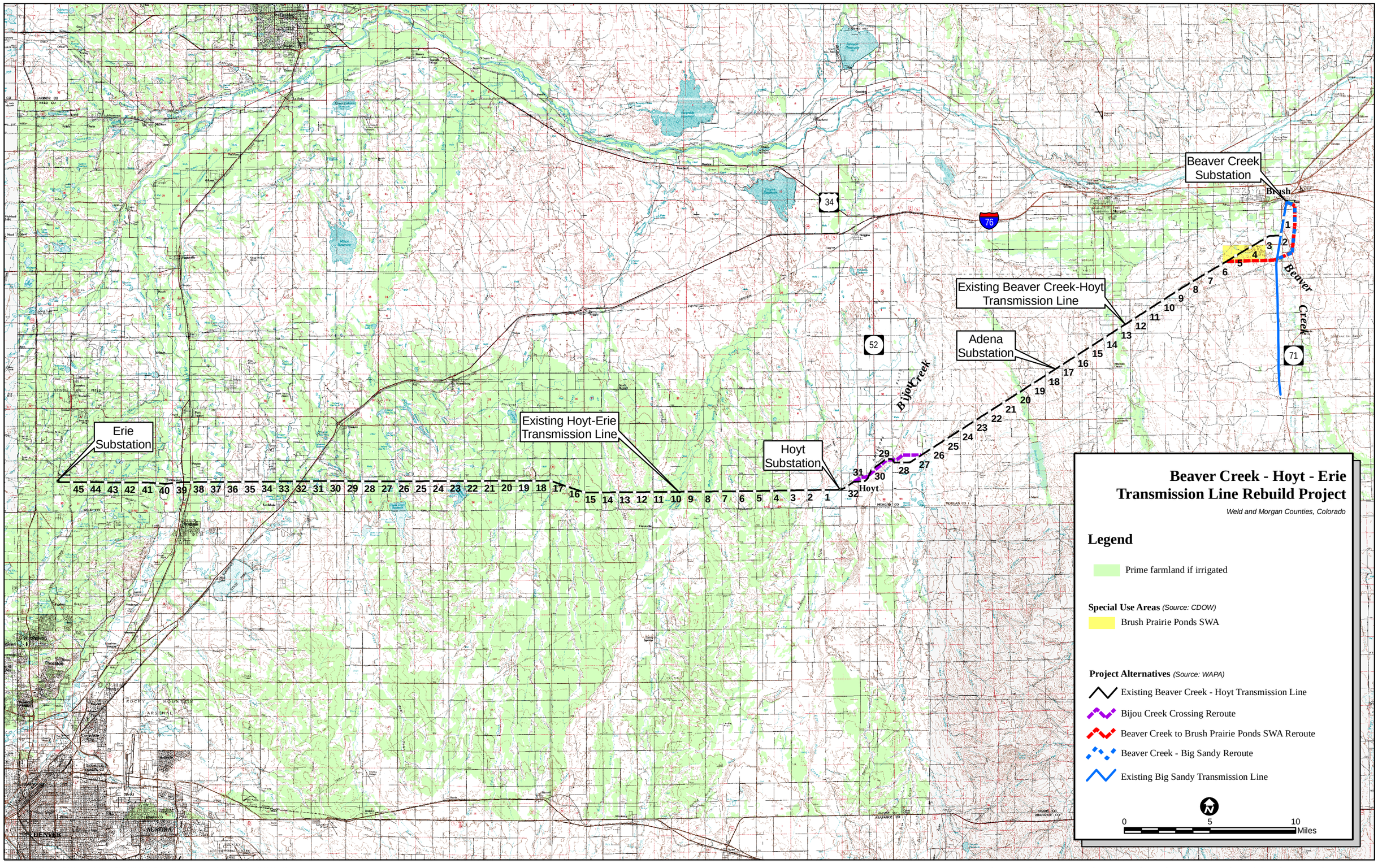
The reroute alternative would reduce the long term impacts to agricultural lands, compared to the existing conditions and the proposed action. Beneficial long term effects would occur where the existing transmission line would be removed from irrigated agricultural fields, and the new line would be located away from agricultural land and center pivot irrigation systems. Beneficial effects to agriculture would occur from approximately milepost BH 26.7 to milepost BH 28 (structure 83-6) and from milepost BH 28.7 to milepost BH 30.5 (structures 81-6 through 79-9). No new agricultural land uses or other existing or planned land uses would be impacted with the reroute alternative, and the alternative would conform to Morgan County planning and zoning regulations. Short term construction impacts would occur along both the reroute alignment and the existing transmission line segment that would be removed. Short term impacts would be the same as previously described for the proposed action and other alternatives.

No Action Alternative

Under the no action alternative, no changes to the existing Beaver Creek-Hoyt-Erie transmission line or substation facilities would occur. Western would continue to operate and maintain the existing 115-kV line in its present location. The potential beneficial agricultural impacts from the increased span between single steel poles for agricultural operations would not occur. From a land use perspective, no additional land uses would be impacted. However, maintenance of the existing lines and substations may increase. Increased maintenance may require increased access to the ROW and more maintenance activities along the ROW, which could affect residences and other commercial, industrial, or agricultural land uses. However, no significant adverse land use impacts are expected from the no action alternative.

3.11.2.4 Mitigation Measures

Implementation of Western's Standard Practices 1 and 2 (Table 2.1-3) and Project Measures WATER-1, WILDLIFE 2, WILDLIFE 3 (Table 2.1-4) will minimize impacts to land uses to levels less than significant. No additional mitigation measures are required.



File: J:\vpw\beaverTL\maps\Fig3-11-1_Prime_farmlands.mxd, Aug 22, 2005 2:05:13 PM, GEO/Graphics, Inc.

Figure 3.11-1. Prime and Unique Farmland in the Project Area

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3.12 Visual Resources

Visual resources consist of landforms, vegetation, rock and water features and cultural modifications that create the visual character and sensitivity of landscapes. Important visual resources are areas that have landscape qualities of unusual or intrinsic scenic value and areas of human and cultural use that are valued for their visual settings.

The project impact area for visual resources includes the proposed action and alternative ROWs, access roads, substation expansion sites, construction sites and surrounding viewsheds where the appearance of project facilities may alter landscape quality and sensitive views. Viewing locations within foreground (within 0.5 mile) and middleground (0.5 to 1.5 mile) distances have been assessed for representative residential, highway, and recreational land uses.

3.12.1 Affected Environment

Factors considered in evaluating the importance of visual resources include the following:

Visual Quality is defined as the overall visual impression or attractiveness of an area, considering the variety, vividness, coherence, harmony or pattern of landscape features. Visual quality is defined according to three levels in the EA – *Distinctive*, resources that are unique or exemplary in quality; *Representative*, resources that are typical of the physiographic region and commonly encountered; and *Indistinctive*, those landscape or cultural areas that either lack visual resource amenities or have been degraded.

Visual Sensitivity is defined as a measure of an area's potential sensitivity to visual change, considering types of viewers and viewer exposure. Visual sensitivity considers viewer types and volumes, as well as viewing distance zones. Areas and associated viewer types considered to be potentially sensitive to visual changes include: designated park and recreation areas, major travel routes, and residential areas. Two distance zones are discussed for potentially sensitive view areas, *foreground* (within .5 mile) and *middleground* (within .5 to 1.5 miles).

Visual Quality

The project area encompasses portions of northeastern Colorado, which are characterized by expansive open plains, rolling hills, and intermittent water features. Major water features include the South Platte River, and a series of smaller creeks and drainages, including Beaver Creek, Badger Creek, Muddy Creek, Bijou Creek Antelope Creek, Box Elder Creek and Big Dry Creek. Wetlands and riparian vegetation patterns are associated with some of these drainages. The project area between Beaver Creek and Hoyt Substations is typical of northeastern Colorado with rolling plains, irrigation ditches, wetlands and river beds. Mixed grasses and short-grass prairies characterize the visual quality of these landscapes. Between the Hoyt and Erie Substations, irrigated agriculture dominates the visual character of the landscape, with Horse Creek and Prospect Irrigation Reservoirs located near the transmission line along with numerous irrigation ditches and canals. Large-scale industrial uses, including the Pawnee power plant southwest of Brush, and oil and gas wells between Hoyt and Erie also influence the visual character of the landscape. Numerous transmission lines are also present through portions of the project area including 115-kV and 230-kV systems. These facilities are discussed in Section 3.11, Land Use. Overall, the scenic quality of the project area is representative of the region and highly influenced by the open quality of the plains environment and the rural agricultural landscapes.

Visual Sensitivity

Sensitive viewer groups within the project area consist of rural residences, agricultural based communities, and travelers along Federal and state highways. Residences are most concentrated in the eastern part of the project area, near the City of Brush, and in the western part of the project area near Erie, where subdivisions and individual estate residences have been built in recent years. Recreational uses are found at the Brush Prairie Ponds SWA, located south of Brush. The following land uses may have potential views to the project area:

Residential Areas and Communities – Residential areas, communities and subdivisions within the foreground to middleground viewing distance zones of the project include: Brush, Wattenberg, Lockbuie and Brighton. (See Figure 2.1-2 and 2.1-3 and Section 3.11).

Major Travel Routes – Major travel routes in the project area include: Interstate 25 and Interstate 76, SR 71, SR 52 and SR 79 in Morgan and Weld Counties, and U.S. Highways 34 and 85 in Weld County. Numerous local county roads are also in the project area. (See Figure 2.1-2 and 2.1-3 and Section 3.14).

Recreation and Natural Areas - The Brush Prairie Ponds SWA is crossed diagonally by the existing transmission line and provides hunting, fishing and wildlife conservation opportunities and values. (See Figure 2.1-2 and Sections 3.8 and 3.11).

3.12.2 Environmental Impacts and Mitigation Measures

3.12.2.1 Issues and Significance Criteria

Visual impacts would be significant if:

- the proposed project or alternatives caused long term visual changes that diminished the value or use of established parks or recreation areas of national and regional importance, or designated scenic areas with recognized regionally important viewsheds.

The proposed action would primarily result in long term visual effects, resulting from the visibility of the proposed facilities for the life of the project. The proposed project and routing alternatives would not impact any national or state parks or designated scenic areas with recognized regionally important viewsheds. Visual impacts to the Brush Prairie Ponds SWA would be adverse and long-term, however, these impacts would not be significant given the values that the SWA are intended to protect (e.g. hunting, fishing, and wildlife conservation) and the visual effects of the 115-kV transmission line that have been on-going since the 1950's. Long-term visual impacts to the SWA are discussed in this section, and would be partially off-set by the removal of the existing 115-kV H-frame structures.

Visual impacts would also include short term direct effects from ground disturbances, and the visibility of construction crews, equipment and vehicles working along the ROW and access roads. Short term visual impacts during project construction would be adverse, but less than significant, since these visual changes would be temporary and Western would implement standard practices to reclaim disturbed landscapes to pre-existing conditions (Table 2.1-3, Standard Practices 1, 2, 6,7, 8 and 9).

The evaluation of long term visual impacts is based on field reconnaissance and an assessment of visual contrasts that the project would cause from representative key observation points (KOPs).

The evaluation of visual effects is based upon adopted Federal (U.S. Department of Interior, Bureau of Land Management, Visual Resource Management System) methods and principals for evaluating visual resources and contrasts. Visual contrast is a measurement of changes in visual elements of line, form, color and texture and is used to compare the existing setting and future setting with the project. Visual contrasts are evaluated according to three levels: weak, moderate and strong. The visual contrast evaluations are supported by photographs of the existing KOP settings, and computer-generated visual simulations of the proposed project and alternatives.

Three KOPs are referenced in this EA section to document the range of visual changes anticipated from the proposed project and alternatives. Photographs and simulations are at the end of Section 3.12.

- KOP 1 – View of rural residence, located south of Brush, east of State Route 71. This KOP is representative of rural residential settings in the eastern part of the project area, within foreground viewing distances of the proposed project. The photograph of the existing setting (Figure 3.12-1a) shows the visual influences of the existing Beaver Creek-Hoyt 115-kV transmission line and other nearby transmission facilities. The visual simulations illustrate the proposed project and range of alternatives and structure designs under consideration by Western. Figure 3.12-1a is a photograph of the existing setting and Figure 3.12-1b is a computer-generated simulation of the proposed project. Figures 3.12-1c and 3.12-1d are computer-generated simulations of the Brush Prairie Ponds SWA Reroute Alternative and Big Sandy Reroute Alternative, respectively.

- KOP 2 – View from rural residence, located east of the Brighton Substation. This KOP is typical of the recent housing development occurring in the western part of the project area. The existing setting is shown in Figure 3.12-2a, and the simulation of the proposed project is shown in Figure 3.12-2b.

- KOP 3 – View from State Route 71, looking west towards Beaver Creek and agricultural lands. A photograph of the existing setting is shown in Figure 3.12-3a, and the simulation (Figure 3.12-3b) shows the visual changes that would occur with implementation of the Brush Prairie Ponds SWA Reroute Alternative. Views from this KOP are typical of road crossings in this rural project area.

3.12.2.2 Impacts of the Proposed Action

The proposed action would result in long term visual and aesthetic changes that would primarily affect representative landscapes of eastern Colorado and residential and highway viewer groups in the project area. Long term visual changes would also occur to the Brush Prairie Ponds SWA and visitors. Landscape character changes and visual contrasts created by the proposed action would typically be incremental (weak to moderate) throughout the project area, since the visual changes would result from replacing a existing 115-kV transmission line with a new 230-kV transmission line and expanding two existing substations. Project-related visual and aesthetic impacts would vary, however, depending on specific viewing conditions and distances from the project.

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Figures 3.12-1a, 3.12-1b, 3.12-2a and 3.12-2b should be referenced in reviewing this impact discussion.

Recreation Areas. The existing transmission line and proposed transmission line rebuild project cross diagonally through the center of the Brush Prairie Ponds SWA. From the SWA, visual changes from the proposed action would be evident and viewed within a foreground distance zone. Visual changes would result from the replacement of the existing transmission line with larger structures and conductors. The single pole steel structures would be almost twice as tall as the existing H-frame structures (average 100 feet in height, compared to the existing H-frame structures that average 50 to 55 feet); consequently, the visibility of the proposed transmission line rebuild would be noticeably increased. The proposed project would result in fewer structures compared to the current conditions due to the increased span length between the proposed structures (1,000 ft. average) compared to the existing H-frame structures (700 ft. average). The visual changes caused by the increased height of the single pole structure design would be partially offset by the reduced number of structures as well as the more streamlined design of the single pole compared to the existing H-frame structures. Visual contrasts created by the increased number and diameter of the conductors, and 230-kV insulator hardware would also be incremental to the existing visual conditions of the 115-kV system. On balance, the increased visual contrasts of the proposed project would be moderate compared to the existing impacts of the H-frame structures and conductors. The proposed project would have adverse, but less than significant visual impacts on the Brush Prairie Ponds SWA.

Residential Areas and Communities. Residential areas that may have views to the proposed project include outlying areas of Brush, Lochbuie, Wattenberg and Brighton as well as scattered rural residences. Brush and Wattenberg are the closest to the proposed project, with Brush less than one mile to the west near the Beaver Creek Substation, and Wattenberg adjacent, and north of, the proposed project, between milepost HE 39 and HE 40. KOP 1, Figure 3.12-1a shows a typical existing setting and the 115-kV transmission line near a rural residence in the eastern part of the project area, south of Brush. Figure 3.12-1b illustrates the proposed project and the visual changes in both structure design, scale and spacing that the project would create. Figures 3.12-2a and 3.12-2b are similar residential settings in the western part of the project area, near the Brighton Substation. Both KOPs document the visual effects from changes in transmission structures and conductors and the increased spacing between structures.

Visual changes associated with the proposed project would be evident within the foreground and middleground viewing distances. Due to the open qualities of the high plains landscape, the increased height and contrast of the proposed single pole steel structures and conductors would be skylined from most homes that currently have views to the smaller 115-kV H-frame structures and conductor. The visual changes of the proposed project would be incremental and off-set by the reduced number of structures required. Overall, visual contrasts would be weak to moderate, depending on viewing distance, when compared to the existing views. Visual impacts would therefore range from adverse to slightly adverse, and would be less than significant.

Visual impacts would also be adverse, but less than significant from rural residential homes that may have views to the proposed H-frame structures at transmission line undercrossings and near the Beaver Creek and Hoyt Substations In each of these locales, Western would install 4 to 6 230-kV H-frame structures. The proposed H-frame structures would be larger than the existing 115-kV H-frame structures, and would be viewed in conjunction with other larger existing transmission facilities that are part of the existing visual setting. Within these utility settings, the increased contrast would be weak to moderate, when compared to the existing conditions.

Travel Routes. The proposed project would be visible to motorists at the following crossings: SR 71 (milepost BH 1.5), I-76 (milepost HE 31.5), and U.S. Highway 85 (milepost HE 38.3). Visual contrasts at these crossings would be moderate to strong, when compared to the existing

setting. Figures 3.13-1a and 3.13-1b are views from SR 71. The long term visual impacts to motorists would be less than significant due to the short duration of views and the incremental changes in visual character that would occur at these locations, compared to the existing setting. Changes would be similar to those described above for viewers to the Brush Prairie Ponds SWA. The proposed project would also be seen within a middleground viewing distance of I-76 and I-25. Evident visual changes would be minor from these roadways due to the short-duration of view, intervening distances, and the incremental visual changes that would occur.

Proposed Beaver Creek and Erie Substation Modifications

Beaver Creek Substation Expansion

The substation expansion would be within view of I-76 and outlying homes near the community of Brush. The visual contrasts created by the Beaver Creek Substation expansion would result from the installation of additional 230-kV transformers, switching equipment and racks that would be similar in visual character as the existing 115-kV facility. At the time of this assessment, the plans for the substation expansion had not been developed. An analysis of up to 31.2 acres to the east of the existing facility has been considered. The actual size of the substation expansion would be substantially smaller, and the new substation equipment would be low-profile, with equipment typically not exceeding 25 feet in height.

From a visual standpoint, the expansion of the substation would mainly add to the size or scale of the existing substation facility, rather than introduce any new facilities of substantially different line, form, color or texture. The substation site and surrounding area supports a number of high voltage transmission lines as well as Tri-State's Story Substation. Viewed within the context of these existing utility land uses, the substation expansion would result in weak visual contrasts in line, form, color and texture. In addition, since the Beaver Creek Substation would be expanded to the east of the existing facility, visual impacts to the community of Brush, located less than a mile to the west, would be minimized.

Erie Substation Expansion

The Erie Substation would be expanded in an area visually characterized as a mixture of rural residential, light industrial, and agricultural land uses. Potential substation changes and the resultant visual contrasts from the substation expansion would be similar to those described above for the Beaver Creek Substation. The analysis for this substation expansion is based on the existing substation expanding to 9.5 acres. The Erie Substation lies more than 1.5 miles away from all communities. Visual contrasts to all viewer groups would be weak, and less than significant due to the low number of viewers, and incremental changes in line, form, color and texture that the substation expansion would create.

3.12.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute

Figures 3.12-1a, 3.12-1c, 3.12-3a and 3.12-3b should be referenced in reviewing this impact discussion.

The Beaver Creek-Brush Prairie Ponds SWA Reroute would result in similar or reduced visual impacts, compared to the proposed project. Visual impacts would be reduced to the SWA and to some local residents. The long term visual impacts to the SWA would be noticeably reduced by relocating the proposed project to the east, and approximately 400 feet north of the southern boundary of the SWA. By rerouting the proposed transmission line along this alternative, the existing transmission line would be removed from the center of the SWA, and no new transmission line would be introduced in its place. While the installation of the proposed single pole steel structures, hardware and conductors near the southern boundary of the SWA would still cause visual effects to the SWA, these contrasts would be substantially lessened, when compared to the proposed project routing through the central area of the SWA. Visual contrasts seen from the SWA ponds would be weak and slightly adverse with this alternative, and an improvement in the SWA visual setting, compared to the existing conditions.

With respect to residences near Brush, the reroute alternative would improve the visual setting from most homes located south of Brush. From the Beaver Creek Substation, the new 230-kV transmission line would be routed further to the east away from homes and agricultural lands, and would follow an existing transmission line corridor. Figures 3.12-1b and 3.12-1c show and compare the visual effects of the proposed project and this alternative. For those residents that would have views to the reroute alternative, the visual contrasts of paralleling another transmission line would range from weak to moderate, depending on individual home views. These impacts would be off-set by the removal of the existing transmission line and ROW, and the consolidation of the proposed project with other visually similar transmission facilities. The visual impacts to residents are consequently assessed as weak to moderate and slightly adverse. Similar impacts would also occur to local travel routes. With this alternative, the visual impacts to SR 71 would be reduced since the project would be consolidated adjacent to other existing transmission facilities.

Beaver Creek-Big Sandy Reroute

Figure 3.12-1d should be referenced in reviewing this impact discussion.

The visual effects of this alternative would be similar to those described for the Beaver Creek-Brush Prairie Ponds SWA reroute. This alternative would consolidate the Big Sandy Transmission Line within the same ROW as the Brush Prairie Ponds SWA Reroute for 4.2 miles south of the Beaver Creek Substation. Depending on the individual settings of homes east and south of Brush, the visual effects of this alternative on area residences would range from beneficial to slightly adverse. From a visual impact perspective, the alternative would result in: 1) two sets of single pole steel structures being installed along an existing transmission line corridor, east of the proposed project and 2) the elimination of two sets of existing H-frame structures that currently occupy separate ROWs further to the west across both the SWA and more developed agricultural lands. Figure 3.12-1a is a photograph of the existing setting and transmission lines from KOP 1. Figure 3.12-1d shows the Big Sandy Reroute Alternative.

While the two sets of single pole steel structures would be noticeably taller than the existing H-frame structures, the consolidation of these transmission lines in one corridor location would result in beneficial effects due to the elimination of some of the existing multiple and separate line corridors. Visual contrasts from the two sets of single steel pole structures would be adverse due to the increased height of the 230-kV system compared to the existing 115-kV H-frames that they would replace. At the same time, the elimination of the two existing and separate 115-kV systems would be beneficial to some area homes where existing views would be enhanced by the permanent relocation of transmission lines and structures. Overall, adverse impacts may occur,

but are not considered significant, since the alternative would result in moderate structure and line contrasts when compared to the existing settings.

Bijou Creek Crossing Reroute

The Bijou Creek Crossing Reroute would result in very similar visual impacts as the proposed rebuild project. The reroute is located in a remote area where views are limited to a few rural residences. The reroute is situated very close to the existing transmission line, with slight adjustments in alignment. Consequently, the visual impacts would be slightly adverse, and essentially the same as the proposed project.

No Action Alternative

The no action alternative would result in the continued operation of the existing Beaver Creek-Hoyt and Hoyt-Erie 115-kV transmission lines. On-going visibility of the transmission lines to local residents, roadside travelers, and the Brush Prairie Ponds SWA would continue. The existing visual effects are considered adverse and less than significant since the transmission facilities are part of the existing visual environment.

3.12.2.4 Mitigation Measures

In order to ensure that visual changes from the proposed action and alternatives are minimized to the extent practicable, Western would implement Project Measure Visual-1 (Table 2.1-4). No additional mitigation measures are necessary.

Project Measure VISUAL-1. The 230-kV single pole steel structures will be a neutral, non-reflective steel material. Non-reflective and compatible toned conductors and insulators will be used. Corten steel will not be used for the transmission structures, due to the strong color and tone contrasts that corten steel would create against the open lighter sky. In order to minimize the visual contrasts of the structures in the open agricultural and prairie settings, a neutral gray tone steel material or similar material will be used.

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Figure 3.12-1a KOP 1 – Rural Residential south of Brush Colorado, View Looking East – Photograph of Existing Setting

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Figure 3.12-1b KOP 1 – Rural Residential south of Brush Colorado, View Looking East – Simulation of Proposed Project

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Figure 3.12-1c KOP 1 – Rural Residential south of Brush Colorado, View Looking East – Simulation of Brush Prairie Ponds SWA Reroute Alternative

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Figure 3.12-1d KOP 1 – Rural Residential south of Brush Colorado, View Looking East – Simulation of Big Sandy Reroute Alternative and Brush Prairie Ponds SWA Reroute Alternative

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Figure 3.12-2a KOP 2 – Rural Residential east of Brighton Substation, View Looking Southwest – Photograph of Existing Setting

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Figure 3.12-2b KOP 2 -- Rural Residential east of Brighton Substation, View Looking Southwest – Simulation of Proposed Project

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Figure 3.12-3a KOP 3 – Roadside View from State Route 71, View Looking West – Photograph of Existing Setting

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Figure 3.12-3b KOP 3 – Roadside View from State Route 71, View Looking West – Simulation of Brush Prairie Ponds SWA Reroute Alternative

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3.13 Socioeconomics and Community Resources (including Environmental Justice)

3.13.1 Affected Environment

This section addresses historical and present socioeconomic conditions in the two counties that would be affected by the proposed action and alternatives. The project area includes the regional and local community settings. Topics reviewed include population, employment and income, and housing. Tables 3.13-1 through 3.13-4 summarize baseline conditions within the two-county area. The only urban community directly affected by the transmission line rebuild is Brush in Morgan County, Colorado. This section of the EA also addresses issues related to Environmental Justice, as required under Executive Order 12898.

3.13.1.1 Demographics

Employment and Income

The project area has a diverse economic base, with the greatest percentages of total employment occurring in the services, government, and retail trade sectors, except for Weld County, which has a large manufacturing sector (U.S. Dept. of Commerce, BEA, 2003). Agriculture is an important sector of the economy within the region.

Employment and unemployment for 2004 in each of the counties within the project area is shown in Table 3.13-1. Morgan County had an estimated unemployment rate of 4.6 percent in 2004 and Weld County 5.4 percent. Unemployment rates reflect an improving economy throughout the region. The total labor force for the two-county area is estimated at over 123,816.

Table 3.13-1. Labor Force Summary 2004

County	Labor force	Employed	Unemployed	%
Morgan County	15,068	14,371	697	4.6
Weld County	108,748	102,918	5,830	5.4

Source: Colorado Labor Market Information

The employment by industrial sector is shown in the Table 3.13-2. The construction sector represents 8.4 percent of total employment (137,335), with over 11,546 employed in the construction sector within the four counties.

Average weekly wage in the construction trade in Morgan County was $659 in 2003 compared to $694 in Weld County (Colorado Department of Labor and Employment: Employment and Wages). Average annual earnings per job in the affected counties were $26,520 in Morgan County and $31,668 in Weld County, Colorado in 2003.

Table 3.13-2 Full Time and Part-time Employment by Industrial Sector NAICS – 2003

	Morgan County	%	Weld County	%
Ag, For, Fish	675	5.9	3,322	4.6
Mining	157	1.4	1,362	1.9
Construction	570	5.0	6,395	8.8
Manuf.	2,701	23.8	10,435	14.4
T.U.P.U.	536	4.7	2,160	2.9
Wholesale Trade	370	3.3	3,242	4.5
Retail Trade	1,194	10.5	7,830	10.8
F.I.R.E.	299	2.6	3,837	5.3
Services	2,396	21.1	22,333	30.7
Government	2,200	19.4	11,730	16.2
Total Industry (including non disclosed)	11,369		72,650	

Source: Colorado Department of Labor and Employment, 2003

Demographic Trends

Population. Population trends for the project area is shown on Table 3.13-3. Population in Morgan County has increased by 28.8 percent between 1990 and 2003, and 59.2 percent in Weld County. Colorado as a whole has increased by 39.2 percent during the same time period. Weld County is one of the fastest growing counties in the U.S.

Table 3.13-3. Population Growth in the Project Area

	1990	2000	2003	% Increase 1990-2003
State of Colorado	3,294,394	4,301,261	4,586,455	39.2
Morgan County	21,928	27,171	28,244	28.8
Weld County	131,821	180,936	209,909	59.2

Source: U.S. Bureau of the Census, Colorado Division of Local Government

The race composition of the project area is composed primarily of White or Hispanic ethnic background. The Morgan County population is 67 percent White and 31.2 percent Hispanic and Weld County is 70 percent White and 27 percent Hispanic (U.S. Bureau of Census, 2000).

Housing

The Beaver Creek-Hoyt-Erie Transmission Line is located near the cities of Brighton (Denver), Fort Lupton, Fort Morgan, and Brush, which have a large number of short term housing accommodations. These towns are within easy commuting distance of the transmission line project. In addition, there are public and private campgrounds throughout the area that provide campgrounds facilities for transient workers. Other temporary accommodations are available along the transmission line route

In addition to temporary housing there is adequate permanent housing within commuting distance of the route throughout the project area. It is anticipated that unless the construction contractor is from out of state, transmission line workers would travel to and from their permanent residences on a daily basis.

3.13.1.2 Public Services

Public services throughout the project area are provided by various private and public entities, including counties, municipalities, special districts and private interests. Because of the minimal level of population impacts anticipated during the construction phase of the project, only public facilities, which might potentially be impacted by accidents of transmission line construction, will be covered in this section.

Emergency Services- Law Enforcement and Hospital

Emergency services provided in Morgan and Weld County, Colorado include fire, sheriff and police, ambulance, and hospital services.

Law enforcement services are provided by the Morgan, Weld, and Adams County Sheriff's Departments and the Cities/Towns of Brush, Brighton, Erie, and Fort Morgan. Officers are stationed in all the towns along the route mentioned above as well as Fort Lupton and Longmont. Fire protection and emergency services are provided by the Greater Brighton Fire Protection District, Brush Volunteer and Rural Fire Departments, Fort Morgan Volunteer Fire Department, and the Adams County Office of Emergency Management.

There are six hospitals in the project area within close proximity of the transmission line: two in Brighton (Community Health Resources and Platte Valley Medical Center); one in Brush (East Morgan County Hospital); one in Fort Morgan (Colorado Plains Medical Center); one in Sterling (Sterling Regional Medical Center), and several in the Denver Metro area including the facilities in Thornton and Longmont, which are near the transmission line rebuild.

3.13.1.3 Environmental Justice

Under Executive Order 12898 (published in the Federal Register February 11, 1994), Federal agencies are required to identify and address disproportionately high or adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. A specific consideration of equity and fairness in resource decision-making is encompassed in the issue of environmental justice. As required by law and Title VI, all Federal actions will consider potentially disproportionate negative impacts on minority or low-income communities. Within the area affected by the proposed project, minimal minority populations are affected. During the EA process, particular efforts were made to ensure that property owners within the affected areas were informed of the proposed project, the EA procedures, and the opportunity to provide comments.

Income levels throughout the project area are diverse. The most recent estimate of per capita personal income was in 2002, and shows a range of $24,495 in Weld County, Colorado, $23,327 in Morgan County, and $33,723 in the state of Colorado. These numbers reflect the disparity of incomes in the more agricultural-oriented Weld and Morgan Counties as compared to the state as a whole. The most recent poverty status statistics are from the 2000 census data and may not reflect the current conditions, however, these data showed poverty status for 12.4 percent (3,369) of the population in Morgan County, and 12.5 percent (22,617) in Weld County (U.S. Bureau of the Census, 2000). Since the economic base of the project area is largely rural agriculture, low income areas are dispersed within the project area. People within the poverty status may reside along the route, but not disproportionately.

Table 3.13-4 highlights demographic statistics for identifying potential areas of concern. The 2000 Census data was used for the analysis of race and income data was used for analysis of poverty.

Table 3.13-4. 2000 Census Community Statistics for Environmental-Justice Analysis

Percent of Population	Colorado	Morgan	Weld
Persons Below Poverty Level	400,017	27,171	22,617
Percent Below Poverty	9.3	12.4	12.5
White	74.5	67.0	70.0
Black	3.8	0.3	0.6
American Indian	1.0	0.8	0.9
Asian	2.2	0.2	0.8
Native Hawaiian or Pacific Islander	0.1	0.2	0.1
Other Race	7.2	16.4	13.3
Hispanic Origin (of any race)	17.1	31.2	27.0

Source: U.S. Bureau of the Census, 2000

3.13.2 Environmental Impacts and Mitigation Measures

3.13.2.1 Issues and Significance Criteria

Impacts to socioeconomics would be significant if:

- minority or low-income populations are disproportionately affected by the transmission line rebuild.

3.13.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Construction. The construction phase of the transmission line rebuild project, between the Beaver Creek Substation and Hoyt Substation is anticipated to begin in May of 2006 and be in service by May of 2007. The construction of the transmission line between the Hoyt Substation and the Erie Substation would occur between 2007 and 2010. The workforce would average 5-6 people per crew with 2 to 5 crews working 10-hour days (Trujillo, 2005). It is anticipated that the workforce would be mostly local if a local contractor is hired and 60 to 70% non-local if an out-of-state contractor is hired. Construction workers would likely stay in RV campers or short term rental units in different locations along the route. If local, some workers would commute to and from their permanent residence on a daily basis if within one hour of the show-up area.

Two to three staging areas of 5 acres each would be designated for each section of line built. The approved contractor would negotiate the location of the staging areas. The staging areas are typically on private land and would not affect transportation or use of public lands.

Wage rates for the skilled and unskilled construction workers range from $8.52 per hour for laborers to $27 per hour for line construction workers including benefits. A portion of this income would be spent in the local area of the transmission line construction for goods and services. This would have a positive short term indirect impact on local businesses such as restaurants, service stations, and miscellaneous retail stores. In addition to local expenditures near the transmission line route, workers would also be contributing to their local economy in the form of local expenditures for goods, services, housing, insurance, entertainment, and food.

Total project cost is estimated at $44 million (Western, 2005). A portion of this would be spent in the local area diesel fuel, fuel oil and miscellaneous supplies and repairs (Trujillo, 2005). This would be considered a positive short term indirect impact to the local economy. Private land owners would be reimbursed for the increase in ROW and also for any crop losses from construction activities.

Based on information provided in Section 3.13.1.1 Housing, temporary accommodations provided in the project area are more than adequate for the estimated 20 to 25 short term employees.

Emergency Services including fire, police, ambulance, and hospital services would not be impacted by increases in population or employment during the construction phase of the proposed project. The only impacts that would affect the provision of emergency services within the project area would be a construction accident or possibly traffic impedance for short periods of time. Basic medical and emergency services, which may be required in the event of an accident, are available throughout the project area as described in Section 3.13.1.2.

Due to the minimal number of construction workforce (20 to 25 maximum for all crews), it is not anticipated that there would be significant impacts on the local area population, employment, housing, or infrastructure.

It is Western's policy that ROW would be purchased at fair market value and payment would be made on full value for crop damages or other property damage during construction or maintenance.

The operations phase of the project would have little or no impact on population, employment, housing, or local infrastructure. The same numbers of operations workers would maintain the rebuilt line. Maintenance activity could actually be less, considering the improved reliability of the rebuilt line.

Proposed Beaver Creek and Erie Substation Modifications

Specifics on the design and exact location and layout of the Beaver Creek and Erie Substation expansions are not available at the time this EA was written. The construction workforce associated with expansion of a substation could range from 6 to 40 peak employees depending on how extensive the expansion is (Trujillo/Hartmann 2005). The construction phase of the project is estimated at 6 months for the Erie substation expansion and one year for the Beaver Creek expansion (Turner, 2005). If the contractor is local, most workers would commute to and from their permanent residences. If the contractor was non-local, a portion (70%) of the workforce would relocate to the area for the duration of the construction activity. These workers would need to find temporary housing in the local area. Income generated in the form of direct wages to employees, and direct expenditures by the contractor would be filtered into the local economy and would be considered a short term beneficial indirect impact. Adequate facility and services exist in Brush, Fort Morgan, Sterling, and Brighton (Denver area) to provide adequate services to the temporary population as described in sections 3.13.1.1 and 3.13.1.2. No significant short term socioeconomic impacts would occur.

3.13.2.3 Impacts of the Alternatives

Beaver Creek-Hoyt Transmission Line Segment

Impacts would be similar to those described for the Beaver Creek-Hoyt-Erie Transmission Line Rebuild for all alternative reroutes.

Environmental Justice

Neither low income (poverty status) nor minority populations would be disproportionately impacted by the proposed project or any of the alternatives. As described in the Environmental Justice section (3.11.1.3) of the Environmental Setting, the economic base of the area is predominately agriculture. Segments of the population are lower income, particularly in rural farm communities, due to a typically lower income generated in the agricultural sector. However, families within the defined poverty status represent less than 13 percent (in 2000) and are dispersed throughout the project area. No new areas would be impacted by the proposed project or routing alternatives.

The proposed project and routing alternatives would not have a disproportionately high or adverse effect on minority and/or low-income populations or corresponding property values of minority or low-income populations. No significant impact to low-income or minority populations would occur.

No Action Alternative

The no action alternative would preclude employment for an estimated construction workforce of 20 to 25 for the proposed transmission line rebuild and a maximum of 40 for the Substation modifications. Income generated in the form of direct wages to employees and direct expenditures by the transmission line contractor and Western would not be filtered into the local economies adjacent to the route. However, maintenance workers would actively be maintaining the line and maintenance expenditures in the area would occur as is the current situation.

3.14 Transportation

3.14.1 Affected Environment

The project impact area for transportation includes the regional and local area that may be used to access the project ROW and substation sites. The transportation system in the project area is predominantly automobile oriented, relying almost exclusively on public roads and highways. Surface transportation in the area is provided by a network of primary, secondary, and local roads. The project area is served by two interstate highways (I-76 and I-25), two U.S. Highways (US 34 and 85), three Colorado State routes (SR 71, 52, and 79), and a number of local Morgan County roads (MCR) and Weld County roads (WCR) (Table 3.14-1). Throughout the project area various county roads and private roads provide access to the transmission line, as shown on Figures 2.1-2 and 2.1-3. From the Beaver Creek substation to milepost BH 5, direct access to the line is available on county roads, but from milepost BH 5 to BH 27 access is somewhat limited between perpendicular county roads. Throughout this segment of the transmission line the land is predominately either fallow or grazing land. Between the Hoyt and Erie substations, access to the project area is provided via numerous county roads that either cross or parallel the proposed transmission line.

Table 3.14-1 Local Access Roads to Beaver Creek-Hoyt-Erie Transmission Line

Morgan County	29, 28, P, 26, 24, Q, 22, 21, 20,1 9, K, L, M, I, 15, 14, F, E, 10, 9, 7, C, 6, D, 5, 4, 3, BB Auto Rd, B, 1
Weld County	95, 91, 87, 83, 81, 73, 71, 6, 61, 59, 57, 55, 4, 53, 51, 49, 47, 45, 41, 39, 37, Bailey Dr., Ditch Rd., 31, 29, 27, 5, 23, 21, 19, 17

The primary interstate and state routes are hard surface and well maintained. Both Morgan and Weld County Roads are either paved or gravel and in excellent condition providing easy access to much of the line. These access roads are not heavily used and are regularly maintained. Farmers and some hunters utilize these roads.

3.14.2 Environmental Impacts and Mitigation Measures

3.14.2.1 Issues and Significance Criteria

Impacts to transportation would be significant if:

- use of public highways and roads was restricted, resulting in adverse impacts to emergency response capability or economic hardships to local businesses.

Impacts to transportation would be associated with short term construction related traffic on the major and local transportation systems within the project area. Large truck traffic and traffic associated with employees traveling to and from the job site would occur on a daily basis during project construction. There are no anticipated impacts to local businesses or the emergency response capabilities, however, since the proposed project is located in a rural agricultural area and work force activities would occur intermittently by relatively small crews. Unlike pipeline projects that can cause traffic and access disruptions along the entire ROW, transmission construction activities primarily occur at structure sites, which limit where access and traffic impacts occur. Consequently, while construction of the proposed action or alternatives could result in short, temporary interruptions of traffic on local roads near structure sites along the

ROW, these impacts would not obstruct access to businesses or impede emergency response capabilities in the region.

3.14.2.2 Impacts of the Proposed Action

Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line

Two to three staging areas per segment of transmission line would be located along the route (Trujillo 2005). Construction materials would be stored at the temporary staging areas. Materials would be hauled to the staging areas using existing roads and streets. Generally the contractor negotiates staging areas with a private landowner. At this time the location of the staging areas are not known, however, they would be located on private land easily accessible from a major transportation route and would not impact public property or public access routes.

Two to five construction crews (including demolition, hauling/framing, setting, and stringing), with up to 5 persons per crew, would travel to and from the respective show-up area (where the job trailer is located) each morning and evening. Based on the number of workers per crew, the peak construction workforce would be a maximum of 25 vehicles. Some workers would carpool to and from the show-up area from where they are residing, reducing the number of vehicles on the roadways. Crews would work a 10-hour day (from sun-up to sun-down). On average the construction crews could complete 10 to 12 structures per day, however, the 2 to 5 crews are working on different components of the line (demolition, hauling, setting, or stringing), and therefore progress along the route would range widely, from 4 to 8 miles per month (Trujillo 2005). Other construction traffic would also be utilizing the transportation system at this time of day, but traffic along the route is moderate to low.

Transportation routes that would be used for the movement of materials and workers for the transmission line rebuild would potentially include I-76 and I-25; U.S. Highways 34 and 85; Colorado State routes SR 71, SR 52 and SR79; and local Morgan and Weld County roads listed on Table 3.14-1. Direct access along the ROW would also be provided via undesignated roads and Western's existing access roads. No urban areas besides Brush and State Highway 71 would be impacted by truck traffic and worker vehicle traffic.

Short term traffic impacts related to truck transportation of materials and supplies would be sporadic throughout the demolition and construction periods. Structures and poles would be removed and stockpiled along the route, then removed altogether from the area during demolition. New poles and structures would be stockpiled at staging areas and brought to the construction site either assembled or partially assembled. Typically equipment used in dismantling and construction of the transmission line include the following: pick-up trucks, blade, tractor trailer, hydrocrane, flat bed truck, tractor with auger, bobcat backhoe, crane (50 to 100 ton capacity), reel trailer, tensioner, puller, digger, winch truck, bucket truck, and hydroseeder. Generally, a maximum of 4 trucks would be at a particular site location at any one time, considering the sequential manner in which demolition and construction occurs.

Only minor short term traffic increases on the project area highway system would result from project construction. Transmission line removal and construction techniques should not require temporary closures of main highways or county roads. Users of smaller gravel access routes may experience some minor short term delays. Western would work with state and county road departments to avoid and minimize potential impacts to transportation systems during construction and during the stringing of the conductors across major highways and interstates, including I-76, U.S. 85, and SR 71 (Standard Practice 17, Table 2.1-3).

The highways providing access to the transmission line ROW have adequate capacity to handle both construction worker traffic and truck traffic associated with demolition and construction of the rebuilt line. No emergency access would be impeded or permanent changes to the transportation or utility systems would occur. Operation activity would require minimal maintenance due to the improved reliability of the line. Western's Standard Practice 17 would be implemented to reduce the impacts to transportation.

Proposed Beaver Creek and Erie Substation Modifications

Beaver Creek Substation Expansion

Expansion of the Beaver Creek substation would require approximately one year to complete, with a peak labor force of 40. Access to the site would be from I-76 and SR 71. Both highways have adequate capacity for workers, materials, and equipment.

Non-local construction workers would likely locate for the short term in Brush or Fort Morgan and commute to and from the construction site on a daily basis. Some local Colorado construction workers may commute up to 80 miles per day from their permanent residences. The transportation system in Brush is adequate to handle both material hauling and commuter traffic to the proposed site. Traffic delays from construction activity, impacts to emergency access, and/or impacts to roadways are not anticipated from construction or operation activities on the proposed Beaver Creek Substation expansion.

Erie Substation Expansion

Expansion of the Erie substation would be similar to the Beaver Creek substation expansion, although the construction period would be approximately six months. Construction workers would have easy access to the site from I-25 and WCR 6. It is anticipated that most non-local workers would temporarily find housing in any of the communities along the I-25 corridor including Brighton, Broomfield, Fort Lupton, and Lafayette among others.

Access to the site would be from I-25 and WCR 6. All access routes have adequate capacity for construction traffic.

3.14.2.3 Impacts of the Alternatives

Beaver Creek - Hoyt Transmission Line Segment

Beaver Creek-Brush Prairie Ponds SWA Reroute and Beaver Creek-Big Sandy Reroute

The impacts for Beaver Creek to Brush Prairie Ponds SWA reroute and Beaver Creek- Big Sandy reroute alternatives would be similar to the proposed project. These alternatives would slightly decrease the potential impacts to SR 71 and MCR 29 and MCR P in the City of Brush. This alternative would avoid construction adjacent to SR 71 from milepost BH 0 to BH 2. It also would avoid industrial and residential traffic along SR 71 for most of the construction period. However, during demolition of the existing line, this area would have impacts similar to the proposed project as described above. Short term construction impacts would be reduced and traffic delays along SR 71 would not occur during construction activities on the rebuilt line.

Access to the Beaver Creek to Brush Prairie Ponds SWA reroute and Beaver Creek- Big Sandy reroute would be through MCR R and MCR Q, on existing farm roads, an existing pipeline

access, and then overland to the ROW and along the ROW. No roads would be built, upgraded, or improved on the alternative route. Access for construction activities is not anticipated to affect current transportation patterns.

Bijou Creek Crossing Reroute

The impacts for Bijou Creek Crossing Reroute alternative would be similar to the proposed project. Access for the Bijou Creek Crossing Reroute alternative would be from MCR D, MCR 6 and the existing Beaver Creek-Hoyt transmission line ROW for the eastern portion of the reroute, and MCR 4, B& B Auto Rd, and the existing transmission line ROW for the western portion of the reroute. No roads would be built, upgraded, or improved on the alternative route. Access for construction activities is not anticipated to affect agricultural operations or access in the area.

No Action Alternative

The existing transportation system would remain the same in the region with the no action alternative. Over time, more frequent maintenance activities would be required for the 115-kV transmission line. No measurable impacts would result on traffic or transportation systems, however.

3.15 Electrical Effects and Human Health

A significant impact on safety and health as a result of the proposed project would occur if features of the proposed project have demonstrated adverse health effects. Specifically, these would include increased risk of injuries or deaths resulting from potentially higher risk of adverse health symptoms (including those to pacemaker wearers) resulting from increases in electric and magnetic fields in the area.

Current and voltage are required to transmit electrical energy over a transmission line. Current is flow of an electrical charge measured in amperes and is the source of a magnetic field. Voltage represents the potential for an electrical charge to do work expressed in units of volts (V) or kV and is the source of an electrical field. The proposed 230-kV transmission line would provide a maximum thermal capacity of approximately 1,000 amperes in each of the three phase conductors or wires. The electrical effects of the proposed 230-kV transmission line can be characterized as "corona effects" and "field effects" that are associated with current-induced magnetic fields and voltage-induced electrical fields.

Corona Effects

Corona is the electrical breakdown of air into charged particles caused by the electrical field at the surface of conductors, insulators, and hardware of energized high-voltage transmission lines. Corona occurs where the field has been enhanced by protrusions, such as nicks, insects, or water drops. During fair weather, these sources are few and corona is minor. During wet weather, sources increase and corona effects are greater. Effects of corona are audible noise, visible light, radio and television interference, and photochemical oxidants.

Audible noise – Corona-generated audible noise is generally characterized as a crackling/hissing noise, most noticeable during wet-weather conditions. There are no design-specific regulations to limit audible noise from transmission lines. Transmission line audible noise is measured and predicted in decibels (A-weighted) or dBA. Some typical noise levels are: light automobile traffic at 100 feet, 50 dBA; an operating air conditioning unit at 20 feet, 60 dBA; and freeway traffic or freight train at 50 feet, 70 dBA. This last level represents the point at which a contribution to hearing impairment begins. The average noise level during wet weather at the edge of the ROW for the proposed line is anticipated to be 46 dBA at 230-kV.

Visible light – Corona is visible as a faint bluish glow at night, and probably only with the aid of telescopic devices. Light would be difficult to detect at the operating voltage of 230-kV.

Radio and television interference – Corona-generated radio interference is most likely to affect the amplitude modulated (AM) broadcast band; frequency modulated (FM) radio reception is rarely affected. Only AM-radio receivers near transmission lines are affected by radio interference. An acceptable level of maximum fair-weather radio interference at the edge of a ROW is 40 to 45 dBuV/m (decibels above one microvolt per meter). Average levels during foul weather are typically 16 to 22 decibels higher than average fair-weather levels. The predicted fair-weather level for the proposed transmission line rebuild is 36 dBuV/m. Television interference (TVI) due to corona occurs during foul weather and is generally caused by transmission lines with voltage more than 345-kV. The level of corona-operated TVI expected from the proposed rebuild is 16 dBuV/m at the edge of the ROW. This is a lower level than occurs on many existing lines.

Various techniques exist for eliminating adverse impacts on radio and television reception. Western would address individual complaints concerning radio and television interference as needed.

Corona-generated interference can disrupt communication bands such as the citizen's and mobile bands. However, mobile-radio communications are not susceptible to transmission line interference because they are generally FM. If interference occurs with these types of communications, the same techniques used to alleviate television and radio interference can be used. Shielding, where practicable, would alleviate interference with electronic monitoring equipment.

Photochemical oxidants – When corona is present, the air surrounding the conductors is ionized and many chemical reactions take place, producing small amounts of ozone and other oxidants. Approximately 90 percent of oxidants are ozone and the remainder mainly nitrogen oxides.

The NAAQS for photochemical oxidants, of which ozone is the principal component, is 235 $\mu g/m^3$ or 120 parts per billion (ppb). The maximum incremental ozone levels at ground level calculated for the proposed line would be less than 0.02 ppb for a 0.5 miles per hour perpendicular wind and a .03 inch per hour rain.

Field Effects

The electric field created by high voltage transmission lines extends from the energized conductor to other conducting objects. Resulting field effects include induced current and voltage in the ground, structures, vegetation, buildings, vehicles, and people near the transmission line; spark discharge shocks; steady state current shocks; field perception at ground level; and magnetic field. The electric field or voltage gradient is expressed in units of volts per meter (V/m) or kilovolts per meter (kV/m).

For a 230-kV line single-circuit design an electric field of less than 4-kV/m would result at the point of maximum strength within the ROW. This would decrease to 0.07-kV/m at about 200 feet away. There are no Federal standards for transmission line electric fields. Several states have set guidelines for electric and magnetic field levels that must be met for newly constructed transmission lines. These levels at the edge of the ROW are about 2 kV/m for electric fields and 200 mG for magnetic fields. In most cases the values are maximum fields that existing lines produce at maximum load-carrying conditions. Montana has established a one-kV/m edge of ROW standard in residential areas. Field levels for the proposed transmission line rebuild would be within the recommended limits of these states.

Primary shocks – The greatest hazard from a transmission line is primary shocks or direct electrical contact with the conductors. Primary shocks can result in physical harm. The lowest category of primary shocks is "let go," which represents the steady-state current that cannot be released voluntarily. The maximum induced current (mA) criterion for vehicles closely approximates the estimated 4.5 mA let-go threshold for 0.5 percent of children (Keesey and Letcher, 1969). Caution should be exercised to avoid primary shocks resulting from line strikes with equipment (e.g., drill rigs, farm equipment, electrical service equipment).

Steady-state current shocks – Steady-state currents are those that flow when a person contacts an ungrounded object, providing a path for the induced current to flow to the ground. Potential steady-state-current shocks from vehicles under the proposed line are at or below secondary shock levels. Secondary shocks could cause an involuntary and potentially harmful movement,

but cause no direct physiological harm. Steady-state current shocks are infrequent and represent a nuisance rather than a hazard.

Induced current and voltage – When a conducting object, such as a vehicle or person, is placed in an electric field, currents and voltages are induced in that object. The magnitude of the induced current depends on the strength of the electric field and the size and shape of the object. Voltage induction and the creation of currents in long conducting objects, such as fences and pipelines, would be possible near the proposed transmission line. If the object is grounded, the induced current flows into the earth and is called the short-circuit current of the object. In this case, voltage on the object is effectively zero. If the object is insulated (not grounded), then it assumes some voltage relative to ground. These induced currents and voltages represent a potential source of nuisance shocks near a high voltage transmission line. Even under worst case conditions, the short-circuit current resulting from induced voltage of the proposed transmission line to the largest anticipated vehicle would be less than the National Electric Safety Code criterion of 5 mA.

Cardiac pacemakers – Overall risk to cardiac pacemaker wearers as a result of current and voltage induction warrant individual discussion. Induced current and voltage represent a possible source of interference to pacemakers. Internal currents can be caused by electric fields, magnetic fields, or by direct contact.

The interference threshold for the most sensitive pacemaker is estimated at 3.4-kV/m. The maximum induced electrical field of the proposed 230-kV transmission line is estimated at 1.6-kV/m. Therefore, the proposed project, when operated at 230-kV capacity, would not pose a risk to pacemaker wearers.

Spark-discharge shocks – Induced voltage appears on objects that conduct electricity, such as vehicles, fences, and railroad tracks, when there is an inadequate ground. If voltage were sufficiently high, a spark-discharge shock would occur upon contact with the object. This type of shock could occur under the proposed 230-kV transmission line. However, the magnitude of the electric field would be low, and infrequently occur under the line near mid-span.

Carrying or handling conducting objects, such as irrigation pipe, under the proposed line could result in spark discharges that are a nuisance. The primary hazard with irrigation pipe, however, is direct contact with conductors.

Field perception – When the electric field under a transmission line is sufficiently high, persons standing under or near the line may perceive the raising of hair on an upraised hand. At the operating voltage of 230-kV, electric fields from the proposed line should not be detected.

Magnetic field – Magnetic field strength is expressed in terms of teslas or gauss. There are no established limits for magnetic field strength. The proposed 230-kV transmission line, operated at maximum current and thermal capacity, would induce an estimated 60-hertz (Hz) magnetic field maximum of approximately 290 milligauss (mG) (.29 gauss) diminishing to 6 mG about 200 feet away. These magnetic field strengths compare with levels of magnetic field measured near common household appliances, and are much less than the direct current magnetic field of the earth (0.6 gauss). The health effects associated with the upgraded transmission line would be similar to those for the existing line. Since the proposed line design is in keeping with Western's field-reducing guidelines, any exposures within the ROW would be similar to those expected from typical Western designs. The edge of the ROW would mark the beginning of the long term residential exposure levels at the root of the present health concern. Since there would be no

residences or occupied buildings within the ROW, no such long term exposures would be expected.

Long term Exposure to Electric and Magnetic Fields

Questions concerning effects of long term exposure to electric fields from transmission lines on human health are a controversial subject that has been raised primarily in hearings related to 500-kV and 765-kV transmission lines. These high voltage lines induce electrical fields at ground levels more than twice the maximum electrical field estimated under the proposed 230-kV Transmission Line. Although available evidence has not established that induced electrical fields pose a significant health hazard to exposed humans, the same evidence does not prove there is no hazard. Therefore, in light of the present uncertainty, it is Western's policy to design and construct transmission lines that reduce the EMF to the maximum extent feasible.

While considerable uncertainty remains about the EMF/health effects issue, the following facts have been established from evaluating the results and trends of EMF-related research:

- Any exposure-related health risks to an exposed individual would be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns have been related to magnetic fields.
- The measures employed for field reduction can affect line safety, reliability, efficiency, and maintainability, depending upon the type and extent of such measures.

No Federal regulations have established environmental limits on the strengths of EMF from power lines. Some states have set limits on EMF from newly constructed lines, not based on factual health data. Most of Western's lines would meet those standards.

Below are brief summaries of some past and current studies on EMF health studies:

Electric and Magnetic Fields from 60-Hz Powerlines: What do We Know about Possible Health Risks? Morgan (1989) concluded that 60-Hz EMF do not pose a significant risk to agriculture, animals, or ecosystems.

The Electric Power Research Institute (1998) (along with the Veterans Affairs Medical Center and the Bonneville Power Administration) conducted a four-phase study that exposed sheep to fields from a 500-kV transmission line. The research was done to determine whether long term EMF exposures impacted melatonin levels, immune function, and animal health. Early phase studies of exposed groups of animals showed no impact on melatonin levels. In later studies, immune cells were monitored in two exposed groups of animals to find out if exposure to fields resulted in immune cells reduction in the exposed animals. Cell reduction would affect immune function and animal health. Final results showed that immune cells were not consistently or significantly reduced in exposed sheep.

A team of Canadian researchers led by McBride reported in the May 1999 issue of the American Journal of Epidemiology that if there is a risk (of childhood leukemia from EMF exposure) it is undetectable through epidemiological studies.

A study sponsored by the National Institute of Health (NIH), National Institute of Environmental Health Sciences (NIEHS) was published in June 1999, The *Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*, stated that all theories

concerning biological effects of EMF "suffer from a lack of detailed, quantitative knowledge," and concluded that laboratory data using a variety of animals, such as non-human primates, pigeons, and rodents, are inadequate to conclude that EMF field exposure alters cancer pattern rate and has not been adequately demonstrated for non-cancer health issues (e.g. birth defects) (NIEHS, 1999). As a precaution regarding human health issues, the report recommends that the electrical field at the edge of a ROW measured one meter above ground not exceed 1-kV/m, and considered this recommendation conservative.

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3.16 Cumulative Impacts

3.16.1 Reasonably Foreseeable Development

Table 3.16-1 identifies the reasonably foreseeable projects throughout the Beaver Creek-Hoyt-Erie Transmission Line Rebuild project area. The projects listed are either proposed, approved, or currently under development. The timeframe for the commercial, industrial, and residential projects is within the immediate future, with full built-out occurring within the next few years.

Few projects are proposed for the Morgan County area. The Cheyenne Plains Gas Pipeline Company just completed construction on a pipeline in Morgan County. No additional plans have been submitted to the county for other industrial projects. The Morgan County Economic Development Corporation is working on 3 potential large industrial projects for Morgan County. Information on these projects is unavailable at this time. (Becker, 2005). There are several residential developments proposed for Morgan County. A total of 500 lots have been platted throughout the county including Brush, Wiggins, Fort Morgan, and the unincorporated areas of Morgan County. No significant commercial development is proposed.

Table 3.16-1 Reasonably Foreseeable Projects

Project	Time frame	Type of Project	Location	Approximate Distance from Transmission Line ROW/Mileposts
Morgan County, CO				
Hoyt to Wiggins 115-kV Transmission Line Rebuild. Conductor replacement and new wood pole H-frames.	2005-2006	Upgrade the carrying capacity, but not the rating of the existing transmission line.	From Hoyt Substation to Wiggins Substation. Originally included in the BC-Hoyt project, then cleared as an Interim Action due to lack of impacts and timing.	Connects to Hoyt Substation. Reviewed as an Interim Action to the Beaver Creek-Hoyt-Erie Transmission Line Project
Residential Development Don Larrick	2005-2007	Residential	Throughout the County: Fort Morgan, Wiggins, Brush, and unincorporated Morgan County	> 1 mile, adjacent to urban development. BC 0
Residential subdivision	2005	34 SF lots	Westside of Brush – (west of Glacier, north. of Edmonds)	~2.5 miles BC 0
Residential subdivision	2005-2006	Prelim. Plat of SF development – 50 lots	West of the above subdivision in Brush: east side of MCR 26, south of Jennifer Circle	~3.0 miles BC 0
Brush Industrial Park	Next 10 years	80 acres industrial park	North of I-76, west of State Route 71, south side MCR T	~1.5 miles BC 0
Weld County, CO				
Sewer Treatment Plant	2004-2005	New sewage treatment plant	WCR 39 near Lochbuie	Adjacent to transmission line HE 32
Annexations near Lochbuie	No timeframe	Talk of industrial potential	WCR 6 and WCR 4	<1 mile to adjacent to transmission line HE 32 to HE 33
Residential subdivision	2005-2006	High density residential	Lochbuie: Blue Lakes Subdivision– north, WCR 37 – east, WCR 35 - west, WCR 4 – south	<1 mile to ½ mile from transmission line HE 33 to HE 34
Blue Lakes Subdivision	2005	High density SF Residential – 1300 units	Lochbuie: WCR 6 – north, WCR 37 –east, WCR 35 - west,	< 1/2 mile to adjacent to transmission line HE 33 to HE 34
Change of Zone – Hunt Bros Properties	Not available	Potential aggregate plant	N2 SW4 20-1-66	~ 1 mile HE 37 to HE 38
Potential Annexation by Fort Lupton	2005-2006	Gravel Mining pits for long term municipal water storage for Fort Lupton	West of WCR 27 between WCR 4 and WCR 6. Gravel mining current uses in this area – near South Platte	< 1 mile HE 38 to HE 39
Various small residential PUD's or exemptions, zoning changes from agricultural to industrial, construction storage facilities, oil and gas processing facility improvements, sand and gravel mining				Varies

3.16.2 Cumulative Environmental Impacts for Resource Topic

Climate and Air Quality

Because of the nature of the proposed project and alternatives any potential air quality impacts would be minor, localized, temporary, and short term. Therefore, there is little likelihood of cumulative impacts occurring with other sources of air pollution. Should cumulative impacts occur, neither the proposed project nor the alternatives would cause or contribute to a violation of

any applicable standards. Because the proposed project or alternatives would not affect local climatic conditions there would be no cumulative impacts on climate.

Soils

There are 12 defined projects, as well as a number of undefined projects, occurring or proposed to occur within the vicinity of this transmission line rebuild effort. The types of projects proposed range from residential developments to industrial parks to gravel pits. Each of these developments would entail surface soil disturbances that would increase erosion potentials and reduce soil productivity for various periods of time. It is assumed that surface soil stabilization would be required for the majority of these projects, limiting soil loss due to wind erosion. Portions of these developments that result in building construction and hard surfacing would, in effect, eliminate soil productivity in perpetuity. The proposed disturbed acreage associated with this project would be limited and would occur intermittently across a 78-mile corridor. The revegetation and mitigation activities required for this project would serve to stabilize the surface soils and return the majority of affected soils to a productive condition across a comparatively short timeframe. Therefore, it is reasonable to assume that impacts to the soil resource resulting from this project are minor when considered in the context of the cumulative regional impacts associated with known regional developments.

Paleontology

With the application of appropriate standard construction measures, this project, and other projects planned and executed with similar sensitivity to paleontology, are likely to have only a small cumulative adverse impact on paleontological resources. This and additional development in the region may result in paleontologic discoveries that would otherwise not occur.

Water Resources

Surface Water: The proposed project would not directly impact surface water and thus no direct cumulative impacts would occur. The project would have the potential to contribute to indirect effects to water quality, resulting from incremental increases in sedimentation caused by surface ground disturbances at substation sites and structure sites. Similar impacts would be expected from residential and industrial construction. The overall short term disturbance area of the proposed project construction would be approximately 197 acres and would be dispersed over 78 miles. Disturbances would occur in phases, beginning in 2006 and ending by 2010. Western would use best management practices to avoid surface water pollution, and minimize indirect cumulative impacts to surface waters, and would therefore not contribute to any significant cumulative impacts. Operations would not impact surface waters and thus would not cause additional cumulative impacts.

Floodplains: Waters of the U.S. are protected under the *Clean Water Act*; many floodplains are defined as waters of the U.S. The rebuild project and each reasonably foreseeable project described above would comply with *Clean Water Act* regulations to protect these areas; therefore, cumulative impacts to floodplains and wetlands would be minor and of short duration. Operations would not impact floodplains or wetlands and thus would not cause additional cumulative impacts.

Ground Water: The proposed rebuild project is not expected to impact groundwater and would not contribute to any cumulative impacts to ground water resources. The proposed project is located near groundwater resources used by the City of Brush and Fort Morgan Reservoir and

Irrigation Company. Impacts to groundwater resources would be avoided by pre-construction testing and monitoring to ensure structure foundations do not impact groundwater resources. Alternative structure designs and adjustments to structure locations would be implemented as necessary to avoid impacts to local groundwater resources and recharge areas. Any dewatering from construction will be mitigated locally and cumulative ground water impacts are expected to be minor and of short duration.

Vegetation, Wetlands, Wildlife, and Sensitive Species

Based on other reasonably foreseeable projects in Morgan and Weld counties the proposed rebuild project would contribute to a short term cumulative loss of native habitats if any of the other foreseeable projects are in native habitats. However, losses of native habitat to occur with the transmission line rebuild project would be short term since they would be reclaimed and not contribute to a long term cumulative loss of native habitats. No cumulative environmental impacts would occur with threatened or endangered species since the transmission line rebuild project would not impact any populations or habitats of listed species.

Cultural Resources

Cumulative impacts to cultural resources would be minor since the Proposed Project is within an existing utility right-of-way. Use of existing utility corridors results in few, if any, new sites with each intervening project. Cumulative impacts are also minimized through implementation of Federal laws and regulations to protect historic resources, prehistoric resources, and sites important to Native American heritage.

Land Use

The proposed project would make a minor contribution to cumulative land use effects resulting from the reasonably foreseeable future projects shown on Table 3.16-1. Future actions that could impact the land use character of the region to the greatest degree are continued residential development adjacent to the transmission line corridor. Bedroom communities continue to expand as the price of real estate in the urban areas continues to escalate. Impacts from these reasonably foreseeable projects will continue to occur presently. For the short term, the proposed reasonably foreseeable projects would not have a dramatic impact on the region. However, the proposed project would not change the land use character of the area since the proposed project consists of replacing and modifying existing transmission lines within established utility corridors.

The project would provide a reliable source of power that would allow future development to occur; and the availability of adequate power supplies could contribute to growth and development in the region. Because of the vast amount of private agricultural land in Weld and Morgan Counties, land use activities and characteristics are likely to remain in spite of the proposed cumulative development. The proposed project would not directly cause or contribute to the long term cumulative impacts to land uses.

Visual Resources

The proposed project would contribute to regional changes in land use character and related visual quality that would result from the reasonably foreseeable projects outlined in Table 3.16-1. Overall, cumulative visual changes would entail the conversion of natural and agricultural landscapes to increasingly developed urban and utility corridor landscapes. The proposed

project's contribution to these regional, long term aesthetic changes would be very minor and incremental, since Western is proposing to utilize established utility corridors, and upgrade existing facilities. As reasonably foreseeable residential and community projects develop, there will be increased areas of visual sensitivity, due primarily to greater numbers of residents located near the ROW and utility facilities. While visual sensitivity may increase, the project's contribution to cumulative adverse impacts would remain minor compared to the existing conditions.

Socioeconomics and Community Resources

The proposed project would make a minor and short term contribution to the cumulative socioeconomic impacts that would result from construction and operation of other reasonably foreseeable projects listed in Table 3.16-1. Build-out of these projects would contribute to changes in local population, employment, housing, public services and facilities, the economy, and the transportation network. Many of these projects would affect the overall socioeconomic environment of the project area, primarily in the areas of increased population and employment, increased income in the project area, and increased revenues generated particularly in Weld County, but also in the towns affected by the developments. It is difficult to identify the secondary and induced growth effects from commercial, industrial and residential activity within the project area.

The Beaver Creek-Hoyt-Erie Rebuild Project would have a very minor contribution to these cumulative socio-economic changes since project-related effects would be short term and occur primarily during project construction in the next 4 to 5 years.

Transportation

During construction, the proposed project would result in short term and insignificant impacts to local transportation systems. Impacts to transportation systems would result from the intermittent presence of construction crews and vehicles and associated increased traffic. These effects could occur simultaneously with other proposed developments, however. The proposed projects contribution to cumulative impacts is considered short term, and could be partially mitigated through the coordination with other local agencies regarding construction plans and schedules, particularly in areas where suburban development is occurring in Weld and Morgan County. Over the long term, the proposed project would not change traffic-related activity throughout the project area.

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4.0 List of Preparers

Western Area Power Administration

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Project Responsibility:	Department of Energy, NEPA Compliance Officer; Coordination, Review, Environmental Compliance
Experience:	30 years professional experience

Allen Turner

Education:	Bachelor of Electrical Engineering, Georgia Tech
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Experience:	12 years - Electrical Engineering, 4 years - Project Management

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Alpine Archaeological Consultants, Inc

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Education:	Master of Arts in Anthropology, Washington State University, Pullman, WA
Project Responsibility:	General project oversight for Cultural Resources, authorship of the Cultural Resources EA secitons.
Experience:	Fifteen years experience in archaeology, six years management level. Five years experience authoring Cultural Resources sections for NEPA compliance documents. Three years experience as a NEPA compliance coordinator/officer for a Native American Community.

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Mark J. Asoian

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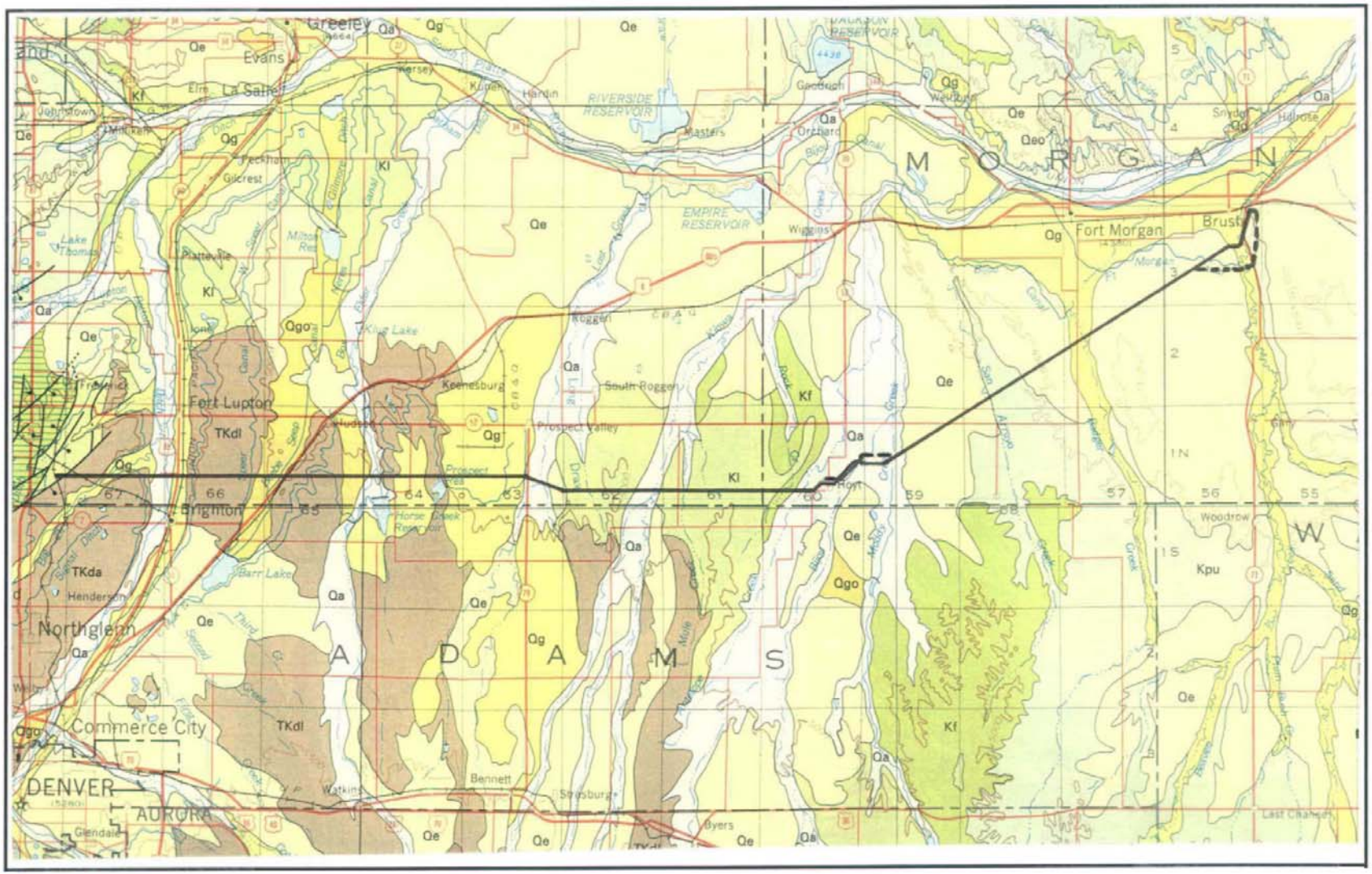
Appendix A. Figures and Tables

Figure GEO-1 Legend
Geologic Formations along the BC-HT-EE Transmission Line Route

Kl	LARAMIE FORMATION – Shale, claystone, sandstone, and major coal beds
Kf	FOX HILLS SANDSTONE
Klf	LARAMIE FORMATION AND FOX HILLS SANDSTONE
Kvt	VERMEJO FORMATION (SHALE, SANDSTONE, AND MAJOR COAL BEDS) AND TRINIDAD SANDSTONE
Kp	PIERRE SHALE, UNDIVIDED
Kpu	Upper unit
Kpm	Middle unit – in Boulder-Fort Collins area, contains Richard, Larimer, Rocky Ridge, Terry, and Hygiene Sandstone Members; elsewhere, shale between zones of *Baculites reesidei* and *B. scotti*
Kpl	Lower unit – Sharon Springs Member (organic-rich shale and numerous bentonite beds) in lower part
Kn	NIOBRARA FORMATION – Calcareous shale and limestone
Kcg	CARLILE SHALE, GREENHORN LIMESTONE, AND GRANEROS SHALE
Kc	COLORADO GROUP – Consists of Niobrara Formation (Kn) and either Benton Shale or Carlile, Greenhorn, and Graneros Formations (Kcg)
Kpg	PIERRE SHALE (Kp), NIOBRARA (Kn), AND CARLILE, GREENHORN, AND GRANEROS (Kcg) FORMATIONS, UNDIVIDED
KdP	DAKOTA SANDSTONE AND PURGATORIE FORMATION – Sandstone and Shale
Kd	DAKOTA SANDSTONE OR GROUP
Qa	MODERN ALLUVIUM – Includes Piney Creek Alluvium and younger deposits
Qg	GRAVELS AND ALLUVIUMS (PINEDALE AND BULL LAKE AGE) – Includes Broadway and Louviers Alluviums
Qgo	OLDER GRAVELS AND ALLUVIUMS (PRE-BULL LAKE AGE) – Includes Slocum, Verdos, Rocky Flats, and Nussbaum Alluviums in east, and Florida, Bridgetimber and Bayfield Gravels in southwest
Qe	EOLIAN DEPOSITS – Includes dune sand and silt Peoria Loess
Qeo	OLDER EOLIAN DEPOSITS – Includes Loveland Loess
Qd	GLACIAL DRIFT OF PINEDALE AND BULL LAKE GLACIATIONS – Includes some unclassified glacial deposits
Qdo	OLDER GLACIAL DRIFT (PRE-BULL LAKE AGE)
Ql	LANDSLIDE DEPOSITS – Locally includes talus, rock-glacier, and thick colluvial deposits
Qb	BASALT FLOWS (AGE<1.8 M.Y. [1])
TKda	DENVER AND ARAPAHOE FORMATIONS – Sandstone, mudstone, claystone, and conglomerate; Denver is characterized by andesitic materials
Tvd	BASALTIC FLOWS IN DENVER FORMATION NEAR GOLDEN (AGE 62-64 M.Y.)
TKdl	DENVER FORMATION OR LOWER PART OF DAWSON ARKOSE – Arkosic sandstone, shale, mudstone, conglomerate, and local coal beds
TKr	RATON FORMATION – Arkosic sandstone, siltstone, and shale; contains major coal deposits in Raton Basin

Figure GEO 1: Geologic Formations along the BC-HT-EE Transmission Line Route



Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
Proposed Beaver Creek-Hoyt-Erie 230-kV Transmission Line							
Beaver Creek Substation	None	NA	S 1/2 Sec 1, T3N, R56W	NA	NA	none	none
BC-Hoyt	Beaver Creek	Stream	NE 1/4 & SE 1/4 of NE 1/4 Sec 14, T3N, R56W	108-5 to 108-4	broad, wetland vegetated channel (2 channel crossings but solid wetlands	530 feet of wetlands and WUS	TYLA
BC-Hoyt	Beaver Creek	Stream	SE 1/4 of NE 1/4 Sec 14, T3N, R56W	108-4 to 108-3	open water channel with incised banks and flat, sandy bottom; wetlands only on south side	105 feet of open water (WUS); 30 feet of wetlands on south side	SAEX, CAPR
BC-Hoyt	Beaver Creek	Stream	SE 1/4 of NE 1/4 Sec 14, T3N, R56W	108-3 to 108-2	broad, wetland vegetated oxbow channel (2 channel crossings with small upland island surrounded by wetlands	~ 350 feet of wetlands and WUS; ~ 180 feet of uplands	TYLA with upland veg. on island
BC-Hoyt	Upper Platte and Beaver Canal	Canal	SW 1/4 of NE 1/4 Sec 14 T3N, R56W	108-2 to 108-1	steep-banked, flat-bottomed canal; wetland vegetated banks	580 feet of ditch crossing and line above ditch; wetlands and WUS; ~13-foot wide open-water channel with 10 to 12 feet of wetlands on each bank	TYLA, SAEX, PHAR, Perisicaria sp.
BC-Hoyt	Upper Platte and Beaver Canal	Canal	SW 1/4 of NE 1/4 Sec 14 T3N, R56W	108-1 to 107-7	steep-banked, flat-bottomed canal; wetland vegetated banks	Line does not cross but canal is within ROW on south side of line; wetlands and WUS; ~ 6-foot wide open-water channel with 6 feet of wetlands on each bank	SPPE, CAEM, SAEX, TYLA
BC-Hoyt	Brush Prairie Ponds	Wetland and dry pond	NE 1/4 of NW 1/4 Sec 22, T3N R56W	106-5 to 106-6	NA	634 feet of unvegetated dry pond and peripheral wetlands; WUS	TYLA, MUAS, JUBA, SAEX Carex sp.
BC-Hoyt	Brush Prairie Ponds	Two wetlands and dry ponds	NW1/4 of NW 1/4 Sec 22, T3N R56W	106-4 to 106-5	NA	157 and 151 feet of unvegetated dry ponds and peripheral wetlands; WUS	TYLA, MUAS, JUBA, SAEX Carex sp.
BC-Hoyt	Brush Prairie Ponds	Wetland and dry pond	NW1/4 of NW 1/4 Sec 22, T3N R56W	106-3 to 106-4	NA	241 feet of unvegetated dry pond and peripheral wetlands; WUS	TYLA, SCLA PODE
BC-Hoyt	Brush Prairie Ponds	Wetland and dry pond	NE 1/4 of NE 1/4 Sec 21, T3N, R56W	106-2 to 106-3	NA	257 feet of unvegetated dry pond and peripheral wetlands; WUS	TYLA, SCPU DIST, Carex sp.
BC-Hoyt	Brush Prairie Ponds	Wetland and dry pond	SE 1/4 of NE 1/4 of Sec 21, T3N, R56W	106-1 to 106-2	NA	251 feet of unvegetated dry pond and peripheral wetlands; WUS	TYLA, SCPU

Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
BC-Hoyt	Brush Prairie Ponds	Wetland within 50-foot ROW on south side of line	SE 1/4 of NE 1/4 of Sec 21, T3N, R56W	106-1 to 106-2 (at 106-1)	NA	Tip of pond wetlands; WUS	TYLA
BC-Hoyt	Brush Prairie Ponds	Wetland	SW 1/4 and SE 1/4 of NE 1/4 Sec 21, T3N, R56W	105-7 to 106-1	NA	283 feet of unvegetated dry pond and peripheral wetlands; WUS	TYLA, SCPU, SCLA, JUBA
BC-Hoyt	Morgan Canal	Canal	SW 1/4 of NE 1/4 Sec 21, T3N, R56W	105-6 to 105-7	near vertical embankments	5.5-foot wide channel; WUS	no wetland vegetation
BC-Hoyt	Unnamed (trib. to Badger Creek)	Swale	SW 1/4 of SW 1/4 Sec 8, T2N, R57W	97-2 to 97-1	dry swale - no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Unnamed (trib. to Badger Creek)	Swale	SE 1/4 of SE 1/4 Sec 7, T2N, R57W	97-1 to 96-6	dry swale - no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Unnamed (trib. to Badger Creek)	Swale	NE 1/4 of NE 1/4 Sec 18, T2N, R57W	96-6 to 96-5	dry swale - no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Badger Creek	Stream	NE 1/4 of NW 1/4 Sec 18, T2N, R57W	96-3 to 96-2	incised grass drainage; no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Sand Arroyo Creek	Stream	SW 1/4 of NE 1/4 Sec 32, T2N, R58W	90-6 to 90-5	no defined channel	NA, intermittent wetlands mixed with upland veg.; no WUS	Eleocharis sp., Persicaria sp., Carex sp.
BC-Hoyt	Sand Arroyo Creek	Stream	SW 1/4 of NE 1/4 Sec 32, T2N, R58W	90-5 to 90-4	no defined channel	NA, intermittent wetlands mixed with upland veg.; no WUS	Eleocharis sp., Persicaria sp., Carex sp.
BC-Hoyt	Muddy Creek	Stream; no crossing, but within 50 feet of north side of ROW	NW 1/4 and NE 1/4 of SW 1/4 Sec 16, T1N, R59W	84-4 to 84-3	incised grass drainage; no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Muddy Creek	Stream	SW 1/4 of SW 1/4 Sec 16, T1N, R59W	84-2 to 84-1	incised grass drainage; no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt	Bijou Creek	Stream	SW 1/4 of NW 1/4 Sec 19, T1N, R59W	81-7 to 81-6	broad floodplain drainage; no defined channel	NA, no wetlands or WUS; ~ 1000-foot drainage crossing	upland veg. except for PODE
Hoyt Substation	Trib. to Antelope Creek	No evidence of any drainage	SE 1/4 of SE 1/4 Sec 28, T1N, R60W	78-1 to 77-8	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Antelope Creek	Stream	SE 1/4 of SW 1/4 Sec 28, T1N, R60W	77-4 to 77-3	incised drainage; defined channel; dry, sandy bottom	22-foot channel with mix of wetland and upland veg.; WUS	PAVI, OEVI, PACA, BASI
Hoyt-Erie	Rock Creek	Stream	SE 1/4 of SW 1/4 Sec 29, T1N, R60W	76-3 to 76-2	no defined channel	NA, no wetlands or WUS	upland veg.
Hoyt-Erie	Trib. to Rock Creek	Swale	SE 1/4 or SW 1/4 Sec 30, T1N, R60W	75-5 to 75-4	no visible channel	NA, no wetlands or WUS	cropland

Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
Hoyt-Erie	Trib. to Rock Creek	Swale	SW 1/4 of SW 1/4 Sec 25, TnM, R61W	74-3 to 74-2	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Unnamed trib. to Goose Creek	Swale	SE 1/4 of SW 1/4 Sec 27, T1N, R61W	72-4 to 72-3	no defined channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Unnamed trib. to Goose Creek	Swale	SW 1/4 of SE 1/4 Sec 28, T1N, R61W	71-6 to 71-5	no defined channel, headcutting at road culvert	NA, no wetlands or WUS	cropland
Hoyt-Erie	Mule Creek	Swale	SE 1/4 of SW 1/4 Sec 29, T1N, R61W	70-4 to 70-3	defined channel intermittent	NA, no wetlands or WUS	cropland
Hoyt-Erie	Kiowa Creek	Stream	SE 1/4 of SE 1/4 Sec 25, T1N, R62W	68-7 to 68-6	no defined channel	NA, no wetlands or WUS	upland veg.
Hoyt-Erie	Trib. to Kiowa Creek	Swale	SE 1/4 of SE 1/4 Sec 26, T1N, R62W	68-1 to 67-7	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Lost Creek (Long Draw)	Stream	SE 1/4 of SW 1/4 Sec 29, T1N, R62W	64-5 to 64-4	no defined channel	NA, no wetlands or WUS	upland veg.
Hoyt-Erie	Trib. to Lost Creek	Stream	SE 1/4 of SW 1/4 Sec 29, T1N, R62W	64-3 to 64-2	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Trib. to Sand Creek	Stream	NE 1/4 of SE 1/4 Sec 26, T1N, R 63W	61-8 to 61-7	defined channel with sandy bottom	18-foot wide channel; WUS	upland veg.
Hoyt-Erie	Sand Creek	Stream	NW 1/4 of SE 1/4 Sec 26, T1N, R63W	61-6 to 61-5	no defined channel	NA, no wetlands or WUS	upland veg.
Hoyt-Erie	Prospect Lateral Ditch	Ditch	NE 1/4 of NE 1/4 Sec 27, T1N, R63W	60-6 to 60-5	defined channel with sand bottom	7-foot wide channel (WUS?)	upland veg.
Hoyt-Erie	Lateral Sub No 2 Ditch	Ditch	NW 1/4 of NE 1/4 Sec 28, T1N, R63W	59-5 to 59-4	concrete lined ditch	variable, v-shaped (WUS?)	no veg.
Hoyt-Erie	Trib. to Lost Creek	Swale	NW 1/4 of NE 1/4 Sec 29. T1N, R63W	58-5 to 58-4	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Lost Creek	Swale	NW 1/4 of NW 1/4 Sec 29, T1N, R63W	58-2 to 58-1	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Denver-Hudson Canal (at Prospect Res)	Canal	NW 1/4 of NE 1/4 Sec 26, T1N, R64W	55-5 to 55-4	U-shaped canal to Prospect Res. with sand banks and bottom	35-foot wide channel with wetland veg. along upper banks (WUS?)	CAEM
Hoyt-Erie	Unnamed trib. to Propsect Res	Swale	NE 1/4 of NE 1/4 Sec 26, T1N, R64W	54-6 to 54-5	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Trib. to Box Elder Creek	Swale	NE 1/4 of NW 1/4 Sec 28, T1N, R64W	53-3 to 53-2	no visible channel	NA, no wetlands or WUS	cropland
Hoyt-Erie	Denver-Hudson Canal	Canal	NW 1/4 of NW 1/4 Sec 28, T1N, R64W	52-1 to 51-8	U-shaped canal to Prospect Res. with sand banks and bottom	50-foot wide channel with wetland veg. along upper banks (WUS?)	CAEM, TYAN on deposition lower banks

Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
Hoyt-Erie	Horse Creek	Stream	NE 1/4 of NE 1/4 Sec 30, T1N, R64W	51-7 to 51-6	meandering stream channel with wetlands on both sides	10-15-foot stream channel; total wetland and stream width = 55 feet; WUS	TYLA, JUBA
Hoyt-Erie	Trib. To Horse Creek	Wetland	NE 1/4 of NE 1/4 Sec 30, T1N, R64W	51-6 to 51-5	old oxbow with no defined channel but wetland veg. present	NA; scattered pocket of wetland veg. intermixed with uplands; WUS	JUBA, CANE
Hoyt-Erie	Box Elder Creek	Stream	NW 1/4 of NE 1/4 Sec 30, T1N, R64W	51-5 to 51-4	sand bottom with no defined channel	NA, no wetlands or WUS	upland veg.
Hoyt-Erie	Box Elder Lateral	Ditch	NE 1/4 of NW 1/4 Sec 25, T1N, R65W	50-4 to 50-3	dry ditch with sand bottom	10 feet wide; wetland veg.? banks burned (WUS?)	minimal wetland veg. possible
Hoyt-Erie	Box Elder Lateral	Ditch	NE 1/4 of NE 1/4 Sec 26, T1N, R65W	49-6 to 49-5	dry ditch with sand bottom	10 feet wide; wetland veg.? banks burned (WUS?)	minimal wetland veg. possible
Hoyt-Erie	Denver-Hudson Canal	Canal	NE 1/4 of NW 1/4 Sec 26, T1N, R65W	49-4 to 49-3	U-shaped canal with flowing water; intermittent wetland veg.	40-foot wide channel (WUS?)	PHAR
Hoyt-Erie	Denver-Hudson Canal	Canal	NE 1/4 of NE 1/4 Sec 28, T1N, R65W	47-8 to 47-7	U-shaped canal with flowing water; intermittent wetland veg.	40-foot wide channel (WUS?)	PHAR
Hoyt-Erie	Unnamed canal	Canal	NW 1/4 of NE 1/4 Sec 28, T1N, R65W	47-5 to 47-4	steep banked canal with flowing water; intermittent wetland veg.	13-foot wide channel (WUS?)	PHAR, ASSP
Hoyt-Erie	Unnamed drainage from Coursey Reservoir No. 1	Wetland	NE 1/4 of NW 1/4 Sec 29, T1N, R65W	46-7 to 46-6	Hummocky wetlands with intermittent flowing channel	500 feet of wetlands with flowing water in western portion; empties into Henry Lake Canal on west side of I-76 (WUS?)	CANE, MUAS, DIST
Hoyt-Erie	Henry Lake Canal	Canal	NW 1/4 NW 1/4 Sec 29, T1N, R65W	45-8 to 45-7	U-shaped channel with wetlands along upper banks	15-foot wide channel (WUS?)	PODE, TYLA, PHAR
Hoyt-Erie	wetland depression	Wetland	NW 1/4 of NE 1/4 Sec 30, T1N, R65W	45-6 to 45-5	Wetland depression surrounded by cropland; no outlet	50 feet wide in ROW (no WUS)	CRJU, MUAS, RUCR, POAR
Hoyt-Erie	unnamed canal	Canal	NE 1/4 of NW 1/4 Sec 30, T1N, R65W	45-2 to 45-1	3-foot wide ditch with no wetlands	WUS?	upland or no veg.
Hoyt-Erie	unnamed canal	Canal	NW 1/4 of NE 1/4 Sec 25, T1N, R66W	44-4 to 44-3	5-foot wide ditch with intermittent wetlands	WUS?	non-continuous wetland veg.
Hoyt-Erie	unnamed canal	Canal	NE 1/4 of NW 1/4 Sec 25, T1N, R66W	44-2 to 44-1	15-foot wide ditch with intermittent wetlands	WUS?	non-continuous wetland veg.

Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
Hoyt-Erie	wetland depression	Wetland	NE 1/4 of NW 1/4 Sec 25, T1N, R66W	44-2 to 44-1	wetland on west side of 44-2 to 44-1 ditch; 40 feet by 100 feet	no wetland or water connection to WUS	PODE, SAAM, SAEX, ASSP
Hoyt-Erie	unnamed canal	Canal	NE 1/4 of NE 1/4 Sec 26, T1N, R66W	41-7 to 41-6	ditch with sand bed and bank	4-foot wide channel; recently burned (WUS?)	wetland veg. unlikely but undeter-mined due to burn
Hoyt-Erie	unnamed canal	Canal	NE 1/4 of NE 1/4 Sec 29, T1N, R66W	40-8 to 40-7	u-shaped canal with sand bottom	20-foot wide channel with 3-foot wetland fringe on each side (WUS?)	PHAR, CAEM
Hoyt-Erie	South Platte River	Stream	SW 1/4 of NW 1/4 Sec 30, T1N, R66W	39-1 to 38-8	wide river crossing with low cut banks on each side	150-foot wide channel with narrow, continous wetlands along cut banks; terrace above river has mosaic of wetlands and uplands	PHAR near river; mix of SAEX, RUCR, and BRIN with upland weeds on near terrace
Hoyt-Erie	Trib. to Big Dry Creek	Stream	SE 1/4 of NE 1/4 Sec 25, T1N, R67W	38-7 to 38-6	small natural drainage; open water mixed with wetland hummocks	12-foot wide channel of open water and wetlands; WUS	JUBA, MUAS, DIST, Polygonum sp.
Hoyt-Erie	Wetland	Wetland	SE 1/4 of NE 1/4 Sec 25, T1N, R67W	38-6 to 38-5	isolated, small wetland depression	NA; isolated with no connection to WUS	DIST, Polygonum sp.
Hoyt-Erie	Trib to Big Dry Creek	Stream and Wetland	SW 1/4 of NE 1/4 Sec 25, T1N, R67W	38-5 to 38-4	old oxbow with hummocky wetlands	400-foot wide channel; WUS	TYLA, MUAS, CANE
Hoyt-Erie	Canal	Canal	SE 1/4 of NE 1/4 Sec 26, T1N, R67W	37-8 to 37-7	flowing u-shaped canal with wetland strip on each side	10-foot wide channel (WUS?)	PHAR
Hoyt-Erie	Canal	Canal	SW 1/4 of NE 1/4 Sec 26, T1N, R67W	37-6 to 37-5	concrete canal	no wetland veg.; (WUS?)	no veg.
	Canal	Canal	NE 1/4 of NE 1/4 Sec 28, T1N, R67W	35-6 to 35-5	steep-banked ditch with wetlands along embankments	8-foot wide channel with wetlands (WUS?)	SAEX, PHAR, CAEM
Hoyt-Erie	Big Dry Creek	Stream	NW 1/4 of NE 1/4 Sec 28, T1N, R67W	35-5 to 35-4	defined channel with wetlands along west bank	12-foot wide channel with wetlands, WUS	SPPE, ONVI
Hoyt-Erie	Wetland	Wetland	NW 1/4 of NE 1/4 Sec 28, T1N, R67W	35-5 to 35-4	remnant wetland pocket in old oxbow of Big Dry Creek	20-foot wide wetland, WUS	TYLA
Hoyt-Erie	Canal	Canal	NE 1/4 of NE 1/4 Sec 29, T1N, R67W	34-6 to 34-5	steep-banked ditch with intermittent wetlands along embankments	10-foot wide u-shaped channel (WUS?)	PHAR, SAEX

Appendix Table A-3.6-1 Proposed Action Stream and Wetland Crossings

Corridor	Name	Crossing: stream, ditch, canal, swale, or wetland	Location	Pole Segment Location	Description of Channel	Water of the U.S. (WUS) or wetland (width in ft.)	Predominant Vegetation
Hoyt-Erie	Trib to Big Dry Creek	Canal	NW 1/4 of NE 1/4 Sec 30, T1N, R67W	33-3 to 33-2	dry channel/pond wetland	250 feet wide wetland within cropland (WUS?)	TYLA
Hoyt-Erie	Canal	Canal	NE 1/4 of NE 1/4 Sec 25, T1N, R68W	32-6 to 32-5	concrete lined ditch	no wetlands (WUS?)	none
Hoyt-Erie	Railroad Crossing	Wetlands along track ditches	NE 1/4 of NW 1/4 Sec 25, T1N, R68W	32-3 to 32-2	NA	near but outside of ROW, no WUS	TYLA
Hoyt-Erie	Canal	Canal	NE 1/4 of NW 1/4 Sec 25, T1N, R68W	32-3 to 32-2	concrete lined ditch	no wetlands (WUS?)	none
Hoyt-Erie	Canal	Canal	NE 1/4 of NW 1/4 Sec 25, T1N, R68W	32-2 to Substation	concrete lined ditch	no wetlands (WUS?)	none

*** Vegetation Species Codes:**

ANTE - *Anisantha tectorum*, cheatgrass
APCA - *Apocynum cannibium*, hemp dogbane
ASSP - *Asclepias speciosa*, showy milkweed
BASI - *Bassia sieversiana*, kochia
BRIN - *Bromopsis inermis*, smooth brome
Carex sp. - Sedge
CAEM - *Carex emoryii*, Emory sedge
CANE - *Carex nebrascensis*, Nebraska sedge
CAPR - *Carex praegracilis*, clustered field sedge
CRJU - *Critesion jubatum*, foxtail barley
DIST - *Distichlis stricta*, inland saltgrass
Eleocharis sp. - spikerush
JUBA - *Juncus balticus*, Baltic rush
MUAS - *Muhlenbergia asperifolia*, alkali muhly
OEVI - *Oenothera villosa*, hairy primrose
PACA - *Panicum capillare*, witchgrass
PAVI - *Panicum virgatum*, switchgrass
Persicaria sp. - smartweed
PHAR - *Phalaroides arundinacea*
POAR - *Polygonum arenastrum*, prostrate knotweed or Devil's shoestrings
PODE - *Populus deltoides*, eastern cottonwood
RUCR - *Rumex crispus*, curly dock
SAAM - *Salix amygdaloides*
SAAU - *Salsola australis*, Russian thistle
SAEX - *Salix exigua*, coyote or sandbar willow
SCLA - *Schoenoplectus lacustris*, bulrush
SCPU - *Schoenoplectus pungens*, three-square
SEGL - *Setaria glauca*, yellow foxtail
SPPE - *Spartina pectinata*, prairie cordgrass
TYAN - *Tyla angustifolia*, narrow-leaf cattail
TYLA - *Tyla latifolia*, broad-leaf cattail
XAST - *Xanthium strumarium*, cocklebur

Appendix Table A-3.6-2 Stream and Wetland Crossings for Alternatives

Corridor	Name	Crosses Stream (includes ditches and canals), Wetland, Stream and Wetland	Location	Description of Stream	Water of the U.S. (WUS) or wetland (width in ft)	Predominant Vegetation*
Beaver Creek to Brush Prairie Ponds SWA Reroute Alternative (Replaces proposed alternative between pole numbers 110-4 and 104-7)						
BC-Hoyt-Erie	Trib. to Beaver Creek	Stream	NW 1/4 of NE 1/4 Sec 24, T3N, R56W	dry, incised grass drainage; no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt-Erie	Beaver Creek (oxbow crossing)	Stream	NW 1/4 of SW 1/4 Sec 24, T3N, R56W; 0.39 mile SW of SH 71	steep-sided drainage; no defined channel	NA, no wetlands or WUS	upland veg.
BC-Hoyt-Erie	Beaver Creek (oxbow crossing)	Stream	NW 1/4 of SW 1/4 Sec 24, T3N, R56W; 0.58 mile SW of SH 71	steep-sided drainage; no defined channel	NA, intermittent wetlands confined to channel bottom (9 feet wide), no WUS	RUCR & Chenopodium sp. mixed with upland veg.
BC-Hoyt-Erie	Beaver Creek (oxbow crossing)	Stream	SE 1/4 of SE 1/4 Sec 23, T1N, R56W; 0.7 mile SW of SH 71	steep-sided drainage; no defined channel	NA, intermittent wetlands mixed with uplands; no WUS	minor amounts of SAEX and RUCR mixed with upland veg.
Beaver Creek-Big Sandy Reroute Alternative - Same as Beaver Creek to Brush Prairie Ponds (above)						
Beaver Creek and Story Substation Expansion Areas - no crossings						
Under Crossing 1 - no crossings						
Under Crossing 2 - no crossings						
Bijou Creek Crossing Reroute Alternative (Replaces proposed alternative between pole numbers 83-6 and 78-8)						
BC-Hoyt-Erie	Bijou Creek	Stream	NW 1/4 and NE 1/4 of NW 1/4 Sec 19, T1N, R59W	broad floodplain drainage; no defined channel; ~1,250-foot drainage crossing	NA, no wetlands or WUS	upland veg. except for PODE
Hoyt Substation - no crossings						
Erie Substation - no crossings						

* Vegetation Species Codes:
ANTE - *Anisantha tectorum*, cheatgrass
APCA - *Apocynum cannibium*, hemp dogbane
Chenopodium sp. - lambsquarters
POAR - *Polygonum arenastrum*, knotweed or Devil's shoestrings
PODE - *Populus deltoides*, eastern cottonwood
RUCR - *Rumex crispus*, curly dock
SAEX - *Salix exigua*, coyote or sandbar willow

Figure WATER-1

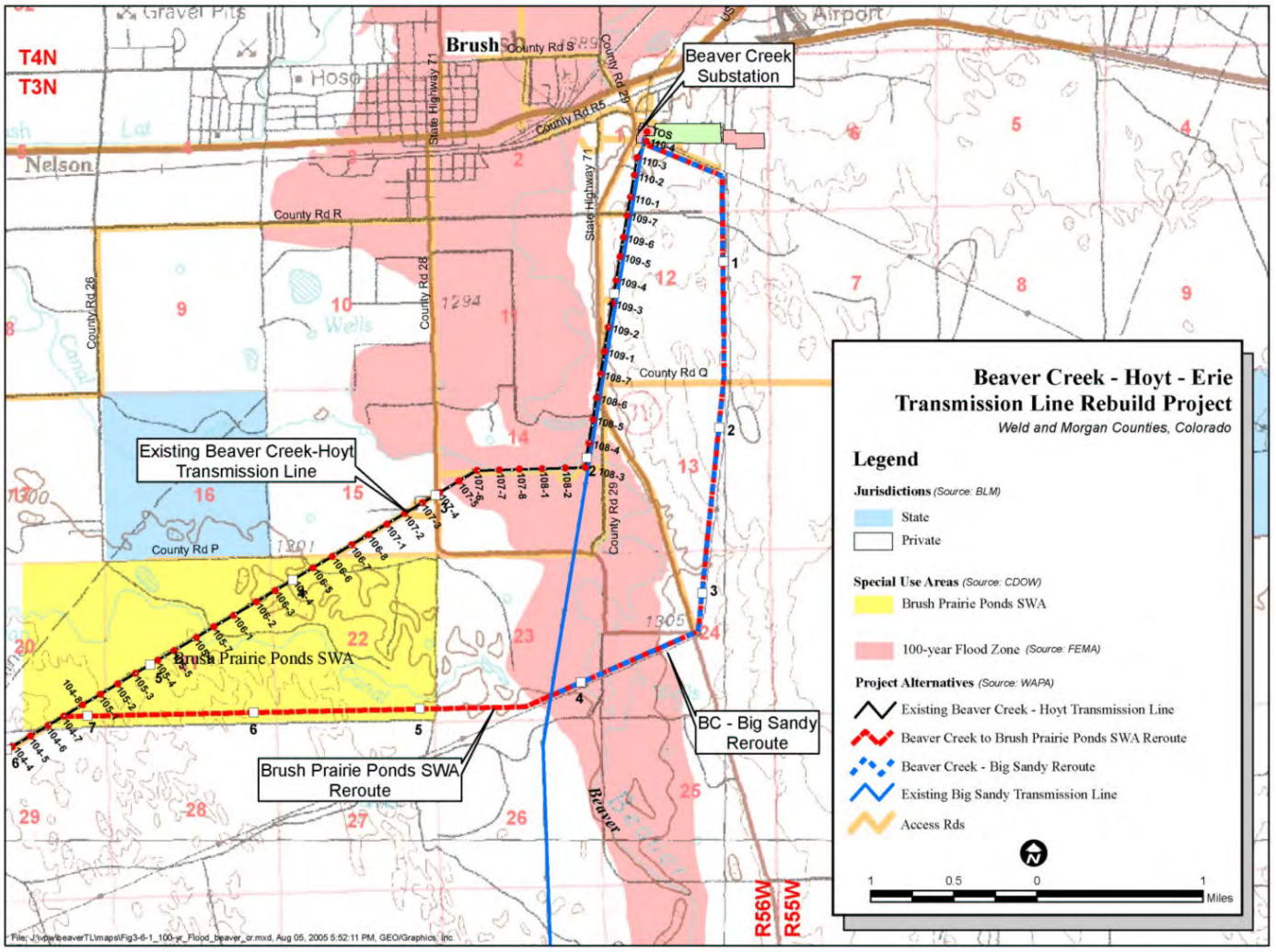
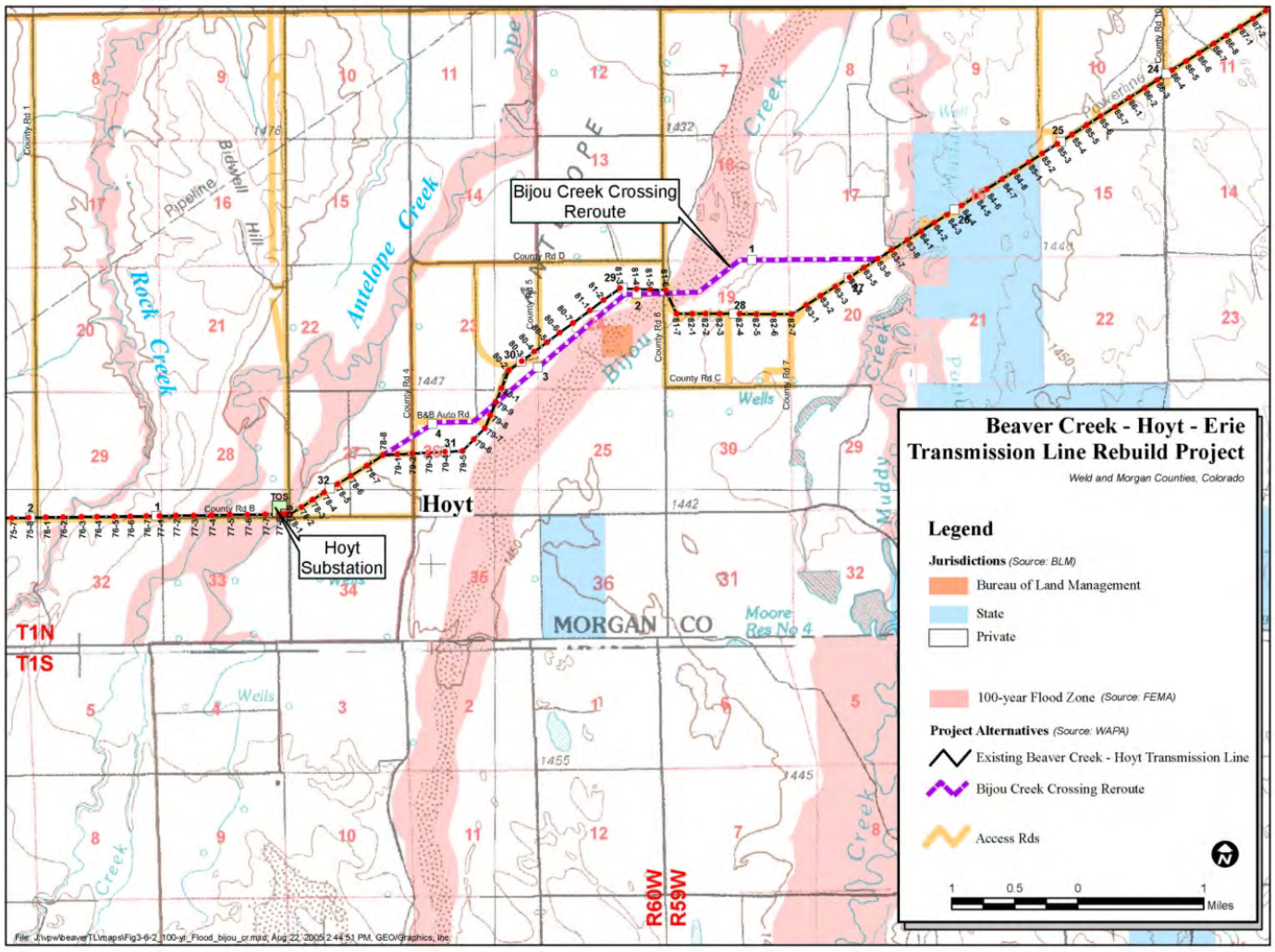


Figure WATER-2



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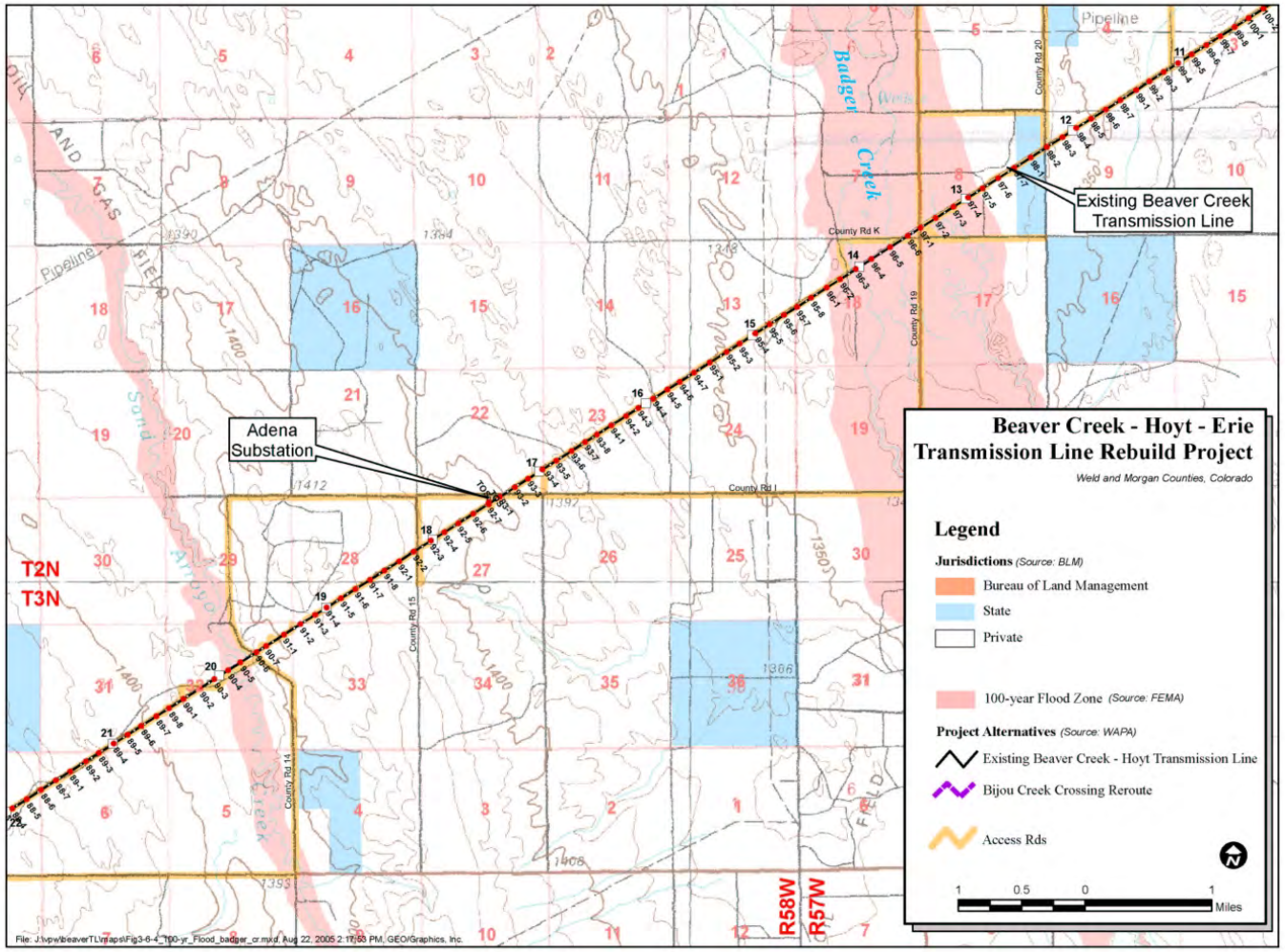

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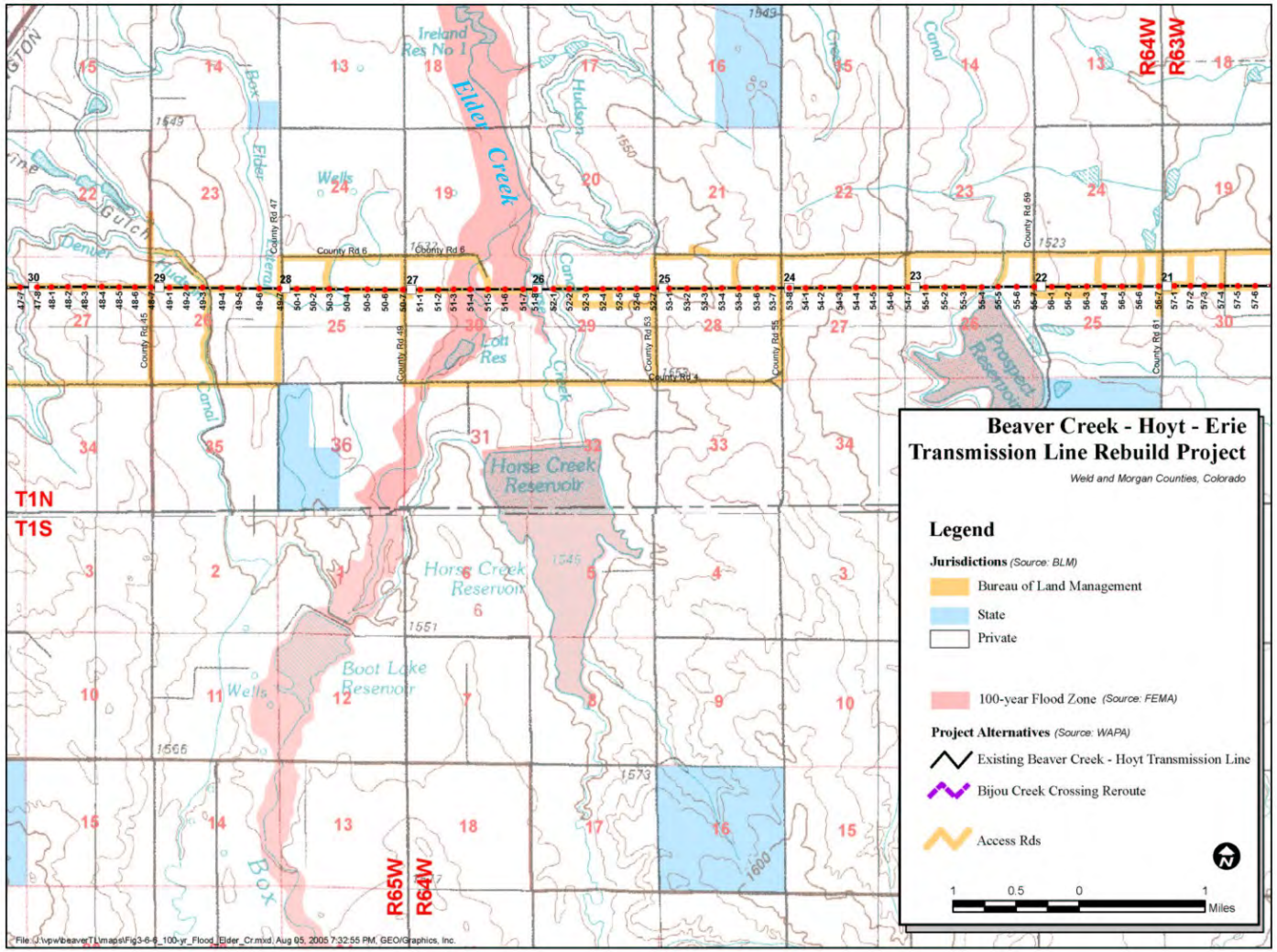
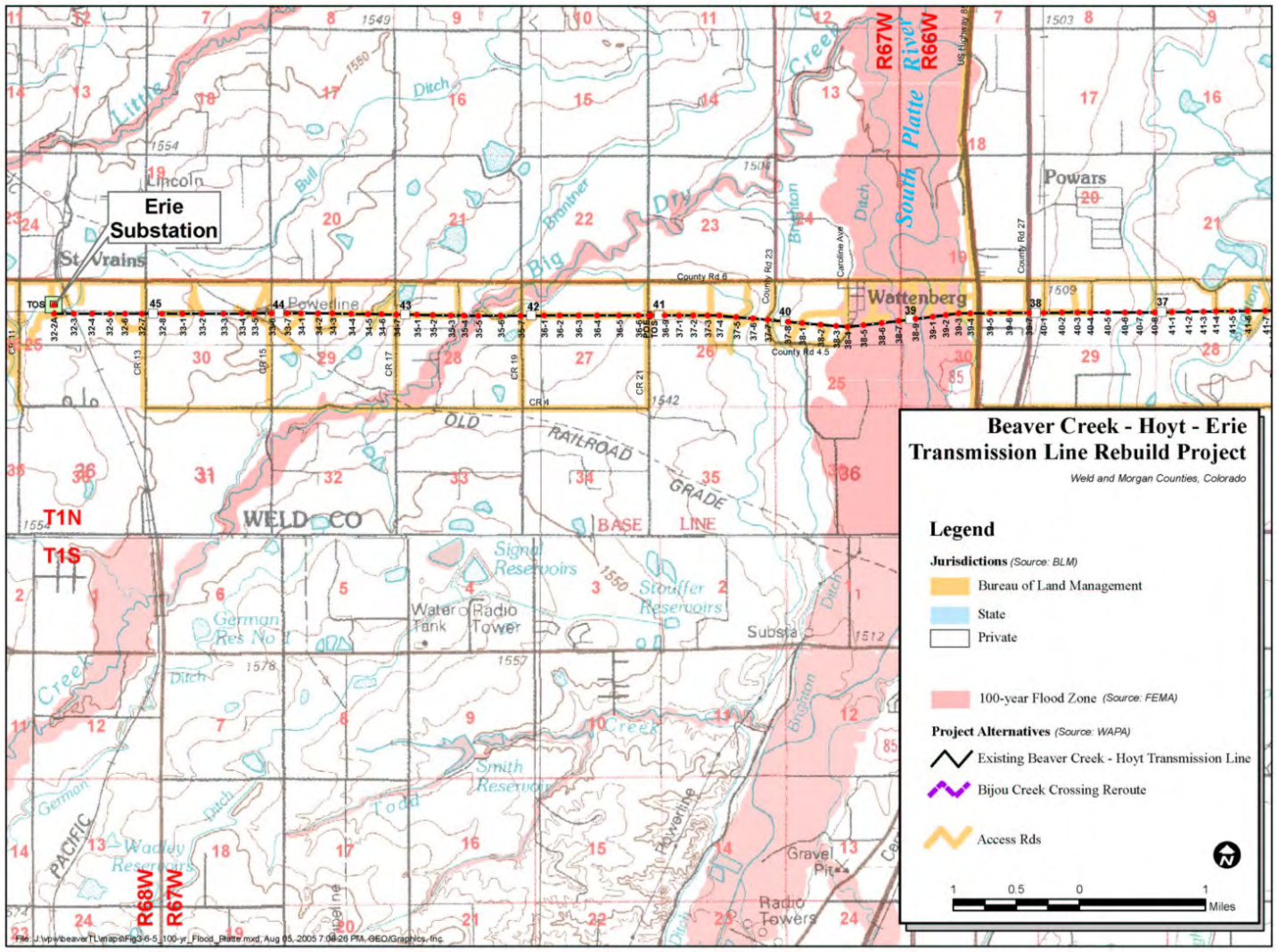


Appendix A- BC-HT-EE Transmission Line Rebuild

Figure WATER-5



Appendix B.

Notice of Proposed Floodplain and Wetland Action and Request for Comments

J0400

Department of Energy
Western Area Power Administration
Rocky Mountain Customer Service Region
P.O. Box 3700
Loveland, CO 80539-3003

Notice of Proposed Floodplain and Wetland Action and Request for Comments

Beaver Creek Substation to Hoyt Substation and Hoyt Substation to Erie Substation
115-kV Transmission Line Rebuild
Morgan County and Weld County, Colorado

July 13, 2005

The Western Area Power Administration (Western) proposes to rebuild the existing Beaver Creek to Hoyt and Hoyt to Erie 115-kV Transmission Lines in Morgan and Weld Counties, Colorado (Figure 1). An environmental assessment is being prepared for the proposal. The existing transmission line crosses Federal Emergency Management Agency (FEMA) designated floodplains along its 72-mile length. The crossings are listed in the attached Table 1. Western also identified possible alternative routes for sections of the Beaver Creek to Hoyt Transmission Line that would include potential floodplain actions (Table 2). A wetland area located at the Brush Prairie Ponds State Wildlife Area (SWA) is located along the existing transmission line.

This Notice informs you of the floodplain involvement of the proposal and invites your comments by August 8, 2005. This notification is provided to you in accordance with the Department of Energy regulations at 10 CFR Part 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements. A floodplains assessment will be include in the environmental assessment for the project. Western will consider your comments before issuing a Statement of Findings. The Statement of Findings will be sent to you when it is completed.

Project Description

Western is proposing to rebuild the existing 115-kV transmission line from Beaver Creek Substation to Hoyt Substation and from Hoyt Substation to Erie Substation as shown on the enclosed map. The line would be upgraded from its present configuration as a single-circuit wood pole H-frame line to a double-circuit 230-kV transmission line on single pole steel structures. The purpose of the rebuild is to increase the carrying capacity of the transmission line and to address, in part, issues related to the constrained transmission path between southeastern Wyoming and northeastern Colorado.

In response to public comments, alternative routes for two segments of the line have been identified. The enclosed Figures 2 and 3 show the locations of the proposed reroutes in relation to floodplains.

Floodplain Action

The Beaver Creek to Hoyt 115-kV transmission line crosses designated floodplains (FEMA, Flood Hazard Boundary Maps). Structures would be located so as to span as much of the floodplain as practicable and minimize the numbers of structures located in floodplains. The final design of the transmission line has not been completed so the exact locations of the structures have not been determined. Western's action in the floodplains would include removal of existing structures, auguring holes for replacement structures, installing reinforced concrete foundations, installing replacement structures on the foundations, removing the existing conductors and installing new conductors, installing overhead ground wires (for lightning protection) and installing fiber optic cable along the overhead ground wires. Trees that would interfere with the safe operation, maintenance and reliability of the installed transmission line would be removed from the right-of-way.

Although several small wetlands occur along the transmission line route, all but one is spanned. The existing 115-kV transmission line crosses over wetland areas at the Brush Prairie Ponds SWA. One of the alternative routes under consideration (Figure 2) would include removal of this segment of line and rerouting to avoid the wetland.

Expected Floodplain/Wetlands Impacts

Western will adhere to the requirements of the Army Corps of Engineers Nationwide Permit 12 for the design and construction of this project in floodplains. The project does not require dredging or filling in floodplains. Whenever practicable, Western would span floodplains. Western expects that there will be no significant impacts to the floodplains from this proposal. A transmission line does not impede the natural action and function of a floodplain. Western constructs their transmission lines in accordance with applicable standards and good engineering practice. There would be no expected adverse impact on the transmission line from the expected level of flooding in these floodplain areas. Flooding would not be expected to impact the transmission line or cause unusual risks to public safety.

The wetland area on the Brush Prairie Ponds SWA would be subject to minor vegetation disturbance whether the existing transmission line is rebuilt in place or the alternative route is selected. The alternative route would have fewer long term impacts on wetlands.

Request for Comments

You are invited to provide your comments on this proposed floodplain action by August 8, 2005. Comments may be mailed, e-mailed, faxed or telephoned to the contact below:

Mr. Jim Hartman
Environmental Manger
Western Area Power Administration
P.O. Box 3700
Loveland, CO 80539
Telephone: 970-461-7450
Facsimile: 970-461-7213
E-mail: Hartman@wapa.gov

If you require additional information, please contact me at the telephone number listed above, or by e-mail or mail.

James G. Hartman
Environmental Manager

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Table 1. Structures within Designated Flood Hazard Zones along Existing 115-kV Transmission Lines.

Line Segment	Location of Crossing	County	Floodplain Hazard Zone Designation	River/Stream Name	Floodplain Map Number
BC-Hoyt	N ½, Section 14, T3N, R56W	Morgan	Zone A	Beaver Creek	080129 0205C
BC-Hoyt	N ½, Section 18 and SW ¼, Section 8, T2N, R57W	Morgan	Zone A	Badger Creek	080129 0200C
BC-Hoyt	NE 1/4, Section 32, T2N, R58W	Morgan	Zone A	Sand Arroyo	080129 0275C
BC-Hoyt	SW ¼, Section 16, T1N, R59W	Morgan	Zone A	Muddy Creek	080129 0250C
BC-Hoyt	NW 1/4 Section 19, T1N, R59W	Morgan	Zone A	Bijou Creek	080129 0250C
Hoyt-Erie	SW ½, Section 28, T1N, R60W	Morgan	Zone A	Antelope Creek	080129 0250C
Hoyt-Erie	SW1/4, Section 29, T1N, R60W	Morgan	Zone A	Rock Creek	080129 0250C
Hoyt-Erie	NE ¼, Section 30, T1N, R64W	Weld	Zone A	Horse Creek	080266 1025C
Hoyt-Erie	N ½, Section 30, T1N, R64W	Weld	Zone A	Box Elder Creek	080266 1025C
Hoyt-Erie	N ½, Section 30, T1N, R66W	Weld	Zone A	South Platte River	080266 0983C
Hoyt-Erie	NE ¼, Section 28, T1N, R67W	Weld	Zone A	Big Dry Creek	080266 0980C

Table 2. Alternative Routes Crossing Designated Flood Hazard Zones

Alternative Line	Approximate Location	County	Floodplain Hazard Zone Designation	River/Stream Name	Floodplain Map Number
Beaver Creek-Hoyt	NW 1/4 of SW 1/4 Sec 24, T3N, R56W, beginning at approximately 1,150 feet SW of SH 71 and extending to SE 1/4 of SE 1/4 Sec 23, T3N, R56W	Morgan	Zone A	Beaver Creek	080129 0205C
Beaver Creek-Hoyt	NW 1/4 Section 19, T1N, R59W	Morgan	Zone A	Bijou Creek	080129 0250C

Ms. Barbara Gorrell
Planning and Zoning Administrator
Morgan County Planning and Zoning
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Fort Morgan, CO 80701

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Fort Morgan, CO 80701

Mr. Steve Enfante, Director
Morgan County Office of Emergency Mgmt.
P.O. Box 1130
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Fort Morgan, CO 80701

Mr. Hal D. Simpson
Colorado Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

Ms. Monica Mika
Director, Planning Department
Weld County Department of Planning Services
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Greeley, CO 80632

Mr. Monte Torres
Administrator
City of Brush
600 Edison Street
Brush, CO 80723

Ms. Kirstie Bay
Colorado Division of Wildlife
122 East Edison
Brush, CO 80723

U.S. Army Corps of Engineers
Denver Regulatory Office
9307 South Wadsworth Blvd.
Littleton, CO 80128-6901

Colorado Office of Emergency Management
Division of Local Government
Department of Local Affairs
15075 South Golden Road
Golden, Colorado 80401-3979

Mr. Jack Russalesi
Town Administrator
Town of Lochbuie
703 County Road 37
Lochbuie, CO 80603

Mr. John Bramble
City Manager
City of Brighton
22 South 4th Avenue
Brighton, CO 80601

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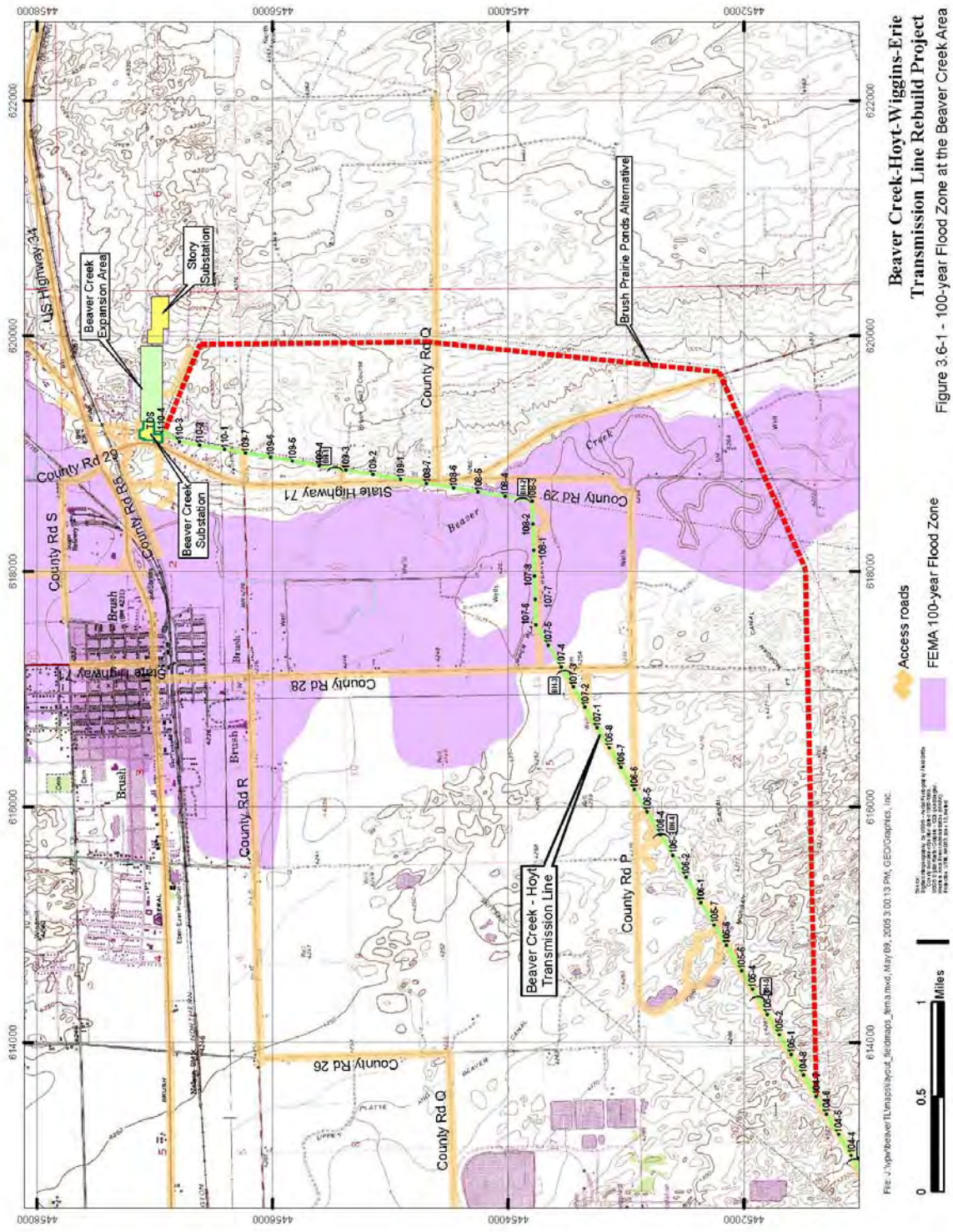
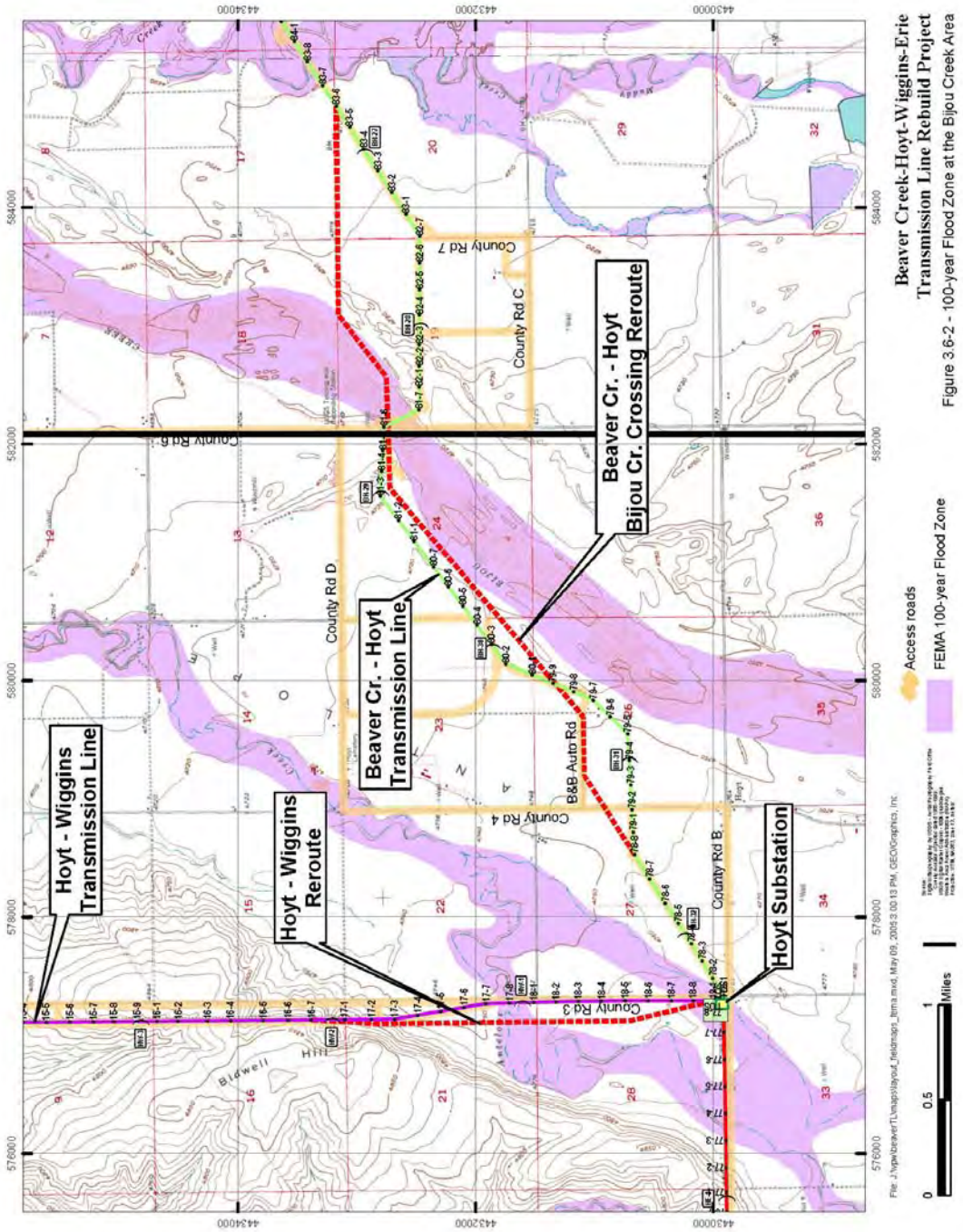

Beaver Creek-Hoyt-Wiggins-Erie
Transmission Line Rebuild Project
Figure 3.6-1 - 100-year Flood Zone at the Beaver Creek Area
Beaver Creek Expansion Area
Story Substation
Brush Prairie Ponds Alternative
Beaver Creek Substation
Beaver Creek - Hoyt Transmission Line
US Highway 34
State Highway 71
County Rd 20
County Rd S
County Rd R5
County Rd 29
County Rd 28
County Rd R
County Rd P
County Rd 26
County Rd Q
Brush
Beaver Creek
Access roads
FEMA 100-year Flood Zone
0
0.5
1
Miles



Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project

Figure 3.6-2 - 100-year Flood Zone at the Bijou Creek Area


Beaver Creek-Hoyt-Wiggins-Erie
Transmission Line Rebuild Project
COLORADO
Legend
Hoyt - Erie 115 kV Rebuild
Beaver Creek - Hoyt 115 kV Rebuild
Hoyt - Kiowa Creek (Hoyt-Wiggins) 115kV Rebuild
Substations
Access roads
Miles
FEMA 100-year Floodzone
Beaver Creek Substation
Hoyt Substation
Erie Substation
Ft. Lupton
Erie
Dacono
Platteville
Gilcrest
Mead
Frederick
Firestone
Longmont
Hudson
Keenesburg
Brighton
Weld County Rd 7
Weld County Rd 8
Weld County Rd 6
Weld County Rd 4
Weld County Rd 2
Weld County Rd 1
Weld County Rd 10
Weld County Rd 11
Weld County Rd 12
Weld County Rd 13
Weld County Rd 14
Weld County Rd 15
Weld County Rd 16
Weld County Rd 17
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Appendix C.
Correspondence from U.S. Fish and Wildlife Service regarding the Endangered Species Act Requirements.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO: T&E/Species list
Mail Stop 65412

AUG 2 6 2004

Mr. Jim Hartman
U.S. Department of Energy
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539-3003

Dear Mr. Hartman:

The U.S. Fish and Wildlife Service (Service) received your letter dated August 10, 2004, regarding the proposed replacement and upgrade of the Beaver Creek-Hoyt 115-kV transmission line between Brush and Hoyt, Morgan County, Colorado. These comments have been prepared under the provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et. seq.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.), and the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.).

For your convenience, we have enclosed a list of Colorado's threatened and endangered species, as well as the counties in which they are known to occur. We cannot provide site-specific details.

If questions regarding the presence of an endangered species, the extent of its habitat, or the effects of a particular action need to be resolved, the Service recommends that a knowledgeable consultant be contacted to conduct habitat assessments, trapping studies, or to provide recommendations regarding options under the ESA. Due to staffing constraints, the Colorado Field Office cannot provide you with these services.

Along with the ESA, please be aware of the potential application of the MBTA and the BGEPA to your transmission line project. Protective measures to help reduce possible impacts to migratory birds and other raptors should be installed. 7 CFR § 1724.52 allows for deviations from construction standards for raptor protection, provided that structures are designed and constructed in accordance with *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* published by the Edison Electric Institute/Raptor Research Foundation. The regulation requires that such structures be in accordance with the National Electrical Safety Code and applicable State and local regulations.

If the Service can be of further assistance, please contact Sandy Vana-Miller of my staff at (303) 275-2370.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

Enclosure: Species List

cc: FWSR6, S. Vana-Miller

Page 5/8

U. S. Fish and Wildlife Service
Ecological Services
Colorado Field Office

(Effective August 16, 2004)

FEDERALLY LISTED AND CANDIDATE SPECIES & THEIR STATUS IN COLORADO
1

	COUNTIES →	LAKE	LA PLATA	LARIMER	LAS ANIMAS	LINCOLN	LOGAN	MESA	MINERAL	MOFFAT	MONTEZUMA	MONTROSE	OTERO	OURAY	PARK	PHILLIPS
Bald eagle, *Haliaeetus leucocephalus*, Listed Threatened		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gunnison sage-grouse, *Centrocercus minimus*, Candidate for Listing			✓					✓			✓	✓		✓		
Least tern (interior population), *Sterna antillarum*, Listed Endangered				▲		▲	▲						✓		▲	
Lesser prairie chicken, *Tympanuchus pallidicinctus*, Candidate for Listing						✓										
Mexican spotted owl, *Strix occidentalis lucida*, Listed Threatened			✓	✓						✓	✓				✓	
Piping plover, *Charadrius melodus*, Listed Threatened				▲		▲	✓						✓	✓	▲	
Southwestern willow flycatcher, *Empidonax traillii extimus*, Listed Endangered			✓					✓			✓					
Yellow-billed cuckoo, *Coccyzus americanus*, Candidate for Listing			✓					✓	✓	✓	✓			✓		
Whooping crane, *Grus americana*, Listed Endangered				▲		▲	▲						▲		▲	
Black-footed ferret, *Mustela nigripes*, Listed Endangered			✓	✓		✓				✓	✓		✓			
Canada lynx, *Lynx canadensis*, Listed Threatened		✓	✓	✓				✓	✓	✓	✓			✓	✓	
Preble's meadow jumping mouse, *Zapus hudsonius preblei*, Listed Threatened				©									✓			
Arkansas darter, *Etheostoma cragini*, Candidate for Listing						✓	✓							✓		
Bonytail, *Gila elegans*, (presumed-historical) Listed Endangered								©		©	*			*		
Colorado pikeminnow, *Ptychocheilus lucius*, Listed Endangered		*						©	*	©	*	*		*		
Greenback cutthroat trout, *Oncorhynchus clarki stomias*, Listed Threatened		✓		✓											✓	
Humpback chub, *Gila cypha*, Listed Endangered								©		©			*			

Rec'd:
22 AUG 05
1100

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO: T&E/Ferret Survey
Mail Stop 65412

AUG 17 2005

Mr. Jim Hartman
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539-3003

Dear Mr. Hartman:

The U.S. Fish and Wildlife Service (Service) received your letter dated July 12, 2005, regarding Western Area Power Administration's (Western) proposed Beaver Creek-Hoyt-Erie 155-kV Transmission Line Rebuild and Upgrade Project, Morgan and Weld Counties, Colorado. Your letter requested the Service's determination as to whether a black-footed ferret (*Mustela nigripes*) survey would be required for your project. These comments have been prepared under the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.), and the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.).

This contact is necessary to determine if black-footed ferrets, a Federally-listed endangered species, may be present at the site where the control is to occur. The issue is that prairie dog control may adversely affect black-footed ferrets, directly by killing ferrets or indirectly by destroying their primary food base, the prairie dog. The responsibility of the Service in this matter is limited to determining the likelihood of black-footed ferrets being present in the control area and, if present, ensuring that they are not adversely impacted.

Under certain circumstances, the Service believes that there is very little chance that ferrets could occur at a specific prairie dog town. These conditions are:

1. There are fewer than 8 prairie dog holes per acre, and therefore does not meet the definition of a prairie dog town.
2. The white-tailed or Gunnison's prairie dog town is less than 200 acres, and there is no other prairie dog town within 4.3 miles from the edge of the treatment area.
3. There is a high degree of urbanization in the immediate area of the control site, or,
4. The area of the control site is predominantly cultivated, thereby isolating the control site from requisite ferret-supporting habitat.
5. A black-footed ferret survey has been conducted on the site by a trained biologist which has resulted in no ferrets being located.

Since one or more of the above conditions have been met, a ferret survey is not necessary for this project.

Please be aware of the potential application of the BGEPA and the MBTA to the proposed project. We recommend that project activities occur outside of the nesting season (approx.

March-July) so as not to disturb migratory birds that may nest in or near the project area such as eagles and other raptors, and mountain plovers (*Charadrius montanus*), which are known to nest on cultivated fields.

Burrowing owls (*Speotyto cunicularia*) often occur in association with prairie dog colonies. This species is a migratory bird and, therefore, protected in accordance with Federal law. The status of this species is unknown at present; therefore, your proposed project should be designed and/or timed to ensure that a "take" of burrowing owls will not occur if prairie dog colonies are present at or surround the subject project site. Biologists studying burrowing owl biology at the Rocky Mountain Arsenal found that most owls arrive in this area of Colorado in late March and migrate form their burrows by September 1. Thus, the Service is concerned about any activities which could adversely impact burrowing owls, especially between late March and September 1.

If the Service can be of further assistance, please contact Sandy Vana-Miller of my staff at (303) 275-2370.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

cc: FWS/ES, S. Vana-Miller

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:
ES/CO: WAPA/NLAA
Mail Stop 65412

NOV - 8 2005

Mr. Joel K. Bladow
Western Area Power Administration
P.O. Box 3700
Loveland, Colorado 80539-3003

Dear Mr. Bladow:

The U.S. Fish and Wildlife Service (Service) received your letter dated September 30, 2005, regarding Western Area Power Administration's (Western) request for concurrence on the proposed Beaver Creek-Hoyt-Erie 115-kV Transmission Line Rebuild and Upgrade Project, Morgan and Weld Counties, Colorado. These comments have been prepared under the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended (16 U.S.C. 668 et. seq.), and the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703 et. seq.).

We have reviewed the information provided with your September 30, 2005, letter, including the pre-approval draft Environmental Assessment (EA) and Biological Assessment (BA). The EA described measures to avoid and minimize impacts to bald eagles (*Haliaeeteus leucocephalus*); specifically, that Western would implement timing and surface occupancy restrictions, as recommended by the Colorado Division of Wildlife.

Based on the information you have provided, the Service concurs that the proposed project may affect but is not likely to adversely affect the bald eagle and whooping crane (*Grus americana*). Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Due to the potential application of the MBTA and the BGEPA to your transmission line project, please be aware of the *April 2005 Avian Protection Plan (APP) Guidelines*, a document prepared jointly by the Service and the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC). The APP Guidelines should be used in conjunction with APLIC's *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996,* published by the Edison Electric Institute/Raptor Research Foundation. The APP Guidelines include measures for reducing or eliminating the risk of eagles and other birds colliding with an overhead line; the BA mentioned this as a possibility where the existing line crosses the South Platte River.

If the Service can be of further assistance, please contact Sandy Vana-Miller of my staff at (303) 275-2370.

Sincerely,

Susan C. Linner
Colorado Field Supervisor

cc: CDOW, Kirstie Bay
FWSR6/ES, S. Vana-Miller

Appendix D.
Concurrence Letters from the State Historic Preservation Officer

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

OFFICIAL FILE COPY
WESTERN
ROCKY MOUNTAIN REGION
03/09/05
INFO COPY TO:

Route to:	Initials	Date
J0000	JKB	3/9/05
SD400		

March 4, 2005

Joel K. Bladow
Regional Manager
Western Area Power Administration
P.O. Box 3700
Loveland, CO 80539-3003

Re: Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project

Dear Mr. Baldow:

This office has reviewed your correspondence of March 2, 2005 and the cultural resources report prepared by Alpine Archaeological Consultants for the project listed above.

We concur that 5MR826, a pitcher's mound, 5MR827, a fallen windmill and 5MR828, abandoned farm equipment, are not eligible to the National Register. These historic resources are not related to persons or events important in history.

Railroad grades 5WL1317 and 5WL1423 have been officially determined eligible to the National Register of Historic Places. We concur that 5WL1317.11 and 5WL1423.11 are contributing segments to railroad lines.

5WL4844.1 appears to be part of 5WL1969 which has been determined eligible to the National Register. The segment recorded for this project is considered to be contributing.

Our office, through a State Historic Preservation Fund grant, is in the process of developing a context on which to evaluate historic irrigation resources in Colorado. We hope to have this available to the public by the fall of 2005. Until we receive this context, we would like to withhold comments on the eligibility of the historic irrigation resources recorded during this survey.

We concur that the rebuilding of this transmission line will not affect the qualities that make the historic resources eligible to the National Register.

If we may be of further assistance please contact Jim Green at 303-866-4674.

Sincerely,

FOR Georgianna Contiguglia
State Historic Preservation Officer

GC/WJG

Department of Energy
Western Area Power Administration
Rocky Mountain Customer Service Region
P.O. Box 3700
Loveland, CO 80539-3003

JUL 14 2005

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

Dear Ms. Contiguglia:

Western Area Power Administration, Rocky Mountain Region (Western), is proposing to rebuild or upgrade approximately 91 miles of transmission line in Weld and Morgan Counties, Colorado.

In consideration of the effect of the undertaking on cultural resources as per 36 CFR 800.5, a cultural resource survey was conducted by Alpine Archaeological Consultants (Alpine). The results of that survey are documented in the report entitled "*Class III Cultural Resource Inventory of the Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project in Morgan and Weld Counties, Colorado.*" A copy of the report was sent to you for review (our letter of March 2, 2005).

Subsequent to that letter, alternative alignments for the transmission line and possible needs for the expansion of existing substations were identified. Western contracted with Alpine to survey the alternative routes and substation expansions. The results of the survey are documented in the enclosed report entitled "*Addendum to Class III Cultural Resources Inventory of the Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project in Morgan and Weld Counties, Colorado: Alternate Routes and Substation Expansions.*"

It is Western's intention that all of the contributing segments of the eligible or recommended eligible sites be avoided by project impacts. If it is determined during the construction phase that this is not possible, Western will consult with your office prior to undertaking any action that would have an effect. Due to existing transmission lines and other alterations to the view shed, the proposed project will have no visual effect on the properties. Western has determined that **no historic properties will be affected** as outlined in 36 CFR 800.4(d) (1). The submission of this documentation fulfills Western's responsibilities under Section 106 of the National Historic Preservation Act, as amended (NHPA), for the project as described in this letter and the Draft Survey Report. Additional project elements or alternatives that may subsequently be identified will require additional surveys, reporting, and consultation with your office.

I. Description of the Additional Undertakings Covered in the Addendum Report.

Beaver Creek Substation to Brush Prairie Ponds State Wildlife Area (SWA) Alternative. This 7.14 mile reroute would involve removing the existing transmission line and moving it to the east to parallel an existing transmission line, and also place it on a new route along the southern border of the SWA. Approximately 2.24 miles of the reroute are on land owned by the City of Brush; the remainder is on private land.

The Beaver Creek to Sandy Transmission Line Reroute. This reroute entailed surveying a 3.45-mile-long segment of the Beaver Creek-Big Sandy Transmission Line, which is proposed for removal and relocation parallel to a part of the reroute of the Beaver Creek Substation to Brush Prairie Ponds SWA alternative.

Expansion of the Beaver Creek Substation. The exact dimensions and extent of the expansion is not known at this time, so a survey area of 35.4 acres was identified. This area is large enough to accommodate locating the substation, which would be considerably smaller than the surveyed area. The expansion is on private land.

Bijou Creek Crossing. Located in the vicinity of and across the Bijou Creek floodplain, the segment is 4.44 miles long. This reroute is on private land.

Hoyt to Wiggins Reroute Segment. This segment runs 2.11 miles north from the Hoyt Substation on private land.

Expansion of the Hoyt Substation. The exact dimensions and extent of the expansion is not known at this time, so a survey area of 20.74 acres was identified. This area is large enough to accommodate locating the substation, which would be considerably smaller than the surveyed area. The expansion area is on private land.

Expansion of the Erie Substation. The exact dimensions and extent of the expansion is not known at this time, so a survey area of 8.9 acres was identified. This area is large enough to accommodate locating the substation, which would be considerably smaller than the surveyed area. The expansion area is on private land.

Area of Potential Effect (APE). The APE for the proposed work addressed in the enclosed Draft Addendum Class III Survey Report is defined as the corridors for the proposed realignments and the expansion areas for the substations. The total acreage of the determined APE is approximately 656 acres. The project location is shown in the enclosed report. The project area is located primarily on private property, with approximately 2.24 miles on city-owned or managed property.

II. Methodology and Reporting - The Office of Archaeology and Historic Preservation (OAHP), Colorado Historical Society, conducted a search of existing site records and previously conducted survey reports. Numerous previous archaeological inventories have been conducted in, or in the vicinity of, the current project area mostly for other linear projects such as pipelines and highways. These previous project surveys recorded other historic sites. Appendix A of the report contains the results of the Class I files search.

An intensive Class III survey of the project area was conducted. The field work consisted of pedestrian survey with transect intervals of no greater than 20 meters. The survey corridor width for the transmission line alternatives varied as described in the report. Sites were defined as five or more artifacts, in relatively close proximity to one another, exceeding 50 years old or cultural features of obvious cultural patterning exceeding 50 years old. Cultural sites were recorded on the appropriate Colorado State site forms. Sites were mapped using a Trimble Global Positioning System unit capable of sub-meter accuracy. Sites and isolated finds were plotted on U. S. Geological Survey quadrangle maps using the Trimble data. Overview photographs were taken of each site to aid in site relocation.

III. Resources Located, Identified, and Evaluated - Results of the file search and field investigations identified historic resources within the project area. Three previously recorded sites were reevaluated. Three new prehistoric sites were recorded, along with one new historic/prehistoric site, and one new historic site. The National Register of Historic Places (NRHP) eligibility and management recommendations for these sites are presented in Table 3 of the draft report. Included are two historic transmission lines, one area with historic farm equipment, two prehistoric lithic scatters, one prehistoric camp, one historic homestead, and one historic trash pile. All sites were located on private land.

The prehistoric camp (5MR840: Cut-Bank Site) is recommended as eligible for inclusion on the NRHP. The remaining sites are recommended as not eligible. 5MR695, 696, 839, 841 & 842

IV. Effects Determination and Compliance Decision - Investigations included a site records check and field examination. None of the sites will be impacted by the proposed action because they will be avoided during construction. Transmission lines structures are relatively easy to place to span and avoid cultural resources of the types identified in the Class I and Class III surveys for this project. Due to existing transmission lines and other existing alterations to the view shed, the proposed project will have no visual effect on the properties.

Western has determined that **no historic properties will be affected** as outlined in 36 CFR 800.4(d) (1) by the proposed project. The submission of this documentation fulfills Western's responsibilities under Section 106 of the NHPA. Western recommends that the proposed project be allowed to proceed as planned.

If you have any questions about this, please telephone Jim Hartman, Rocky Mountain Region Office, at (970) 461-7450.

Sincerely,

Joel K. Bladow
Regional Manager

Enclosure

I concur for State Historic Preservation Officer Date 7/18/05

Department of Energy
Western Area Power Administration
Rocky Mountain Customer Service Region
P.O. Box 3700
Loveland, CO 80539-3003

JUL 27 2005

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

Dear Ms. Contiguglia:

Western Area Power Administration, Rocky Mountain Region (Western) is proposing to upgrade the Hoyt Substation to Wiggins Substation 115-kV Transmission Line in Morgan County, Colorado.

In consideration of the effect of the undertaking on cultural resources as per 36 CFR 800.5, a cultural resource survey was conducted by Alpine Archaeological Consultants. The results of that survey are documented in the report entitled "*Class III Cultural Resource Inventory of the Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project in Morgan and Weld Counties, Colorado.*" A copy of the report was sent to you for review (our letter of March 2, 2005). Additional survey information related to the Hoyt to Wiggins Transmission Line was provided in the survey report: *"Addendum to Class III Cultural Resource Inventory of the Beaver Creek-Hoyt-Wiggins-Erie Transmission Line Rebuild Project in Morgan and Weld Counties, Colorado: Alternate Routes and Substation Expansions."* This report was sent to you for review (our letter of July 14, 2005).

Subsequent to that letter, Western identified the need for a construction staging area. Western surveyed the proposed staging area and prepared the enclosed "Limited Results Survey Report."

Western has determined that **no historic properties will be affected** as outlined in 36 CFR 800.4(d)(1). The submission of this documentation fulfills Western's responsibilities under Section 106 of the National Historic Preservation Act, as amended (NHPA) for the project as described in this letter and the Limited Results Survey Report. Additional project elements or alternatives that may subsequently be identified will require additional surveys, reporting, and consultation with your office.

I. Description of the Additional Undertakings Covered in the Limited Results Survey Report - The staging area will be used by construction forces to store, assemble, and dispatch materials for the Hoyt Substation to Wiggins Substation Upgrade.

Area of Potential Effect (APE). The APE for the proposed work is defined as approximately 12 acres of land. The project location is shown in the enclosed report. The project area is located on private property.

II. Methodology and Reporting - The Office of Archaeology and Historic Preservation, Colorado Historical Society, conducted a search of existing site records and previously conducted survey reports. Numerous previous archaeological inventories have been conducted in, or in the vicinity of, the current project area mostly for other linear projects such as pipelines and highways. These previous project surveys recorded other historic sites.

An intensive Class III survey of the project area was conducted. The field work consisted of pedestrian survey with transect intervals of no greater than 10 meters. Sites would be defined as five or more artifacts, in relatively close proximity to one another, exceeding 50 years old or cultural features of obvious cultural patterning exceeding 50 years old.

III. Resources Located, Identified, and Evaluated - There were no historic resources located during this survey.

IV. Effects Determination and Compliance Decision - Investigations included a site records check and field examination. No known sites will be impacted by the proposed staging area.

Western has determined that **no historic properties will be affected** as outlined in 36 CFR 800.4(d)(1) by the proposed project. The submission of this documentation fulfills Western's responsibilities under Section 106 of NHPA. Western recommends that the proposed project be allowed to proceed as planned.

If you have any questions about this, please telephone Jim Hartman, Rocky Mountain Region Office, Loveland, Colorado, at (970) 461-7450.

Sincerely,

Catherine McCartney

Joel K. Bladow
Regional Manager

Enclosure

I concur Susan M. Collins Deputy Date July 29, '05
State Historic Preservation Officer