

3.9 WETLANDS AND RIPARIAN AREAS

Wetlands are defined for regulatory purposes as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR Part 328.3, 40 CFR Part 230.3). Wetlands are important ecological resources that perform many functions including groundwater recharge, flood flow attenuation and conveyance, erosion control, and water quality improvement. They also provide habitat for many plants and animals, including threatened or endangered species (see Sections 3.7 – Special Status Plants and 3.11 – Special Status Wildlife and Fish Species).

Riparian areas are unique vegetation communities that occur adjacent to waterways and wetlands, and provide habitat for numerous plant and animal species. They generally occupy transitional areas between aquatic and upland habitats, and may function as vegetative buffers for aquatic resources. Although riparian habitats are often combined with wetlands (as a result of their intimate relationship to the hydrological regime), riparian areas differ from wetlands in that they are generally linear, more terrestrial (less hydric), and are often dependent on a natural disturbance regime relating to flooding and stream dynamics (Naiman et al. 2005). This section includes but is not limited to waters that would be jurisdictional under Section 404 of the CWA (waters of the United States) and areas considered by each state to be “waters of the state.”

3.9.1 Affected Environment

This section describes the existing wetland and riparian areas that could be impacted by the Project. The discussion will first define the Analysis Area. It will then outline the issues that were raised during public scoping, followed by a description of the laws and regulations in place to manage wetlands and riparian areas. This section will then conclude by describing the methods used to assess impacts to wetlands and riparian areas, and a description of the existing conditions of wetlands and riparian areas crossed by the Project.

3.9.1.1 Analysis Area

The Project would cross a portion of the Intermountain West region, in southern Wyoming and Idaho, as well as a small portion of northern Nevada (under Alternative 7I). Grass and shrublands are the most common vegetation type found in this region, with only a few areas that contain forests or woodlands. Wetlands and riparian areas are limited within this region, with the most abundant types consisting of herbaceous and shrub wetlands that are associated with drainage features.

The Analysis Area used to determine wetland impacts is a minimum of 250 feet on either side of the transmission line centerline for Proposed and Alternative Routes, a minimum of 25 feet on either side of the centerlines of roads mapped for Proposed and Alternative Routes, and a minimum of 50 feet around the perimeter of other Project features such as staging areas, laydown yards, fly yards, substations, and regeneration stations. This area, based on preliminary or indicative engineering, allows for a

comparison of impacts among alternatives. Approximately 297,600 acres were mapped for the Project during the course of route and alternative development, scoping, and public involvement. Mapping was conducted on routes and alternatives that were considered but have been eliminated from detailed study. Therefore, the Analysis Area for assessing impacts to wetlands encompasses approximately 277,100 acres, of which 3,815 acres (1.4 percent) was mapped as wetland or riparian areas.

3.9.1.2 Issues to be Analyzed

Issues identified during public scoping (Tetra Tech 2009a) included the following:

- What the effects on permanent and seasonal wetlands would be;
- Whether riparian areas would be affected; and
- Whether equipment staging and/or refueling areas can be kept away from wetlands and riparian areas.

3.9.1.3 Regulatory Framework

The USACE regulates the discharge of dredge and fill material into “waters of the United States” under Section 404 of the CWA. In addition, the Swampbuster Provision of the Food Security Act of 1985 requires that landowners who receive USDA program benefits comply with wetland requirements.

The USACE jurisdiction over non-tidal waters of the United States extends to the “ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands” (33 CFR Part 328.4); and under Title 40 CFR Part 230.3 (s)(1). Waters of the United States are defined earlier in this Draft EIS in Section 1.2.3 in Chapter 1.

Many wetlands are protected under the CWA as waters of the United States and special aquatic sites. Wetlands are defined by the USACE based on the presence of wetland vegetation, wetland hydrology, and hydric soils. In addition, EO 11990, Protection of Wetlands (42 *Federal Register* 26961), directs all federal agencies to minimize the destruction, loss, or degradation of wetlands, and to enhance the natural and beneficial values of wetlands. Federal regulation and management of wetlands follows a “no net loss” policy.

Under Section 404, the USACE issues a number of nationwide permits for different types of activities that result in minimal individual and cumulative adverse effects on the aquatic environment. Nationwide Permit 12 authorizes construction, maintenance, and repair of utility lines in all waters of the United States provided that there is no change in preconstruction contours. This nationwide permit also authorizes related facilities including substations (provided they do not result in the loss of more than 0.5 acre of waters of the United States), structure foundations of overhead utility lines (provided they cover the minimum size necessary), and access roads (provided the discharges do not cause the loss of greater than 0.5 acre of non-tidal waters of the United States). These limitations for Nationwide Permit 12 include all losses at a single crossing of a wetland or stream, or cumulative losses from multiple crossings of the same wetland or stream.

A pre-construction notification must be sent to the USACE if any of the following situations would occur: mechanized clearing of forested wetlands, a Section 10 permit is required under the Rivers and Harbors Act for work in navigable waters, a loss of more than 0.1 acre of jurisdictional wetlands or other waters, permanent access roads are constructed above grade for more than 500 feet, or permanent access roads are constructed of impervious materials (72 *Federal Register* 11092-11198). Compensatory mitigation would be required for all losses if they exceed 0.1 acre. Losses that exceed 0.5 acre are not authorized by Nationwide Permit 12.

There are no specific laws protecting riparian areas; however, the land management plans of federal agencies provide protections for riparian areas including BLM's no net loss of wetland/riparian habitat policy. Federal agency management goals are to maintain, restore, and improve riparian areas to protect water quality, improve water retention and groundwater recharge, provide wildlife habitat, support biodiversity, and other goals. The BLM and Forest Service evaluate the functional condition of riparian areas using a qualitative method called assessment of proper functioning condition (Pritchard 1998). "Properly functioning" means the hydrological, vegetation, and soil erosion/deposition components on a stream system are in working condition, are resilient to disturbance, and provide adequate vegetation, landform, or debris to protect water resources, habitat, and biodiversity. Proper functioning condition can be applied for both lotic (streams) and lentic (ponds, wetlands) systems. The evaluation procedures for delineating the condition of these areas are different for each system and are more clearly defined in the BLM technical documents (Burton et al. 2008; Smith 2008). The assessment of proper functioning condition should be used in conjunction with more quantitative methods; it is not a substitute for monitoring but a tool for identifying smaller scale areas (step-down process).

Depending on the National Forest, the NFS has identified Water Influence Zones (WIZs), Aquatic Influence Zones (AIZs), or Riparian Conservation Zones (RCZs), which are based on a specific width on either side of a stream depending on flow regime and do not specifically require the physical presence of mapped riparian or wetland vegetation. These areas provide a buffer between a stream or waterbody and the upland areas, and can influence water quality. The Caribou-Targhee NF has delineated about 63,000 acres of AIZ on its 1.1 million acres (Forest Service 2003e). The Sawtooth NF has delineated about 66,210 acres of AIZ on its 596,791 acres. Based on methodology provided by the Medicine Bow-Routt NFs, about 13,619 acres of WIZs on its 174,300 acres has been delineated within the southern portion of the Douglas Ranger District.

3.9.1.4 Methods

The location of wetlands and riparian areas within the Analysis Area was determined based on remote sensing techniques, which consisted of acquiring Project-specific aerial images of the Analysis Area, segmentation of images into GIS polygons, classification of polygons into vegetation types (i.e., photo interpolation), and limited field verifications to ensure that photo interpolation was conducted accurately. The NWI and National Hydrography Dataset GIS databases were also referenced to assist in vegetation mapping. A more detailed description of the remote sensing mapping

methods can be found in the Vegetation and Habitat Mapping Baseline Technical Report (Tetra Tech 2009b).

To determine the acreage of impacts that could potentially occur to wetland and riparian areas, the Project's construction and operations footprints were overlaid onto the wetlands and riparian areas that were identified and mapped during the remote sensing effort (using ArcGIS). Areas where the Project's construction or operations footprints were co-located with mapped wetlands or riparian areas were considered to be a direct impact and the acreage of impact was calculated via GIS analysis. Examples of wetlands and riparian areas found along the Proposed Route and Route Alternatives are shown in Figures E.9-1 through E.9-4 in Appendix E.

The estimates of impacts determined through these methods are based on preliminary engineering. As a result, they likely overestimate the impacts that would actually occur due to Project construction and operations, because Project components (including towers, roads, equipment storage yards, fly yards, and laydown areas) would be sited outside of wetlands during final engineering design whenever possible (as is a standard engineering practice). In addition, the estimated impacts resulting from tower pads are determined via a standard circular buffer around the proposed pad location. However, construction engineers are not likely to impact the entire extent of this circular buffer when wetlands or riparian areas are present but would instead reshape the construction area around the tower pad to exclude these areas. These impact estimates are presented here as they are based on the current preliminary design of the Project. Most of the wetland and riparian area impact estimates presented within this EIS would be avoided or minimized during final engineering design.

Wetlands were identified using the vegetation mapping data, which used one of the three parameters (vegetation) required for an area to be considered a jurisdictional wetland. Therefore, the actual number and acreages of wetlands that could be jurisdictional wetlands (which would be determined during wetland delineation) may be smaller than those presented within this EIS if the area of hydric soils and/or wetland hydrology is smaller than the area of hydrophytic vegetation identified via remote sensing. More exact estimates of the area of impact to jurisdictional wetlands would be made as part of final design and CWA Section 404 permitting. Wetland delineations have not been conducted for this Project at this time but would be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation would identify both wetland and non-wetland waters of the United States that would be affected by the Project.

As used in this EIS, the term "construction impacts" includes all areas that would be disturbed during construction. Some of these areas would remain disturbed for the life of the Project (such as the bases of transmission structures, substation foundations, and access road beds, i.e., operations impacts), while others would be restored following final construction. All of the operations impacts would be initiated during construction.

3.9.1.5 Existing Conditions

As stated earlier, the identification of areas as wetlands is preliminary and based on photo interpretation. The actual area of jurisdictional wetlands and the type of wetlands that occur within the Analysis Area would be determined during wetland delineations that would be required prior to construction. The wetland mapping study was intended to be conservative and include all potential areas of wetlands and riparian vegetation.

Wetlands and riparian vegetation occupy only a small portion of the Analysis Area. They represent about 1.2 percent of the miles crossed by the centerline of the Proposed Route and Route Alternatives (Appendix D, Table D.6-1). They occupy about 1.5 percent of the total Analysis Area. Wetlands and riparian areas are more common in some portions of the Analysis Area, such as along Segment 1W and portions of Segment 4, and less common in other areas such as Segments 8 through 10. Wetlands and riparian areas are most common in and near the mountainous portions of the Analysis Area and are scarce in southwestern Idaho and in the arid parts of Wyoming.

Four types of wetlands were mapped in the Analysis Area. For reference purposes, the Cowardin system (used by NWI to classify wetlands) will be listed when appropriate; however, this system will not be used during this analysis.

- Herbaceous wetlands (i.e., palustrine emergent, or PEM in the Cowardin system [Cowardin et al. 1979]) are dominated by erect, rooted, herbaceous species, such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), spikerushes (*Eleocharis* spp.), and various grasses and forbs. Herbaceous wetlands make up more than half of the wetlands mapped in the Analysis Area, and are most abundant on Segment 4, where they occupy large areas on private lands along the Hams Fork and Bear River in southwestern Wyoming and the Bear River in southeastern Idaho.
- Shrub wetlands (i.e., palustrine scrub-shrub or PSS in the Cowardin system [Cowardin et al. 1979]) include wetlands dominated by woody vegetation less than 20 feet tall. These wetlands are commonly dominated by species such as coyote willow (*Salix exigua*), other willows, and other shrubs such as water birch (*Betula occidentalis*) and red-osier dogwood (*Cornus sericea*). Shrub wetlands often have an understory and openings dominated by herbaceous wetland species. Shrub wetlands are the second most common type found within the Analysis Area and are found predominantly along Segments 1E through 5.
- Mixed wetlands (not defined by the Cowardin system) are areas that had a mix of shrub and herbaceous wetlands, or a mix of trees, shrub, and herbaceous; they represent areas that could not be readily assigned to a single wetland type during photo interpretation. The mixed wetlands type was slightly less common than the shrub wetlands type, and is predominantly found along Segment 4.
- Forested wetlands (i.e., palustrine forested, or PFO in the Cowardin system [Cowardin et al. 1979]) are wetlands dominated by trees. Common species include plains cottonwood (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), peachleaf willow (*Salix amygdaloides*), and Russian olive

(*Elaeagnus angustifolia*). This type of wetland is relatively uncommon in the Analysis Area, and is only found along Segments 1W and 4.

In addition, four types of riparian areas were mapped within the Analysis Area:

- Herbaceous riparian areas included regions dominated by herbaceous species along perennial and intermittent streams that were not identified as wetlands during remote sensing efforts. They are abundant along Segments 1E, 4, and 7.
- Shrub riparian areas included regions dominated by species such as willows, black greasewood (*Sarcobatus vermiculatus*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and other species along perennial or intermittent streams. This is the most common riparian type found within the Analysis Area; it can be found along all segments but is most common along Segment 4.
- Mixed riparian areas consisted of non-wetland areas that contained elements of the three riparian types identified above. This type is uncommon within the Analysis Area, predominantly found along Segment 4.
- Forested riparian areas included mesic regions dominated by trees or shrubs and were located along rivers or streams. These areas are typically dominated by plains cottonwood in the lowlands and by narrowleaf cottonwood, aspen (*Populus tremuloides*) and conifers in the mountains, and by shrub species such as willows, chokecherry (*Prunus virginiana*), skunkbush sumac (*Rhus trilobata*), and snowberry (*Symphoricarpos* spp.). Forested riparian areas often have an open tree canopy and an herbaceous understory of grasses and forbs. This riparian type is relatively uncommon in the Analysis Area, predominantly found along Segments 1W and 4.

3.9.2 Direct and Indirect Effects

This section is organized to present effects to wetlands from construction, then operations, followed by decommissioning activities for the proposed Project. Route Alternatives are analyzed in detail in Section 3.9.2.3. There is a Design Variation involving use of two single-circuit structures proposed by the Proponent for Segments 2, 3, and 4 (see Section 2.2 for details), which is analyzed in Section 3.9.2.4 and a Structure Variation that is analyzed in Section 3.9.2.5. The Proponents have also proposed a Schedule Variation, analyzed in Section 3.9.2.6, in which one of the two single circuits to be constructed in Segments 2, 3, and 4 and a portion of Segment 1W would be built on an extended schedule with construction beginning approximately 2.5 years after completion of the initial construction.

In May of 2011, the Proponents submitted a Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S. (Appendix C-6).

Mitigation measures or EPMS are presented in detail within this section only if it is the first time they have been discussed in Chapter 3; all other measures are referenced or summarized. A comprehensive list of all Proponent-proposed EPMS and Agency-required mitigation measures can be found in Table 2.7-1 of Chapter 2.

Plan Amendments

Proposed amendments are summarized in Table 2.2-1 of Chapter 2 and detailed in Appendices F and G. Amendments are needed to permit the Project to cross various areas of BLM-managed and NFS lands. Effects described for areas requiring an amendment in order for the Project to be built would only occur if the amendment were approved. Amendments that alter land management designations could change future use of these areas. No amendments specific to wetlands and riparian areas are proposed for the Project and no impacts to wetlands and riparian areas resulting from approving the amendments beyond the impacts of the project are anticipated.

An amendment is proposed for the Caribou Forest Plan TES Standard 11 to allow the Project where it would disturb wetland/riparian habitat for the boreal toad, wood frog, or northern leopard frog.

3.9.2.1 No Action Alternative

Under the No Action Alternative, the Project would not be constructed or operated. No Project-related impacts would occur to wetlands or riparian areas. However, impacts would continue as a result of natural conditions (such as fire, drought, and severe weather) and/or existing development in the Analysis Area.

3.9.2.2 Effects Common to All Action Alternatives

Construction

The primary impact to wetland and riparian areas would result from the clearing of vegetation. Removal of vegetation could alter various functions provided by these areas, including their ability to serve as wildlife habitat (see Sections 3.10 – General Wildlife and Fish and 3.11 – Special Status Wildlife and Fish Species), as well as their ability to trap sediment and nutrients. Soil disturbances and removal of vegetation within a wetland or riparian area could temporarily alter the area's ability to moderate flood flow, control sediments, or facilitate surface water flow. Removal of vegetation could also increase water and soil temperatures and alter the species composition within these areas.

Increased soil disturbances can lead to invasions by exotic plant species, which can alter the composition and function of wetlands and riparian areas. Any blasting that may occur within or adjacent to a wetland could fracture the bedrock and alter the hydrology of a perched water table, thereby leading to drier conditions and impairment of revegetation efforts. Withdrawal of water for use during construction may have temporary effects on wetlands adjacent to streams, by reducing the water input that they would receive. Failure to restore disturbed areas to their preconstruction conditions (contours, hydrology, segregation and restoration of topsoil), could impede the re-establishment of wetland and riparian vegetation during revegetation efforts. A summary of the direct impacts (i.e., vegetation removal and soil disturbances) that would result from construction of the Project (broken down by segment and alternative) is provided in Table D.9-1 of Appendix D.

Although some Project-related disturbances would be temporary and confined to the construction phase, impacts would continue through the operations phase in areas

where construction sites are located within forested wetlands or riparian areas, because of the time required to restore forested habitats. Construction impacts in forested wetlands and forested riparian areas would generally involve a conversion to a different wetland type (i.e., a change to shrub or herbaceous type), rather than a loss of wetland or riparian acreage. It is likely that recovery would be fairly rapid in herbaceous and shrub wetlands, and construction in these types is not likely to cause a conversion to a different type. Impacts could result from soil compaction or alteration of surface or subsurface water movement in wetlands and riparian areas, or springs and seeps. Impacts could also result if areas that once contained wetlands or riparian areas (prior to construction) become occupied by Project facilities (such as tower pads, substations, and access roads).

To minimize the potential impacts that could occur to wetlands, the Proponents have proposed a Reclamation, Revegetation, and Weed Management Plan and are developing a SWPPP and an SPCC Plan. These plans would include measures to ensure that disturbed areas are revegetated and restored to preconstruction conditions, and that toxic substances or increased sedimentation do not impact waterbodies. These plans are discussed in more detail below and the preliminary measures that would be included in these plans are provided in Appendices C-1 and C-2.

Reclamation, Revegetation, and Weed Management Plan

The Framework Reclamation Plan for Construction Activities (Appendix C-2) provided by the Proponents addresses measures to be undertaken to ensure reclamation and revegetation of disturbed areas that are not occupied by permanent Project facilities, as well as to prevent the accidental introduction or transport of noxious weeds or exotic species along the ROW during and after construction. This Plan, as proposed, includes site-specific restoration measures, procedures for preconstruction treatment of noxious weeds and invasive plants, topsoil treatment, ROW restoration (recontouring, decompaction, and cleanup), seedbed preparation, seeding methods, preliminary seed mixes, road reclamation, monitoring, and remedial actions. Project-specific seed mixes would be developed in consultation with the public land manager or private landowner. Reclamation efforts would be scheduled for late fall to early winter, where feasible, and permitted to facilitate seed establishment when snow and rainfall are more likely. A detailed reclamation schedule will be prepared as part of the Final Reclamation Plan for each segment.

Reclamation actions would meet short- and long-term reclamation objectives by:

- Conducting preconstruction weed surveys, applying preconstruction weed control measures where appropriate, controlling weed introduction and spread during construction, and conducting postconstruction weed monitoring and control activities where needed (REC-1 to REC-15);
- Using proper soil management techniques, including stripping, stockpiling, and reapplying topsoil material at temporarily disturbed areas to restore soil horizons and establish surface conditions that would allow for rapid re-establishment of vegetation (REC-16 to REC-18);
- Re-establishing topography compatible with the surrounding landscape (REC-19);

- Establishing stable soil surface and drainage conditions, which would minimize surface erosion and sedimentation (REC-20 to REC-22);
- Re-vegetating disturbed areas with plant species adapted to site conditions to establish long-term, productive, self-maintaining plant communities compatible with existing land uses; and concurrently minimize the chances for noxious weeds and invasive plant species to replace species that are native to the area (REC-24 through REC-26);

This plan would minimize the impacts that would occur to wetlands and riparian areas by providing measures for restoring vegetation and site characteristics. As a result of this plan, the majority of impacts to wetlands would occur due to impacts related to occupancy of a wetland or riparian area by operations facilities, or through the maintenance of forested vegetation below the height of the transmission lines (addressed in more detail below, within the Operations and Maintenance discussion).

Stormwater Pollution Prevention Plan

The Proponents have developed EPMs to minimize erosion and sediment transportation to adjacent waterbodies. These measures would be included in the SWPPP, which would be finalized prior to construction. Preventing erosion and sedimentation from entering waterbodies (including wetlands) is essential, because these sediments can alter the function of wetlands or riparian areas (as described above). The following are EPMs contained within the preliminary SWPPP (Appendix C-1, Attachment B) that are applicable to wetlands and riparian areas:

- SW-1 The appropriate NPDES permits for construction activities that disturb one acre or more of land will be obtained from the Department of Environmental Quality and USEPA or their designees.
- SW-4 The SWPPPs will be modified as necessary to account for changing construction conditions.
- SW-5 The SWPPPs will identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion. (Descriptions of stormwater BMPs are available at USEPA [2008]).
- SW-6 Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.
- SW-7 Stormwater BMPs will be maintained on all disturbed lands during construction activities, as described in the SWPPP.
- SW-8 Approved sediment and erosion control BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.
- SW-9 Temporary BMPs will be used to control erosion and sediment at staging areas (equipment storage yards, fly yards, laydown areas) and substations.
- SW-10 The construction schedule may be modified to minimize construction activities in rain-soaked or muddy conditions.

- SW-11 Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.
- SW-12 Upon completion of construction, permanent erosion and sediment BMPs will be installed along the transmission line within the ROW, at substations, and at related facilities in accordance with the SWPPPs.

Spill Prevention, Containment, and Countermeasures Plan

The Proponents have developed EPMs to minimize the possibility of accidental spills of toxic substances into or adjacent to waterbodies (including wetlands). These measures would be included in the SPCC Plan, which would be finalized prior to construction.

The following are EPMs contained within the preliminary SPCC Plan (Appendix C-1, Attachment C) that are applicable to wetlands and riparian areas:

- SPC-1 Construction industry standard practices and BMPs will be used for spill prevention and containment.
- SPC-2 Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.
- SPC-3 All staging areas will contain fueling areas with containment. Where fueling must be conducted along the ROW, the plan will specify BMPs.
- SPC-4 If an upland spill occurs during construction, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated materials will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.
- SPC-6 For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.
- SPC-9 Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas at least 500 feet away from streams, 400 feet for public wells, and 200 feet from private wells.

Permitting and Mitigation Requirements

As part of the Section 404 permitting process, the USACE would evaluate whether wetlands have been avoided to the extent practical and whether losses have been adequately mitigated. The permitting process would also identify additional requirements, as necessary, to comply with USACE regulations. These would include the necessity for compensatory mitigation for any permanent loss of wetland area or wetland function. Compensatory mitigation could include the creation, enhancement, or restoration of wetlands to replace the lost wetland function/acreage. Other potential options include purchasing credits from a mitigation bank or in-lieu fee programs. The

type of compensatory mitigation would be determined by the USACE as part of the Section 404 permitting process.

Compensatory mitigation involves actions taken to offset unavoidable adverse impacts to wetlands, streams and other aquatic resources authorized by CWA Section 404 permits and other USACE permits. Compensatory mitigation is a critical tool in helping the federal government meet the longstanding national goal of “no net loss” of wetland acreage and function. It is the Proponents’ responsibility to take all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the United States.

In addition to the compensatory mitigation required by the USACE (discussed in the Operation and Maintenance section below) and the Proponents’ EPMs, the Agencies have identified the following mitigation measures to further protect wetlands and riparian areas during construction:

- WET-1 Impacts on wetland and riparian areas shall be avoided unless physically or economically infeasible. Land management agencies’ plans (RMPs and Forest Plans) that have standards, guidelines, stipulations, or avoidance buffers will be adhered to. Where these do not exist, Inland Fish Strategy (INFISH) buffers for fish-bearing and nonfish-bearing waters and wetlands will be followed.
- WET-2 Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project.

In addition, the following mitigation measure has been proposed by the Agencies and adopted by the Proponents:

- WET-3 Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts shall be submitted to the appropriate regulatory agency, as well as the land managing agency. The Proponents shall apply directly to the appropriate permitting agency (USACE and/or State agency) for approval.

Operations

During siting, routing, and construction, the Proponents committed to avoiding wetlands and riparian areas to the maximum extent practicable, minimizing impacts by reducing clearing and road width to the minimum needed for safe operation, and restoring construction disturbance. Wetland losses could be reduced by restoring the original contours and wetland area, by minimizing the area of impact during construction by use of mats or other techniques (allowing heavy equipment to pass over while protecting wetland soils below), or by avoiding or minimizing placement of structures in wetlands during final design.

However, there would still be residual impacts in some areas from Project operations and maintenance. These unavoidable impacts to wetlands and riparian areas would include permanent fill to support transmission towers, permanent 8-foot-wide roads to each tower, and safety vegetation maintenance in the ROW, including removal of trees

that could interfere with the conductors or use of the roads. Table D.9-2 in Appendix D lists the acreage of permanent impacts that would occur during operations by segment and alternative.

If permanent operations facilities are located within a wetland or riparian area, this would result in a permanent loss of wetland or riparian area. The Proponents have asserted that final Project design would avoid these areas to the extent practical.

The Proponents would use Integrated Vegetation Management on the ROW to reduce the risk of fire and maintain safe access to the line and associated facilities. In general, this would involve removing or trimming tall-growing trees so that they do not come into contact with the line. Impacts to wetlands and riparian areas would occur where trees are cut to meet wire clearance requirements (see Section 3.6.2.2). Removal of trees would result in conversion of forested wetland or forested riparian areas to shrub or herbaceous types. This vegetation management would be initiated during construction and would continue during the operations phase of the Project.

Maintenance of the access roads and work areas (blading of roads to restore surface conditions, and weed management conducted near permanent structures) could result in minor direct and indirect impacts to wetlands or riparian areas. Vehicle traffic in wetlands and riparian areas has the potential to permanently alter soil characteristics and drainage patterns unless proper precautions are taken. Indirect impacts during maintenance may include compaction of soils, alteration of drainage patterns, erosion, and sedimentation. Erosion control and sedimentation measures such as water bars, culverts, sediments basins, or perimeter control would be installed as required to minimize erosion.

Compensatory Mitigation

The USACE recognizes three mechanisms for providing compensatory mitigation. Listed in order of most favorable (preferred by the USACE) to least favorable, these include mitigation banks, in-lieu fee programs, and permittee-responsible compensatory mitigation. Both mitigation banks and in-lieu fee programs involve off-site compensation activities that are conducted by a mitigation bank sponsor or an in-lieu fee program sponsor. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year (73 *Federal Register* 19594–19705). As its name implies, the permittee retains responsibility for ensuring that required compensation activities are completed and successful. Compensatory projects can be located at or adjacent to the impact site (i.e., on-site compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., offsite compensatory mitigation).

The USACE prefers the use of mitigation banks but has indicated that the Project does not fall within the service areas of any approved and operational mitigation banks or existing in-lieu fee programs (Johnson 2010; Joyner 2010). In addition, it is unlikely any approved mitigation banks will be operational within service areas appropriate for this Project in the foreseeable future. Therefore, it is the Proponents' responsibility to develop a suitable compensatory mitigation program. The framework of the Proponents' plan is found in Appendix C-6.

If possible, the Proponents intend to develop a Project-specific in-lieu fee program and suitable sponsor(s) to ensure adequate compensation for all Project-related aquatic impacts. The following activities are proposed to develop an in-lieu fee program and sponsor(s):

- The Proponents will work with USACE to determine the amount of mitigation required as well as the geographic service areas in which mitigation should occur;
- Potential entities/sponsor(s) for an in-lieu fee program shall be identified; and
- The Proponents will work with potential in-lieu fee entities/sponsor(s) to determine pre-plan needs (fiscal, structure, governance).

Suitable sponsors for an in-lieu development program might include national organizations such as Ducks Unlimited, Trout Unlimited, or the Rocky Mountain Elk Foundation; state organizations such as the Wyoming Wildlife Federation; or more grass roots organizations such as local land trusts.

However, if the Proponents are unable to encourage the development of an acceptable in-lieu fee program with one or more sponsors that meets the requirements of the USACE, the Proponents would propose one or more compensatory mitigation projects in a comprehensive mitigation plan. This plan would include the specifications sections and sub-plans outlined below.

1. **Objectives**—This section would discuss:
 - The resource type(s) and amounts that will be provided by the mitigation project;
 - The method of compensation (i.e., restoration, establishment, enhancement, and/or preservation); and
 - The manner in which the resource functions of the mitigation project will address the needs of the watershed, ecoregion, physiographic province, or other geographic area of interest.
2. **Site Selection**—This section would discuss the factors considered during the site selection process, such as:
 - Needs of affected watersheds,
 - On-site alternatives (where applicable), and
 - The practicability of accomplishing an ecologically self-sustaining aquatic resource at mitigation project site.
3. **Site Protection Instrument**—This section would describe measures that will be used to ensure the long-term protection of the mitigation project site; including legal arrangements and instrument, as well as site ownership.
4. **Baseline Data**—This section would discuss or include:
 - Historic and existing plant communities of the proposed mitigation site and the impact site(s);
 - Historic and existing hydrology of the proposed mitigation site and the impact site(s);

- Soil conditions of the proposed mitigation site and the impact site(s);
 - Map(s) showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s); and
 - Other site characteristics appropriate to the type of resource proposed as compensation, including delineation.
5. **Determination of Credits**—This section would describe the number of credits to be provided, including a brief explanation of the rationale for this determination.
 6. **Monitoring**—This section would include the following:
 - A description of parameters to be monitored in order to determine if the mitigation project is on track to meet performance standards, or if adaptive management is needed.
 - A schedule for monitoring and reporting to the responsible agency.
 - A description of the length of the monitoring period and responsible party.
 7. **Financial Assurances**—This section would describe the financial assurances in-place and how these assurances are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with its performance standards. The USACE may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.
 8. **Ecological Performance Standards**—This section would describe the ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.

The following sub-plans would also be included:

1. **Work Plan**—This plan would describe the following:
 - Geographic boundaries of the Project;
 - Construction methods, timing, and sequence;
 - Source(s) of water, including connections to existing waters and uplands;
 - Methods for establishing the desired plant community;
 - Plans to control invasive plant species;
 - Proposed grading plan, including elevations and slopes of the substrate;
 - Soil management; and
 - Erosion control measures.
2. **Maintenance Plan**—This plan would include a description and schedule for the maintenance requirements aimed at maintaining the continued viability of the resource once initial construction is completed.
3. **Long-Term Management Plan**—This plan would include a description of how the mitigation project will be managed after performance standards have been achieved in order to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.

4. **Adaptive Management Plan**—This plan would include a description of how the mitigation plan would be revised and implemented if changes arise. This plan would also identify the party or parties responsible for implementing adaptive management measures.

In addition, other relevant information concerning waters of the United States would be included in the mitigation plan, covering such topics as plan-form geometry, channel form (typical channel cross-sections), watershed size, design discharge, and riparian area plantings. The Agencies have identified the following mitigation measure to further protect wetlands and riparian areas during operations:

- WET-4 To meet USACE requirements for CWA 404 permitting, the Proponents must submit a plan for mitigation and full compensation for all losses of waters of the United States. This plan must be approved by the USACE. The framework for this plan is included in the Draft EIS (Appendix C-6) and must be fully detailed for the Final EIS.

Decommissioning

Decommissioning of the Project could result in impacts to wetlands and riparian areas. These impacts would include increased sedimentation, erosion, soil compaction, and limited direct removal of vegetation (if some vegetation areas needed to be cleared to remove structures from the site).

3.9.2.3 Proposed Route and Alternatives by Segment

Tables D.9-1 (Construction Impacts) and D.9-2 (Operations Impacts) in Appendix D provide details of impacts to wetlands and riparian areas by ecological type for the Proposed and Alternative Routes across all segments and for the Design Variation in Segments 2 through 4. In the analysis by segment below, the impacts are summarized and compared across Route Alternatives for that segment. The quantitative analysis of impacts is based on the following conservative assumptions:

- Areas identified and mapped as wetlands from remote sensing may not be jurisdictional under Section 404 of the CWA; therefore, wetland impacts may be overstated.
- Impacts are assessed based on preliminary design and do not include the avoidance and minimization of impacts that would occur as part of final design.

Segment 1E

Segment 1E, as proposed, would link the Windstar and Aeolus Substations in south-central Wyoming with a 100.6-mile 230-kV single-circuit transmission line. Twenty acres of the expansion of Windstar and Aeolus Substations and 0.5 acre for one regeneration site are attributed to Segment 1E. Alternative 1E-A is a 16.1-mile alternative along the north end of Segment 1E, which was the Proponents' initial proposal before moving the Proposed Route at the suggestion of local landowners to avoid the more settled area around Glenrock. Alternative 1E-B is 21.4 miles longer than the Proposed Route but is being considered by the Proponents because it would avoid a Wyoming-designated sage-grouse core area to the east. The BLM has required the

consideration of Alternative 1E-C, which parallels the Segment 1W 230-kV lines into the Aeolus Substation (see Appendix A, Figure A-2).

The Analysis Area for Segment 1E consisted of approximately 27,470 acres of mapped vegetation, which included 483 acres (1.8 percent) of wetland and riparian areas. Nine acres of wetlands and riparian areas that were mapped were located on the Medicine Bow-Routt NFs. The primary types present are herbaceous and shrub wetlands and riparian areas.

The Medicine Bow-Routt NFs have provided instructions for identifying WIZs associated with many of the stream segments on the NFs. Streams, wetlands, and waterbodies are buffered by specified distances and have limited development to protect these features from impacts such as erosion, sedimentation, temperature increases, and other water quality–related issues. The Proposed Route and Route Alternatives do impact WIZs in varying degrees, from four crossings on Alternative 1E-C to eight crossings of WIZs on the Proposed Route.

Construction

The impacts from construction of the Segment 1E Proposed Route and Route Alternatives are presented in Table 3.9-1. About 3.3 acres of wetlands and 7.9 acres of riparian areas would be affected by construction along the Proposed Route. Most of the impacts would occur from construction of structure sites and access roads. Most of the wetland impacts would occur in herbaceous wetlands and most of the riparian impacts would occur in shrub and herbaceous riparian areas. Construction would affect 0.4 acre of forested wetlands (due to ROW clearing) and would affect a combined total of 2.5¹ acre of forested riparian areas. The Proposed Route would cross the WIZ of eight streams on Medicine Bow-Routt NFs and construction activities would impact 0.3 acre of wetlands and riparian areas.

As shown in Table 3.9-1, Alternative 1E-A would have more effects on wetlands and riparian areas than the comparison portion of the Proposed Route.² Alternative 1E-B would result in more impacts to wetlands and less impacts to riparian areas than the comparison portion of the Proposed Route. Alternative 1E-C would have fewer impacts to wetland and riparian areas than the comparison portion of the Proposed Route. Nearly all of the wetland and riparian impacts for Proposed Route would occur along the portion that compares to Alternative 1E-C.

Operations

The impacts from operations and maintenance of the Proposed Route and Route Alternatives in Segment 1E are presented in Table 3.9-1. About 0.9 acre of wetlands and 1.4 acres of riparian areas would be occupied by operations facilities and 0.4 and 1.9 acres of forested wetland and forested riparian areas, respectively, would be converted to an herbaceous or shrub community by ROW maintenance along Segment 1E. Most of the wetland impacts would occur in herbaceous wetlands and most of the

¹ Due to permit criteria, acreages are reported here rounded to tenths of an acre instead of to the nearest whole acre as done elsewhere in this EIS.

² The portion of the Proposed Route that starts and ends at the same nodes as the Route Alternative.

Table 3.9-1. Comparison of Wetland/Riparian Impacts for Segment 1E Proposed Route and Alternatives 1E-A, 1E-B, and 1E-C

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed 1E – Total Length	3.3	7.9	0.9	0.4	1.4	1.9
Proposed – Comparison Portion for Alternative 1E-A	t ^{1/}	1.5	–	–	t ^{1/}	1.3
Alternative 1E-A	2.2	2.1	0.1	1.8	0.3	1.2
Proposed – Comparison Portion for Alternative 1E-B	0.2	2.7	t ^{1/}	–	0.7	–
Alternative 1E-B	1.8	2.5	0.3	–	0.4	–
Proposed – Comparison Portion for Alternative 1E-C	3.3	6.4	0.9	0.4	1.3	0.6
Alternative 1E-C	1.8	1.2	0.5	t ^{1/}	0.3	–

1/ Value is less than 0.1 acre.

riparian impacts would occur in herbaceous riparian areas. Less than 0.1 acre of wetlands or riparian areas would be impacted on the Medicine Bow-Routt NFs.

Segment 1W

Segment 1W is composed of two parts, Segment 1W(a) and 1W(c), both of which would consist of a new 230-kV line for part of their length and a reconstruction of an existing 230-kV line for the remaining part. Segment 1W(a) would be about 76.5 miles long, and would extend from the Windstar Substation to the Aeolus Substation. Segment 1W(c) would be about 70.6 miles long, and would extend from the Dave Johnston Power Plant to the Aeolus Substation. Alternative 1W-A is a 16.2-mile alternative located near the town of Glenrock, which was the Proponents’ initial proposal before moving the Proposed Route at the suggestion of local landowners in order to avoid the more settled area around Glenrock. Twenty acres of the proposed expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(a) and 3 acres of the expansion at the Heward Substation and 17 acres of the expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(c). There are no Route Alternatives proposed south of that point (see Appendix A, Figure A-2).

The Analysis Area for Segment 1W(a) consisted of approximately 11,230 acres of mapped vegetation which included 209 acres (1.9 percent) of wetland and riparian areas. Three acres of wetlands and riparian areas that were mapped were located on the Medicine Bow-Routt NFs. The Analysis Area for Segment 1W(c) consisted of approximately 8,720 acres of mapped vegetation, which included 208 acres (2.4

percent) of wetland and riparian areas. Less than 1 acre of wetlands and riparian areas that were mapped were located on the Medicine Bow-Routt NFs. The primary types present are shrub and herbaceous wetlands and riparian areas.

Construction

The impacts from construction of the Segment 1W(a) Proposed Route and Route Alternative are presented in Table 3.9-2. About 3.1 acres of wetlands and 3.8 acres of riparian areas would be affected by construction of the Proposed Route 1W(a) and about 5.5 acres of wetlands and 6.8 acres of riparian areas would be affected by construction of Proposed Route 1W(c). Construction would not affect any forested wetlands on 1W(a) but would affect 2.4 acres of forested wetlands on 1W(c), and 0.4 and 2.0 acres of forested riparian areas on 1W(a) and 1W(c), respectively. Segments 1W(a) and 1W(c) would cross the WIZ of seven and two streams, respectively, on the Medicine Bow-Routt NFs.

Table 3.9-2. Comparison of Wetland/Riparian Impacts for Segment 1W(a) Proposed Route and Alternative 1W-A

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed 1W(a) Total Length	3.1	3.8	0.6	–	1.4	0.4
Proposed – Comparison Portion for Alternative 1W-A	t ^{1/}	0.7	t ^{1/}	–	0.3	–
Alternative 1W-A	3.6	1.5	0.3	2.9	t ^{1/}	1.2
Proposed 1W(c) Total Length	5.5	6.8	0.7	2.2	1.0	1.7

1/ Value is less than 0.1 acre.

Operations

The impacts from operations and maintenance of the Segment 1W Proposed Route and Route Alternatives are presented in Table 3.9-2. About 0.6 acre of wetlands and 1.4 acres of riparian areas would be occupied by operations facilities on Segment 1W(a) and about 0.7 acre of wetlands and 1.0 acres of riparian areas would be occupied by operations facilities on Segment 1W(c). Operations facilities affecting wetlands and riparian areas would include structure pads and new and improved access roads. ROW maintenance would convert 2.2 acres of forested wetland to herbaceous or shrub wetland on 1W(c), and would similarly affect 0.4 and 1.7 acres of riparian forests on 1W(a) and 1W(c), respectively. Most of the wetland impacts would occur in herbaceous and forested wetlands and in shrub and forested riparian areas.

The acreage of operations impacts to wetlands and riparian areas that would occur along Alternative 1W-A would be similar to those discussed for construction.

Segment 2

Segment 2, as proposed, would link the Aeolus and Creston Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at

230 kV during the initial phase of the Project. Its total proposed length is 96.7 miles. Fifty-two acres of the expansion of the Aeolus Substation and the construction of the Creston Substation and 0.5 acre for one regeneration site are attributed to Segment 2. There are three Route Alternatives, two of which are near the community of Fort Fred Steele. Alternative 2A at 28.4 miles long is being considered by the BLM because it remains in the WWE corridor nearer the town and the state historic site, and Alternative 2B, at 6.2 miles, is closer to the community than the comparison portion of the Proposed Route and was the initially proposed route before the Proponents responded to local suggestions and relocated the Proposed Route farther to the south. Alternative 2C is a 24.4-mile alternative located north of Hanna, Wyoming. It is being evaluated at the recommendation of the Wyoming Governor's office to follow a utility corridor approved by that office for minimizing effects to sage-grouse (see Appendix A, Figure A-3).

The Analysis Area for Segment 2 consisted of approximately 18,030 acres of mapped vegetation, which included 240 acres (1.3 percent) of wetland and riparian areas. The primary wetland types present are herbaceous wetlands, shrub wetlands, and shrub riparian areas.

Construction

The impacts from construction of the Proposed Route and Route Alternatives in Segment 2 are presented in Table 3.9-3. About 2.5 acres of wetlands and 7.2 acres of riparian areas would be affected by construction. Most of the impacts would occur from construction of structure pads and new and improved roads. Most of the wetland impacts would occur in herbaceous wetlands and most of the riparian impacts would occur in shrub riparian areas. Construction would not affect any forested wetlands but would affect a combined total of 0.3 acre of forested riparian areas.

Both Alternatives 2A and 2B would have similar impacts to wetlands as the comparison portions of Segment 2, but would have substantially more impacts to riparian areas. Alternative 2C would not impact wetlands and would impact less riparian areas than the comparison portion of the Proposed Route.

Operations

The impacts from operations and maintenance of the Proposed Route and Route Alternatives in Segment 2 are presented in Table 3.9-3. About 0.5 acre of wetlands and 2.8 acres of riparian areas would be occupied by operations facilities. ROW maintenance would convert 0.2 acre of forested riparian to herbaceous or shrub wetland. Operations facilities affecting wetlands and riparian areas would include structure pads and new and improved access roads. Most of the wetland impacts would occur in herbaceous wetlands and shrub riparian areas.

Table 3.9-3. Comparison of Wetland/Riparian Impacts for Segment 2 Proposed Route and Alternatives 2A, 2B, and 2C

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 2 – Total Length	2.5	7.2	0.5	–	2.8	0.2
Proposed – Comparison Portion for Alternative 2A	2.1	1.3	0.3	–	0.3	0.2
Alternative 2A	2.3	8.0	0.5	–	0.7	4.6
Proposed – Comparison Portion for Alternative 2B	t ^{1/}	0.1	t ^{1/}	–	t ^{1/}	–
Alternative 2B	0.2	5.7	t ^{1/}	–	0.3	3.4
Proposed – Comparison Portion for Alternative 2C	0.2	1.6	t ^{1/}	–	0.5	0.2
Alternative 2C	–	0.1	–	–	t ^{1/}	–

1/ Value is less than 0.1 acre.

Segment 3

Segment 3, as proposed, would link the Creston and Anticline Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at 230 kV during the initial phase of the Project. Its total proposed length between those two substations is 56.5 miles. Sixty-nine acres of the construction of the Anticline and Creston Substations are attributed to Segment 3. Segment 3 would also link the Anticline and Jim Bridger Substations with a 4.3-mile 230-kV line and a 5.5-mile 345-kV line and includes the 10-acre expansion of the Jim Bridger 345-kV Substation. There are no alternatives proposed along this segment (see Appendix A, Figure A-4).

The Analysis Area for Segment 3 consisted of approximately 6,993 acres of mapped vegetation, which included 134 acres (1.9 percent) of wetland and riparian areas. The primary wetland types present are herbaceous wetlands and shrub riparian areas.

Construction

The impacts from construction of the Proposed Route in Segment 3 are presented in Table 3.9-4. About 4.7 acres of wetlands and 8.0 acres of riparian areas would be affected by construction. Most of the impacts would occur from construction of structure pads and new access roads. Most of the wetland impacts would occur in herbaceous wetlands and all of the riparian impacts would occur in shrub riparian areas.

Table 3.9-4. Wetland/Riparian Impacts for Segment 3 Proposed Route

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 3 – Total Length	4.7	8.0	0.9	–	1.3	–

Operations

The impacts from operations and maintenance of the Proposed Route in Segment 3 are presented in Table 3.9-4. About 0.9 acre of wetlands and 1.3 acres of riparian areas would be occupied by operations facilities. Impacts from operations facilities would mostly occur from structure pads and new or improved access roads. Most of the wetland impacts would occur in herbaceous wetlands and shrub riparian areas. No impacts to forested wetlands or riparian areas would occur during operations along this segment.

Segment 4

Segment 4, as proposed, would link the Anticline Substation near the Jim Bridger Power Plant in southwestern Wyoming with the Populus Substation in Idaho with two 500-kV circuits on one structure. Its total proposed length is 203 miles. Eighty-nine acres of the construction of the Anticline Substation and the expansion of the Populus Substation and 1.5 acres for three regeneration sites are attributed to Segment 4. It has six Route Alternatives in the middle portion of its route but the first 52 miles to the east and the last 61 miles to the west (in Idaho) do not have any Route Alternatives. The middle section of the Proposed Route is 90.2 miles long, and its Route Alternatives vary from 85 to 102 miles long. These alternatives were proposed by the Wyoming Governor's office (4A, paralleling the existing 345-kV lines throughout); by the BLM Kemmerer FO (4B through 4E, including edits from various cooperating agencies), with the intent to avoid impacts to cultural resources to the extent practical; and by the Proponents (4F, attempting to avoid impacts to cultural resources while still remaining north of the existing lines) (see Appendix A, Figures A-5 and A-6).

The Analysis Area for Segment 4 consisted of approximately 52,938 acres of mapped vegetation, which included 1,416 acres (2.7 percent) of wetland and riparian areas. Approximately 9 acres of wetlands and riparian areas that were mapped were located on the Caribou-Targhee NF. The primary wetland types present are herbaceous wetlands and shrub riparian areas. This segment would make several crossings of broad irrigated and sub-irrigated valleys associated primarily with the Bear River as well as some other smaller streams. Much of the valley floor is mapped as a complex of herbaceous wetlands and riparian areas, and the length of the crossings of these complexes ranges from about 0.5 mile to several miles.

The Caribou-Targhee NF has identified AIZs associated with many of the stream segments on the NF. Streams are buffered by set distances depending on the stream

type and limit development in these buffer areas to protect streams from impacts such as erosion, sedimentation, temperature increases, and other water quality-related issues. The Proposed Route would impact AIZs on 13 streams at 52 locations.

Construction

The impacts from construction of the Proposed Route and Route Alternatives in Segment 4 are presented in Table 3.9-5. About 45.2 acres of wetlands and 20.1 acres of riparian areas would be affected by construction of the Proposed Route. Most of the impacts would occur from construction of structure pads, new access roads, and improvements made to existing access roads. Most of the wetland impacts would occur in herbaceous wetlands and most of the riparian impacts would occur in shrub riparian areas. Construction would affect 1.8 acres of forested wetlands and 1.9 acres of forested riparian areas.

Table 3.9-5. Comparison of Wetland/Riparian and AIZ Impacts for Segment 4 Proposed Route and Alternatives 4A through 4F.

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operation s Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 4 – Total Length	45.2	20.1	9.1	1.8	3.9	1.6
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E, F	10.1	6.5	2.0	0.8	0.9	0.3
Alternative 4A	28.0	27.5	4.2	0.2	2.4	2.5
Alternative 4B	21.6	21.5	2.3	–	1.6	0.6
Alternative 4C	14.9	21.4	1.6	–	1.4	0.6
Alternative 4D	18.9	21.0	2.5	–	1.6	0.6
Alternative 4E	15.3	20.8	1.8	–	1.4	0.6
Alternative 4F	16.7	26.3	2.5	0.8	1.7	2.6

Approximately 1.2 acres of wetlands and riparian areas would be impacted by construction activities on the Proposed Route on the Caribou-Targhee NF. The Proposed Route would cross the AIZ of seven streams on Caribou-Targhee NF. With the application of the SWPPP and the Reclamation, Revegetation, and Maintenance Plan, construction of Segment 4 within Caribou-Targhee NF is not expected to result in a reduction or loss of function for the AIZ streams within the Project area. Site-specific crossing plans and measures to mitigate impacts would be submitted to the Caribou-Targhee NF for approval prior to construction in these areas. Approximately 9.6 acres of AIZs on the Caribou-Targhee NF would be impacted on the Proposed Route by construction activities.

All of the alternatives would have greater impacts to wetlands and riparian areas than the comparison portions of the Proposed Route. Alternative 4A would have the most

construction-related impacts to wetland areas, while Alternatives 4A and 4F would have the most construction-related impacts to riparian areas.

Operations

The impacts from operations and maintenance of the Proposed Route and Route Alternatives in Segment 4 are presented in Table 3.9-5. About 9.1 acres of wetlands and 3.9 acres of riparian areas would be occupied by operations facilities on the Proposed Route, of which approximately 0.2 acre of impact would occur on the Caribou-Targhee NF. Operations facilities affecting wetlands and riparian areas would include structure pads and new and improved access roads. ROW maintenance would convert 1.8 acres of forested wetlands to herbaceous or shrub wetland types, and 1.5 acres of forest riparian areas to herbaceous or shrub riparian areas on the Proposed Route. Most of the operations impacts would occur in herbaceous wetlands and forested riparian areas. Approximately 3 acres of AIZs on the Caribou-Targhee NF would be impacted on the Proposed Route by operations and maintenance activities.

Segment 5

Segment 5, as proposed, would link the Populus and Borah Substations with a 54.6-mile single-circuit 500-kV line. Forty-four acres of the expansion of the Populus and Borah Substations are attributed to Segment 5. There are five Route Alternatives including two proposed by the BLM to avoid the Deep Creek Mountains (5A and 5B; 8 miles and 19 miles longer than the comparison portion of the Proposed Route), one preferred by Power County that crosses the Fort Hall Indian Reservation (5C; 6 miles shorter than the comparison portion of the Proposed Route), one originally proposed by the Proponents (5D; 2 miles shorter than the comparison portion of the Proposed Route but located within more agricultural lands), and one proposed by Power County as an alternative approach to the Borah Substation (5E) (see Appendix A, Figure A-7).

The Analysis Area for Segment 5 consisted of approximately 20,796 acres of mapped vegetation, which included 1,416 acres (2.7 percent) of wetland and riparian areas. Riparian shrub areas are the most abundant type present.

Construction

The impacts from construction of the Proposed Route and Route Alternatives in Segment 5 are presented in Table 3.9-6. About 3.8 acres of wetlands and 5.9 acres of riparian areas would be affected by construction of the Proposed Route, resulting mostly from construction of structure pads and new and improved roads. Most of the wetland impacts would occur in herbaceous and mixed wetlands and most of the riparian impacts would occur in shrub riparian areas. Construction would not affect any forested wetlands but would affect a combined total of 0.2 acre of forested riparian areas.

Alternatives 5A and 5B would have fewer wetland and riparian impacts compared to the comparison portion of the Proposed Route. Alternative 5C would impact more wetlands and riparian areas compared to the comparison portion of the Proposed Route. Alternative 5D would have more than twice as many impacts as the comparison portion

Table 3.9-6. Comparison of Wetland/Riparian Impacts for Segment 5 Proposed Route and Alternatives 5A through 5E

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 5 – Total Length	3.8	5.9	0.3	–	0.6	0.1
Proposed- Comparison Portion for Alternatives 5A, 5B	2.8	1.8	0.2	–	t ^{1/}	0.1
Alternative 5A	0.2	0.8	t ^{1/}	–	0.2	0.4
Alternative 5B	0.1	1.4	t ^{1/}	–	0.2	1.0
Proposed- Comparison Portion for Alternative 5C	1.3	2.3	t ^{1/}	–	0.5	–
Alternative 5C	3.5	2.7	t ^{1/}	–	0.1	1.3
Proposed – Comparison Portion for Alternative 5D	1.1	3.4	t ^{1/}	–	0.5	–
Alternative 5D	2.6	7.5	t ^{1/}	2.5	0.2	5.5
Proposed – Comparison Portion for Alternative 5-E	–	1.1	–	–	t ^{1/}	–
Alternative 5E	–	0.1	–	–	t ^{1/}	–

1/ Value is less than 0.1 acre.

of the Proposed Route for construction-related impacts. Alternative 5E and the comparison portion of the Proposed Route would not affect wetlands; however, 5E would have fewer impacts to riparian areas from construction than the comparison portion.

Operations

The impacts from operations and maintenance of the Segment 5 Proposed Route and Route Alternatives are presented in Table 3.9-6. About 0.3 acre of wetlands and 0.6 acre of riparian areas would be occupied by operations facilities on the Proposed Route. Impacts would mostly result from new and improved access roads. The wetland impacts would occur in herbaceous, shrub, and mixed wetlands and most of the riparian impacts would occur in herbaceous and shrub riparian areas. Operations facilities and ROW clearing would not affect any forested wetlands but would affect 0.1 acre of forested riparian areas.

Segment 6

Segment 6 is an existing transmission line linking the Borah and Midpoint Substations; it is now operated at 345 kV but would be changed to operate at 500 kV. This segment has no Route Alternatives. Existing support structures would be used and impacts would be limited to within approximately one-quarter mile from each substation to allow for moving the entry point into the substation to the new 500-kV bay. Thirty-one acres of the expansion of the Borah and Midpoint Substations are attributed to Segment 6. Changes in the two substations would allow it to be operated at 500 kV (see Appendix A, Figure A-8).

Segment 7

Segment 7, as proposed, would link the Populus and Cedar Hill Substations with a 118.1-mile single-circuit 500-kV line. Forty-two acres of the expansion of the Populus and the construction of the Cedar Hill Substations and 1 acre for two regeneration sites are attributed to Segment 7. In addition to the Proposed Route, which is principally on private lands, Route Alternatives have been proposed by the BLM to avoid the Deep Creek Mountains (7A and 7B; which are 5 miles and 11 miles longer than the comparison portion of the Proposed Route), by local landowners (7C, 7D, 7E, 7F, and 7G, which all represent minor adjustments proposed to address local issues), by local landowners to avoid private agricultural lands (7I or the State Line Route, which is 55 miles longer than the Proposed Route and would require 0.5 acre for an additional regeneration site), and by the Proponents to avoid the State Line Route (7H, which is 10 miles longer than the Proposed Route). Alternative 7J, which is a variant of the State Line Route also proposed by local landowners, would not terminate at the Cedar Hill Substation. This alternative, referred to as the Rogerson Alternative, would require a different substation be constructed near a 345-kV existing transmission line (approximately 24 miles southwest of the Cedar Hill Substation; see Appendix A, Figure A-9). The tables and discussion in this document compare 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

The Analysis Area for Segment 7 consisted of approximately 53,365 acres of mapped vegetation, which included 675 acres (1.3 percent) of wetland and riparian areas. Approximately 260 acres of wetlands and riparian areas that were mapped were located on the Sawtooth NF. The most common types present are herbaceous wetland and riparian.

The Sawtooth NF has identified RCZs associated with many of the stream segments on the NF. Streams are buffered by set distances depending on the stream type and limit development in these buffer areas to protect streams from impacts such as erosion, sedimentation, temperature increases, and other water quality-related issues. The Proposed Route and Route Alternatives would impact RCZs in varying degrees from two crossings on Alternative 7E to 194 crossings of RCZs on Alternative 7H.

Construction

The impacts from construction of the Segment 7 Proposed Route and Route Alternatives are presented in Table 3.9-7. About 3.4 acres of wetlands and 4.6 acres of riparian areas would be affected by construction. The wetland impacts would occur in herbaceous, shrub, and mixed wetlands and most of the riparian impacts would occur in herbaceous and mixed riparian areas. Of the streams on the Sawtooth NF that have identified RCZs, the Proposed Route would cross 27 of them. Approximately 22 acres of RCZs would be impacted by the Proposed Route, as presented in Table 3.9-7.

Alternative 7A would result in more impacts to wetland and riparian areas, while Alternative 7B would result in fewer impacts to wetlands and riparian areas than the comparison portion of the Proposed Route. Alternatives 7C through 7G and their corresponding portions of the Proposed Route would have no or minimal wetland and riparian impacts. Alternative 7I would have more wetland and riparian impacts than Alternative 7H, and both would have more impacts than the comparison portion of the Proposed Route. Alternative 7J would have more wetland and riparian impacts than the comparison portion of the Proposed Route; however, due to the routing of Alternative 7J in relation to the Proposed Routes of Segments 7 and 9, it cannot be directly compared with the Proposed Route of Segment 7, as can the other alternatives for this segment. Alternative 7E would have the fewest crossings of RCZs with two, whereas Alternatives 7H and 7I would have the most with 194 and 179 crossings, respectively.

Operations

The impacts from operations and maintenance of Segment 7 Proposed Route and Route Alternatives are presented in Table 3.9-7. About 0.1 acre of wetlands and 0.4 acre of riparian areas would be occupied by operations facilities along the Proposed Route of Segment 7. Operations facilities affecting wetlands and riparian areas would include structure pads and new and improved access roads. Most of the impacts would occur in shrub wetlands and herbaceous riparian areas. ROW maintenance would not affect any forested wetland or forested riparian areas; however, ROW maintenance would impact these areas along Alternatives 7A, 7H, 7I, and 7J. Operations impacts in RCZs range from 0.1 acre in Alternative 7E to 40 acres in Alternative 7I.

Table 3.9-7. Comparison of Wetland/Riparian and RCZ Impacts for Segment 7 Proposed Route and Alternatives 7A through 7J

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Construction Impacts to RCZs on Sawtooth NF (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
				Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 7 – Total Length	3.4	4.6	22.2	0.1	–	0.4	–
Proposed – Comparison Portion for Alternative 7A,7B	1.3	2.2	–	–	–	0.1	–
Alternative 7A	2.2	2.5	19.6	0.3	–	0.3	0.4
Alternative 7B	–	1.2	19.5	–	–	0.2	–
Proposed – Comparison Portion for Alternative 7C	t ^{1/}	t ^{1/}	–	t ^{1/}	–	t ^{1/}	–
Alternative 7C	–	–	–	–	–	–	–
Proposed – Comparison Portion for Alternative 7-D	1.1	1.9	–	t ^{1/}	–	t ^{1/}	–
Alternative 7-D	1.1	1.8	–	t ^{1/}	–	t ^{1/}	–
Proposed – Comparison Portion for Alternative 7E	–	–	4.6	–	–	–	–
Alternative 7E	–	–	4.5	–	–	–	–
Proposed – Comparison Portion for Alternative 7F	0.4	t ^{1/}	20.8	t ^{1/}	–	t ^{1/}	–
Alternative 7F	–	t ^{1/}	10.3	–	–	t ^{1/}	–
Proposed – Comparison Portion for Alternative 7G	t ^{1/}	–	–	t ^{1/}	–	–	–
Alternative 7G	t ^{1/}	0.8	–	t ^{1/}	–	–	–
Proposed – Comparison Portion for Alternative 7H, 7I	3.4	4.6	22.2	0.1	–	0.4	–
Alternative 7H	5.4	4.5	188.5	0.4	–	0.8	1.4
Alternative 7I	12.3	13.2	168.0	1.0	3.2	2.4	3.5
Proposed – Comparison Portion 7/9 for Alt. 7J ^{2/}	3.6	4.6	22.2	0.1	–	0.4	–
Alternative 7J ^{2/}	9.5	11.0	159.2	1.1	–	2.3	1.4

1/ Value is less than 0.1 acre.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

3.9-27

Segment 8

Segment 8, as proposed, would link the Midpoint and Hemingway Substations. This 131-mile single-circuit 500-kV transmission line would stay north of the Snake River until crossing through the SRBOP parallel to an existing 500-kV transmission line before ending at the Hemingway Substation. Thirteen acres of the expansion of the Midpoint Substation and 0.5 acre for a regeneration site are attributed to Segment 8. There are five Route Alternatives: 8A, which follows the WWE corridor but crosses the Snake River and I-84 twice (while the Proposed Route would stay north of this area); 8B and 8C, which represent the old routes originally proposed by the Proponents but that have now been changed to avoid the cities of Kuna and Mayfield, respectively; 8D, which represents a small revision involving a rebuild of the existing transmission line to move both away from the National Guard Maneuver Area; and 8E, which was proposed by the BLM in order to avoid crossing the Halverson Bar nonmotorized portion of the Guffey Butte-Black Butte Historical Area (see Appendix A, Figure A-10).

The Analysis Area for Segment 8 consisted of approximately 30,000 acres of mapped vegetation, which included 147 acres (0.5 percent) of wetland and riparian areas. The most common types present are herbaceous wetland and shrub riparian areas.

Construction

The impacts from construction of the Segment 8 Proposed Route and Route Alternatives are presented in Table 3.9-8. About 3.3 acres of wetlands and 1.4 acres of riparian areas would be affected by construction. Most of the wetland impacts would occur in herbaceous wetlands and most of the riparian impacts would occur in herbaceous riparian areas. Construction would not affect any forested wetlands but would affect about 0.4 acre of forested riparian areas.

Table 3.9-8. Comparison of Wetland/Riparian Impacts for Segment 8 Proposed Route and Alternatives 8A through 8E

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 8 – Total Length	3.3	1.4	0.3	–	0.4	0.3
Proposed – Comparison Portion for Alternative 8A	1.6	0.5	0.1	–	t ^{1/}	0.3
Alternative 8A	0.4	6.0	0.2	–	0.2	5.5
Proposed – Comparison Portion for Alternative 8B	–	0.7	–	–	0.2	–
Alternative 8B	5.8	1.6	t ^{1/}	–	0.2	0.4

Table 3.9-8. Comparison of Wetland/Riparian Impacts for Segment 8 Proposed Route and Alternatives 8A through 8E (continued)

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed – Comparison Portion for Alternative 8C	–	0.1	–	–	t ^{1/}	–
Alternative 8C	–	t ^{1/}	–	–	t ^{1/}	–
Proposed – Comparison Portion for Alternative 8D	–	–	–	–	–	–
Alternative 8D	–	–	–	–	–	–
Proposed – Comparison Portion for Alternative 8E	–	–	–	–	–	–
Alternative 8E	–	0.2	–	–	–	–

1/ Value is less than 0.1 acre.

Alternative 8A would have fewer impacts to wetlands but more impacts to riparian areas than the comparison portion of the Proposed Route. Alternative 8B would have more impacts than the corresponding portion of the Proposed Route to both wetlands and riparian areas. Alternative 8C would have no impacts to wetlands and only minor impacts to riparian areas. No impacts to wetlands or riparian areas would occur along Alternative 8D and the comparison portion of the Proposed Route, while Alternative 8E would have slightly more impacts to riparian areas than the comparison portion of the Proposed Route.

Operations

The impacts from operations and maintenance of Segment 8 Proposed Route and Route Alternatives are presented in Table 3.9-8. About 0.3 acre of wetlands and 0.4 acres of riparian areas would be occupied by operations facilities along the Proposed Route. Operations facilities affecting wetlands and riparian areas would primarily include structure pads; however, some impacts would occur from new and improved access roads. Most of the impacts would occur in herbaceous wetlands and riparian areas. ROW maintenance would convert 0.3 acre of forested riparian areas to herbaceous or shrub riparian areas along the Proposed Route.

Segment 9

Segment 9, as proposed, would link the Cedar Hill and Hemingway Substations with a 161.7 mile single-circuit 500-kV transmission line which skirts the Jarbidge and Owyhee Military Operating Areas to the north, then follows the WWE corridor just north of the Saylor Creek Air Force Range, passing through Owyhee County before entering into the Hemingway Substation. Fifteen acres of the construction of the Cedar Hill Substation

and 1 acre for two regeneration sites are attributed to Segment 9. There are eight Route Alternatives proposed, including 9A, which was the Proponents' Proposed Route until moving to avoid the Hollister area; 9B, which is being considered by the BLM because it follows the WWE corridor and parallels existing utility corridors; 9C, which was the Proponents' Proposed Route until moving to avoid the Castleford area; and 9D and 9E, proposed by the Owyhee County Task Force, that cross more public lands north and south of the Proposed Route, respectively, than the Proposed Route. Most of Alternative 9D would be within the SRBOP. Alternatives 9F, 9G, and 9H were proposed to avoid crossing the nonmotorized area south of C.J. Strike Reservoir. Alternatives 9G and 9H provide an alternate route location south of Alternative 8E (see Appendix A, Figure A-11).

The Analysis Area for Segment 9 consisted of approximately 43,274 acres of mapped vegetation, which included 119 acres (0.3 percent) of wetland and riparian areas. The most common types present are shrub riparian and mixed riparian areas.

Construction

The impacts from construction of the Segment 9 Proposed Route and Route Alternatives are presented in Table 3.9-9. About 0.8 acre of wetlands and 2.4 acres of riparian areas would be affected by construction of the Proposed Route. Most of the impacts would occur from construction of structure pads and access roads. Most of the

Table 3.9-9. Comparison of Impacts for Segment 9 Proposed Route and Alternatives 9A through 9H

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed Segment 9 – Total Length	0.8	2.4	0.3	–	0.6	t ^{1/}
Proposed– Comparison Portion for Alternative 9A	0.3	t ^{1/}	–	–	t ^{1/}	–
Alternative 9A	–	0.3	–	–	t ^{1/}	–
Proposed– Comparison Portion for Alternative 9B	–	0.3	–	–	t ^{1/}	–
Alternative 9B	–	0.5	–	–	t ^{1/}	0.3
Proposed– Comparison Portion for Alternative 9C	–	0.2	–	–	t ^{1/}	–
Alternative 9C	–	–	–	–	–	–

Table 3.9-9. Comparison of Impacts for Segment 9 Proposed Route and Alternatives 9A through 9H (continued)

Segment/ Alternative	Construction Impacts to Wetlands (acres)	Construction Impacts to Riparian (acres)	Operations Impacts to Wetlands (acres)		Operations Impacts to Riparian (acres)	
			Due to Operations Facilities	Due to ROW Maintenance in Forests	Due to Operations Facilities	Due to ROW Maintenance in Forests
Proposed– Comparison Portion for Alternatives 9D through 9H	0.6	2.1	0.3	–	0.6	–
Alternative 9D	0.7	1.8	t ^{1/}	–	t ^{1/}	–
Alternative 9E	0.8	1.4	0.1	–	0.1	–
Alternative 9F	1.3	4.7	0.3	–	0.3	–
Alternative 9G	1.1	2.4	0.2	–	t ^{1/}	–
Alternative 9H	1.8	4.5	0.5	–	0.3	–

1/ Value is less than 0.1 acre.

wetland impacts would occur in herbaceous wetlands and most of the riparian impacts would occur in shrub and mixed riparian areas. Construction and ROW clearing would not affect any forested wetlands and only minor portions of forested riparian areas.

Alternatives 9A and 9C and the corresponding comparison portions of the Proposed Route would have little or no impacts to wetlands, but Alternative 9A would result in greater impacts to riparian areas. Alternative 9B would not impact wetlands but would impact about 0.2 acre more riparian areas than the comparison portion of the Proposed Route. Alternatives 9D through 9H would have larger impacts to wetlands than the comparison portion of the Proposed Route. Two alternatives (9D and 9E) would result in slightly less impacts to riparian areas than the comparison portion of the Proposed Route, whereas the other three alternatives (9F through 9H) would have up to twice the impact.

Operations

The impacts from construction of Segment 9 Proposed Route and Route Alternatives are presented in Table 3.9-9. About 0.3 acre of wetlands and 0.6 acre of riparian areas along the Proposed Route would be impacted during operations. Operations facilities affecting wetlands and riparian areas would include structure pads and new and improved access roads. Most of the impacts would occur to shrub wetland and shrub riparian areas. ROW maintenance would not affect forested wetland and only minor amounts of riparian areas along the Proposed Route.

Segment 10

Segment 10, as proposed, would link the Cedar Hill and Midpoint Substations with a 33.6-mile single-circuit 500-kV line, following a WWE corridor for most of its distance. Twenty-eight acres of the expansion of the Midpoint Substation and of the construction of the Cedar Hill Substation are attributed to Segment 10. There are no Route Alternatives proposed along this segment (see Appendix A, Figure A-12).

The Analysis Area for Segment 10 consisted of approximately 4,224 acres of mapped vegetation, which included 2 acres (0.04 percent) of wetland and riparian areas.

Construction/Operations

A total of 0.1 acre of shrub riparian area would be impacted by construction. There would be no direct impact from operations.

3.9.2.4 Design Variation

A Design Variation is being considered that would consist of constructing two single-circuit lines in Segments 2 through 4 instead of a single double-circuit line (which is the design assessed above). The disturbance footprint of the two single-circuit towers is greater than that of the double-circuit tower, in part because the requested ROW would be wider, but also because helicopter-assisted construction could be implemented in these areas due to the lighter weight of the towers, which would require additional fly yards. The additional ROW space and the fly yards would cause additional temporary disturbance during construction. Across Segments 2, 3, and 4, the additional disturbance of the single-circuit tower alternative would range from 35 to 40 percent (53.7 acres) greater than the double-circuit tower disturbance. The two single circuits would require more ground disturbance, but would be designed and constructed to the same standards as the Proposed Action. Impacts from ROW maintenance to forested wetlands and riparian areas would increase by about 15 percent (0.6 acres). The impacts from construction of the Segment 2, 3, and 4 Proposed Routes and Route Alternatives with impacts broken down by wetland and riparian type, are presented in Table D.9-3 of Appendix D.

3.9.2.5 Structure Variation

The proposed guyed Structure Variation would add four guy wires about 140 feet long from a point about 100 feet up in each tower to four guy anchors spaced in a square around the tower (Appendix B, Figure B-6). This would not change the amount of disturbance during construction or operations appreciably. Extra care would be needed where towers are near wetland and riparian areas in order to avoid placing guy wires in these areas. Self-supporting lattice towers would be used if wetland or riparian impacts could not be avoided with the use of the guy wires. Therefore, there is no appreciable difference in impact on wetlands from the use of this Structure Variation when compared to the use of self-supporting lattice towers.

3.9.2.6 Schedule Variation

The Schedule Variation uses the two single-circuit design variation described above but extends construction over a longer time frame. Initially only one of the eventual two single-circuit lines would be constructed with the second to be constructed at a later date. The Schedule Variation proposes that the first single-circuit transmission line in Segments 2, 3, and 4 would be built as soon as a ROW grant is issued, but that the second line would not begin construction until late 2018. This would mean nearly 2 years between the end of construction for the first line and beginning of construction for the second line. Any staging areas and fly yards that had been used for the first stage would have been re-vegetated after construction was complete and would have to

be cleared again. There would be two sets of construction disturbances adding movement, noise, and dust to the area of construction in two instances in any given area. The area of impacts to wetlands and riparian would be similar, but some areas may be disturbed twice.

3.9.3 Mitigation Measures

To minimize or avoid impacts on wetlands, the Proponents have committed to EPMs that would be implemented Project-wide as outlined in this section and in Appendix C. In addition to the compensatory mitigation required by the USACE (discussed in Section 3.9.2.2 and detailed in Appendix C-6) and the Proponents' EPMs, the Agencies have identified the following mitigation measures to further protect wetlands and riparian areas during construction and operations:

- WET-1 Impacts on wetland and riparian areas shall be avoided unless physically or economically infeasible. Land management agencies' plans (RMPs and Forest Plans) that have standards, guidelines, stipulations, or avoidance buffers will be adhered to. Where these do not exist, Inland Fish Strategy (INFISH) buffers for fish-bearing and nonfish-bearing waters and wetlands will be followed.
- WET-2 Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project.
- WET-4 To meet USACE requirements for CWA 404 permitting, the Proponents must submit a plan for mitigation and full compensation for all losses of waters of the United States. This plan must be approved by the USACE. The framework for this plan is included in the Draft EIS (Appendix C-6) and must be fully detailed for the Final EIS.

The following mitigation measure has been proposed by the Agencies and adopted by the Proponents:

- WET-3 Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts shall be submitted to the appropriate regulatory agency, as well as the land managing agency. The Proponents shall apply directly to the appropriate permitting agency (USACE and/or State agency) for approval.