Chapter 3 Affected Environment

In this Chapter:

- **Existing natural environment**
- **Existing human environment**
- **Protected resources**

This chapter describes the existing environment that may be affected by the alternatives. A brief regional description is given here to give the reader a better understanding of the information in this chapter.

The project area is in the uppermost reaches of the Columbia River Basin, within the Snake River watershed. It is part of the Greater Yellowstone Ecosystem, which is the largest remaining block of relatively undeveloped land in the contiguous United States. This ecosystem is centered around Yellowstone and Grand Teton National Parks and includes the national forests, wilderness areas, wildlife refuges, and other federal, state, tribal, and private lands that surround these parks.

The landscape is scenic. Dominant features include mountain ranges over 3,660 m (12,000 feet) high, alpine valleys, rivers, broad flat plateaus, picturesque farmlands, and the special features of the national parks. The region is known for its variety of wildlife, unequaled elsewhere in the continental United States. Species present in large numbers include bighorn sheep, pronghorn antelope, moose, mule deer, elk, and black bear. Wolverines, grizzly bears, and reintroduced wolves are present as well.

This region attracts over 5 million tourists and recreationists per year (Wyoming Department of Commerce, 1995). Visitors and local residents enjoy sightseeing, hiking, backcountry skiing, snowmobiling, camping, backpacking, horseback riding, mountain biking, snowboarding, parasailing, hunting and fishing. Because of the concentration of highly visible wildlife species in the region, wildlife-related recreation is a key element of the region's economy and character.

3.1 Land Use

Reminder

Mile
Kilometer

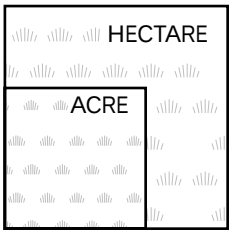
The existing ROW crosses both private agricultural land and public lands (timber and rangeland) in northeastern Idaho and western Wyoming. About 84 percent (52 km [30 miles]) of the ROW is on the Targhee and Bridger-Teton National Forests. Of that, about 80 percent is within the Targhee National Forest, and

20 percent is within the Bridger-Teton National Forest (see Map 1). Three existing substations are in rural (timberland), residential and mixed use (residential and commercial) areas.

3.1.1 Timber and Rangelands

The existing ROW crosses timber and rangelands (see Map 3, **Land Use**). In the Targhee National Forest, about 188,185 hectares (465,000 acres) are available for timber harvest (U.S. Department of Agriculture, Forest Service, 1997). Of that amount, none in prescription 8.1 (in which the existing and proposed ROW are located) are suited for harvest. In the Bridger-Teton National Forest, about 113,000 hectares (279,000 acres) are suited for timber harvest (U.S. Department of Agriculture, Forest Service, November 1989a).

Reminder



Hectare: about two and one-half acres

In rangeland on the Targhee National Forest, the existing ROW crosses the Dry Canyon-Pine Creek Cattle Allotment, the Burbank Sheep Allotment, the Spencer Sheep Allotment, and the Pine Creek Cattle Allotment. No grazing allotments are crossed on the Bridger-Teton National Forest.

3.1.2 Agriculture

For Your Information

Pine Creek Bench is a broad level slope extending up from the base of the Snake River Range near Swan Valley Substation.

The area surrounding the existing ROW is semi-arid with cold, moist winters and hot, dry summers. The average annual precipitation on Pine Creek Bench is about 38 cm (15 inches) and the frost free period is about 70 days (U.S. Department of Agriculture, Soil Conservation Service, 1981). Average annual precipitation in Jackson, Wyoming is also about 38 cm (15 inches) but frost is possible almost any time of year. Crop yields are limited by the short growing season. In addition, although the distribution of precipitation throughout the year allows dryland farming, dry periods during the summer and fall can also adversely affect soil preparation and winter grain seeding.

The existing ROW crosses about 6.4 km (4 miles) of productive cropland on the west end of the ROW in Bonneville County, Idaho, and about 1.6 km (1 mile) of dryland and irrigated pasture at the east end of the ROW in Teton County, Wyoming (see Map 3). Near Targhee Tap the existing ROW, while on national forest land, is very close to agricultural land to the north. Bonneville County has 55,000 hectares (137,000 acres) of non-irrigated cropland (Jensen, September 9, 1996). Teton County has 7,300 hectares (18,000 acres) of pasture (Sutton, September 30, 1996).

Agriculture is confined to valley floors and adjacent benchlands. The main crops grown in the Swan Valley area are wheat, barley, potatoes and alfalfa. Bonneville County is one of

Idaho's leading malt barley producing areas. Soils on Pine Creek Bench are suited to spring barley and winter wheat, and are predominately dryland farmed using a cropping system that alternates a year of grain with a year of fallow. The area's livestock industry provides an outlet for feed hay and potato waste products. Beef cattle are the primary livestock, but dairy cattle and sheep are also raised (University of Idaho, 1993). In the Jackson area, irrigated land supports hay production and pasture for cattle.

3.1.3 Residential and Commercial

Teton Substation is located in unincorporated Teton County, Wyoming, near the Town of Jackson on land zoned "NC-SF" (Neighborhood Conservation-Single Family). The substation is surrounded on three sides by Lake Creek Subdivision, with rural farmland owned by the Snake River Association to the west.

Jackson Substation is located on land zoned "S-R" (Suburban Residential) in the Town of Jackson. Adjoining land uses include medium density residential and commercial businesses. These include multi-family dwellings (condominiums), an RV park, a commercial lodging facility, a major supermarket and a neighborhood gas station.

The area north of Jackson Substation where it could be expanded is zoned "A-C" (Auto Urban Commercial). This land has been cultivated recently.

3.2 Visual Resources

The area's visual character and quality are recognized as an important resource at national, state, and local levels, and tourists from around the world come to see nearby natural features.

This section provides detailed information on viewpoints and viewers of the existing ROW. Because the entire ROW is not visible from a single viewpoint, seven potential viewing areas called *Visual Assessment Areas* were identified. These areas are described in detail. Photographs of views from the five most sensitive areas are provided as representative of various views from areas surrounding the existing ROW. See Map 4, **Visual Assessment Areas and Viewpoint Locations**, for visual assessment areas and photographed locations.

In general, the existing ROW is well sited on the landscape about one-third of the way up forested slopes, with a buffer of vegetation between the ROW and roadways. The ROW follows the general contours of the land in most cases, instead of cutting a straight swath through rolling and mountainous terrain. No long stretches of line follow the top of a ridgeline where the line would be dominant.

3.2.1 Visual Assessment Area 1 - Swan Valley

For Your Information

Foreground *is within 0.4 to 0.8 km (0.25 to 0.5 mile) of the viewer;* ***middleground*** *is from the foreground to about 8 km (5 miles) of the viewer; and* ***background*** *is over 8 km (5 miles) from the viewer. Distance zones are based on Forest Service standards (US Department of Agriculture, Forest Service, 1974).*

State Route 31 and part of State Route 33 are Idaho Scenic Byways. Twenty-eight miles of the existing ROW pass within sight of these highways. The existing line is visible from these roads in many locations, mostly in the middleground and background of most views, not as a dominant feature. Portions of the new ROW are expected to become somewhat more visible to tourists traveling through the area. However, the new line is not expected to become the dominant feature in the landscape, nor is it expected to change the perception of tourists that this is a highly scenic area.

The existing ROW begins at Swan Valley Substation and runs for about 6.4 km (4 miles) through rural, rolling open agricultural lands with scattered ranches. Typical views in this area generally are ***foreground*** views of farmland and crops, ***middleground*** views of rolling rural landscape, and ***background*** views of rolling hills and open sky. Viewers are residents of scattered farmhouses, and commuters, tourists, and residents using Idaho State Route 31.

The existing ROW is generally not dominant in the view. The ROW is in the background or is blocked from view by rolling terrain. Residential viewers are generally considered highly sensitive to changes in views. Commuters and local viewers along State Route 31 generally have low sensitivity to changes in view. Tourists are sensitive to views, but are not expected to be highly sensitive to views of the ROW as they pass through the area because transmission line structures are hidden or are in the background. Also, most tourists are en route to other scenic destinations and may be unlikely to perceive the structures in agricultural fields as inconsistent with the view.

3.2.2 Visual Assessment Area 2 - State Route 31, Targhee National Forest

Reminder

Structure locations refer to BPA's designation of existing 115-kV transmission line structures. Structures are numbered, with the first number denoting the mile and the second number denoting the structure number (e.g., 3/7 is mile 3, structure 7).

At about structure 5/2, the terrain becomes more hilly and forested as the existing ROW enters Targhee National Forest. From structure 5/2 to structure 15/1, the ROW runs through the national forest next to State Route 31. This terrain is rolling, has steep hills and lower mountains with predominantly coniferous forests. Pine Creek runs in a meadow-like valley south of State Route 31 and between the steep forested ridges where the transmission line passes. The views are generally very rugged, natural, and undeveloped. Typical views are foreground views of Pine Creek Valley nestled between steep, forested slopes that form the valley walls (see Figure 3-1). Willows and deciduous shrubs fill the valley floor, and there are occasional glimpses of Pine Creek.

With the exception of the State Route 31 roadbed, the foreground view is very natural. Middleground views are of steep forested slopes covered predominantly with evergreen trees. The existing ROW is in the middleground of the view, about one-third to one-half of the way up the forested slopes and is partially hidden from view by trees. In some places, the ROW can be clearly seen along the slope. The background view is sky or an occasional distant mountain silhouette.

Viewers are tourists traveling through the area to enjoy the state-designated scenic byway; recreationists (e.g., hunters, anglers, horseback riders, backcountry skiers, organized camp participants, hikers, and snowmobilers) using USFS roads, campgrounds, and

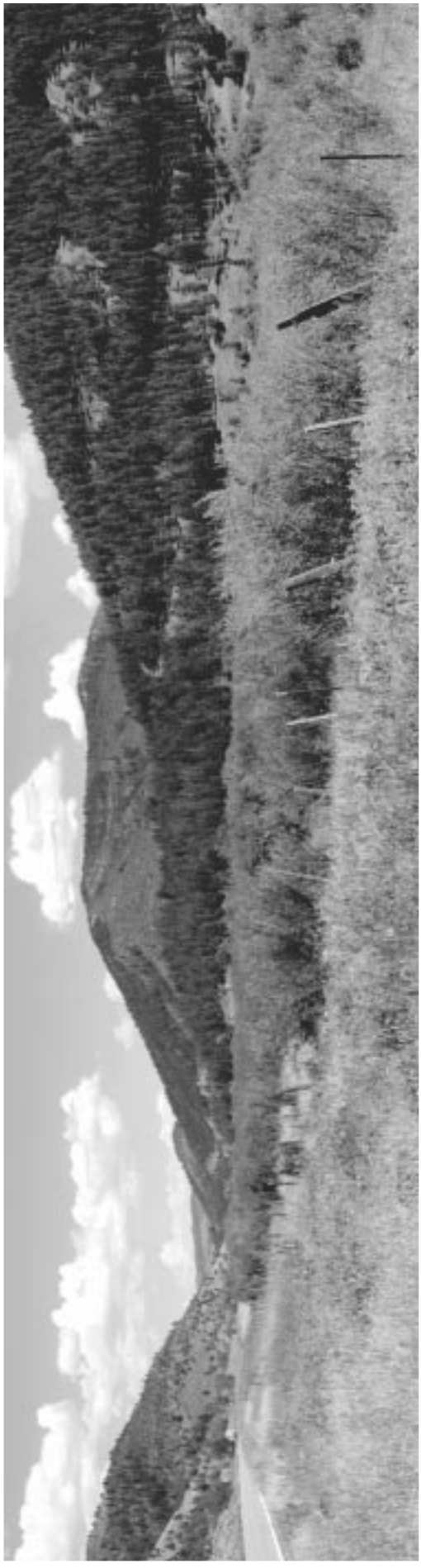


Figure 3-1. Viewpoint 1 - Existing View in Visual Assessment Area 2, State Route 31, Targhee National Forest

organized camps; and commuters to Victor and Driggs, Idaho. Tourists' sensitivity to views is considered high, but the sensitivity of commuters is low. Recreationists' sensitivity in general is considered high, although sensitivity would vary depending on each group's focus. See Section 3.3, **Recreation Resources**, for sensitivity levels of each recreational group. Also, many sensitive viewers pass through this area because of State Route 31's scenic byway designation.

3.2.3 Visual Assessment Area 3 - South of Victor and State Route 33

From structure 15/1 to structure 19/6, the existing ROW descends into the hillsides that define the southern boundary of a vast flat plateau. Located in this open plateau and closest to the existing ROW is the small town of Victor. The views through this area are generally rural, with expansive views of flat, rural lands surrounded by rugged and rolling mountainous terrain.

The existing ROW is in the middleground and background of the view about one-third of the way up the mountains. Typical foreground views are of flat scenic farmland with scattered rural housing. Middleground views are of flat farmland and rolling, steep rugged mountains, and background views are of open sky and some distant mountain silhouettes. Figure 3-2 depicts a typical view of the existing ROW from south of Victor.

Viewers are residents of south Victor including ranchers and single-family home residents, and motorists traveling on side roads south of Victor. Residential viewers are concerned about potential impacts to views from south of Victor.

In the area south of Victor, some residents have views of Targhee Tap. In summer, deciduous and evergreen trees break this view. In winter, with snow and no leaves on the deciduous trees, Targhee Tap is more visible.

3.2.4 Visual Assessment Area 4 - Idaho State Route 33 and Wyoming State Route 22, Targhee National Forest

At structure 19/6, the ROW continues east over a rise of foothills and crosses Idaho State Route 33 at structure 21/2. The ROW then follows State Route 33 and Wyoming State Route 22 in the rugged, forested Teton Mountains. The general character of this area is of rugged views of steep mountains along each side of the highway. Typical views in this area are foreground views of highway roadbed, middleground views of forested mountain slopes, and background views of sky. The existing ROW is generally sited about one-third to one-half of the way up the slope and is viewed through a buffer of evergreen trees, similar to the

Figure 3-2. Viewpoint 2 - Existing View in Visual Assessment Area 3, South of Victor and State Route 33

view in Figure 3-1 through the Pine Creek area. At the ascent to Teton Pass, the transmission line can be seen traversing the steep, rocky slopes just before crossing over Teton Pass summit. The conductors (transmission line wires) are very visible at this point because of the orange marker balls hanging on the conductors to alert pilots and birds. Views through this area are similar to those shown in Figure 3-3, but from lower elevations.

Viewers are tourists traveling through the area enjoying the scenery; recreationists (particularly campers using three formal USFS campgrounds along this stretch, hikers parking and entering the Jedediah Smith Wilderness Area on the north side of the highway, horseback riders, backcountry skiers, and snowboarders using bowls at Teton Pass, and hunters); and commuters generally traveling from the Victor and Driggs, Idaho, area to Jackson, Wyoming.

The sensitivity level of tourists to views is considered high, but the sensitivity of commuters is considered low. The sensitivity level of recreationists in general is considered high, although sensitivity depends on each group's focus. See Section 3.3, **Recreation Resources**, for sensitivity levels of each recreational group. Also, many sensitive viewers pass through this area because State Route 33 and Wyoming Route 22 are scenic.

3.2.5 Visual Assessment Area 5 - Summit of Teton Pass, Bridger-Teton National Forest

At structure 28/5, the line enters Bridger-Teton National Forest and the summit of highly scenic Teton Pass, a mixture of vast mountainous views and vistas of Jackson Valley. For about 0.8 km (0.5 mile), the transmission line is in the Palisades Wilderness Study Area. The ROW crosses Wyoming State Route 22 in Teton Pass at structure 30/5. Typical views in this area are vistas where the viewer is on high, steep slopes. Generally, this setting has little to no foreground view (see Figure 3-3). Middleground views are of extremely rugged forested mountain terrain. Background views are glimpses of the distant alpine valley floor, silhouettes of mountains, and vast sky views. Views are highly scenic. The ROW is clearly visible in the middleground and background.

Viewers are tourists who drive through the pass and stop at scenic overlooks; recreationists including hikers, horseback riders, backcountry skiers, snowboarders, wildlife and bird watchers, backpackers, and photographers/artists; and commuters generally traveling from Victor and Driggs into Jackson.

Tourists and recreationists are considered very sensitive to this view. Recreational viewers' level of sensitivity depends on the activity. Recreationists such as snowboarders and some backcountry skiers using the ROW as a downhill route would be somewhat less sensitive to the view of transmission line facilities,

Figure 3-3. Viewpoint 3 - Existing View in Visual Assessment Area 5, Summit of Teton Pass, Bridger-Teton National Forest

while hikers, backpackers, other backcountry skiers (touring in the area), and photographers/artists would be more sensitive to view changes since their recreational experience is not tied to the existence of the ROW.

3.2.6 Visual Assessment Area 6 - Ski Lake Trail, Phillips Ridge, Bridger-Teton National Forest

From structure 30/5 to structure 35/1, the ROW passes through highly scenic mountainous backcountry. Typical views in the Ski Lake Trail area (structures 31/1 to 34/7) generally are foreground views of coniferous woods or alpine meadows (covered during some times of year with colorful wildflowers), middleground views of rugged mountain terrain including coniferous forest and alpine meadows, and background views of distant valley floors and mountain silhouettes. Views are highly scenic.

Viewers are a diverse group of recreationists, including backcountry skiers, hikers, backpackers, horseback riders, mountain bike riders, and photographers/artists. This trail system is heavily used by winter recreationists who do not depend on the ROW for their recreation experience. The entire Teton Pass area is popular in winter. For this reason, Figure 3-4 shows the winter setting. The existing ROW is visible in the middleground of the picture, which is typical of views where the transmission line is visible.

3.2.7 Visual Assessment Area 7 - Below Phillips Ridge to Teton Substation

From structure 35/1 to Teton Substation, the ROW descends into the scenic Wilson Valley, an area of rural-residential and scattered, resort-like developments.

Typical views in the neighborhoods that surround Teton Substation vary, with foreground views depending on location, middleground views of the flat scenic Wilson Valley, and background views of rugged rolling mountains. Viewers are mostly residents.

Residents here are extremely sensitive to changes in the view. Other viewers include commuters, golfers, and resort guests.

Figure 3-5 is a typical view of the existing ROW from the Teton Substation area. This view is representative of most residential views. In the Teton Substation area, some residents have views of the existing substation. Summer views of the substation are broken up by existing deciduous trees that surround the substation, but there are clear views of substation structures, which are taller than the surrounding vegetation. Winter views are more predominant

Figure 3-4. Viewpoint 4 - Existing View in Visual Assessment Area 6, Ski Late Trail, Phillips Ridge, Bridger-Teton National Forest

Figure 3-5. Viewpoint 5 - Existing View in Visual Assessment Area 7, Below Phillips Ridge to Teton Substation

because of the loss of leaves from deciduous trees. This makes the substation clearly visible. However, in years of high snowfall, some resident views would be blocked by snow piles from the clearing of snow from streets.

3.3 Recreation Resources

This section describes motorized and nonmotorized recreation activities in the project area and each activity's relationship to the existing ROW. Table 3-1 lists recreation facilities inventoried within clear view of the existing ROW and Map 5, **Recreation Sites**, shows the location of these facilities.

Table 3-1. Recreation Facilities in View of the ROW

Site	Facilities
1. Pine Basin Lodge	lodge, trails, Pine Creek
2. Rigby - LDS Stake Girl Scout Camp and Trailhead	trailhead, Pine Creek
3. Pine Creek Ridge Trail and Piney Creek	trailhead, major turnout along highway
4. Pine Creek Campground	picnic tables, fire circles, outhouse
5. Teton Valley Campground	campsites, cabins, pool
6. RV Park	campsites, water/sewer/electric hookups
7. Trail Creek Pond Sportsman Access	pond, picnic tables, fire circles
8. Moose Creek Road and Trailhead for Scenic Crest Trail and Moose Meadows	trails, unimproved road
9. Mike Harris Campground and Trailhead	campsites, picnic tables, fire circles, drinking water
10. Trail Creek Campground	campsites, picnic tables, outhouses, fire circles
11. Unofficial campsite/Burbank Creek/Trailhead	informal fire pit, trailhead
12. Coal Creek Trailhead	parking, restroom, trailhead
13. Mail Cabin Canyon Road/Trailhead	trail
14. Teton Pass Wildlife Viewing Area	parking lot, trailhead
15. Phillips Canyon Trailhead	parking lot, trailhead

3.3.1 Motorized Recreation

In most cases the existing ROW follows roads that are a common route for tourists traveling through the region and visiting national parks and monuments.

Tourists and sightseers commonly travel along State Routes 31 and 33, portions of which are designated Idaho Scenic Byways. The existing transmission line is currently visible from these roads in many locations. The ROW is noticeable in the middleground and background of most views but is not at any time a dominant feature. Figure 3-1 shows a typical view through this section.

Sightseers travel to the top of Teton Pass and spend time at pullouts next to the road viewing vistas across the mountains and down into Jackson Valley. The existing ROW is noticeable in the middleground and background of the view but is not the dominant feature. See Figure 3-3 for a typical high-quality view enjoyed by sightseers in Teton Pass.

Motorists driving motorbikes and all-terrain vehicles (ATVs) are restricted to a limited number of USFS roads, identified in the Targhee Forest Travel Plan, that access or are within the existing ROW (structures 15/2 to 20/10 or Murphy Creek to the highway crossing of Idaho State Route 33). Off-roaders not using the ROW travel under the transmission line and are quickly out of view of the ROW.

Some hunters use ATVs in or near the existing ROW (only the areas mentioned above that are in the new Forest Travel Plan). Hunting from a vehicle is prohibited but hunters access hunting areas and carry game out using these vehicles. These recreationists' relationship to the ROW is the same as described above.

Fishing occurs in or near the existing ROW. In the Pine Creek area, anglers see the ROW on the mountain side along the south side of State Route 31 and at road crossings. Because anglers are focused on the water, sensitivity levels to the ROW are considered low.

Parasailing is very popular from the bluffs of Phillips Ridge. Parasailers access the ridges by driving on the existing ROW access road at Ski Lake and Phillips Pass Trails. Once they arrive at their desired launching areas, they spread out equipment on the ROW to prepare for takeoff from Phillips Ridge. They then move through a thin line of trees to launch from the ridge.

Snowmobile use is high throughout the Pine Creek Pass area, and follows Upper Creek Road to popular trailheads. Trails are not formally groomed by the USFS. Snowmobilers pass under the ROW and move away from the line. For this reason, snowmobilers' views of the ROW are brief.

Snowmobilers also use the ridges of the Pole Canyon area and south of Victor. Snowmobile use is somewhat lower through this area than in the Pine Creek area. Some snowmobiling occurs along the highway at State Routes 33 and 22. Snowmobiling is very popular north of State Route 22 on the Bridger-Teton National Forest and south of State Route 22 on the Targhee National Forest because of the high-country setting. Snowmobile use is prohibited on the south side of State Route 22 in Teton Pass on the Bridger-Teton National Forest from December 1 through April 30.

3.3.2 Nonmotorized Recreation

Nine trailheads are close to the existing ROW. In all areas except Teton Pass, hikers and backpackers cross under the existing line briefly as the trail leads away in a perpendicular direction from the line. The ROW is not a major element in the visual experience of these hikers because many of the trails quickly ascend over the hillside and proceed out of view. This is true for the Pine Creek Ridge Trail, Scenic Crest Trail, Moose Meadows Trail, Trail Creek, Burbank Creek, Mail Cabin Trail, and Coal Creek Meadows Trails. However, backcountry skiers and mountain bikers use the ROW proper between Mike Harris Campground and Pine Creek Pass.

For Your Information

See Map 5 for the location of some of these trailheads.

In some cases hikers and backpackers use the existing ROW access roads for hiking. Because these recreationists are relying on the ROW for access, their sensitivity to views of the line is much lower than for those headed into backcountry areas.

Teton Pass is a high recreation use area. Hikers and backpackers have access to a number of backcountry trails. Ski Lake and Phillips Pass Trails, located on the north side of State Route 22 just before the summit of Teton Pass, lead into backcountry areas, along with Black Canyon Trail, which travels generally south and east from the wildlife viewing area at the summit of Teton Pass. The existing ROW is visible from these trails for about 4 to 5 km (2.5 to 3 miles). The ROW is noticeable in the middleground and background of the view but is not the dominant feature because mature trees break up the views. Hikers are the most sensitive to disruptions in the mostly pristine views from these trails.

Five developed campgrounds were inventoried within sight of the existing ROW. In most instances, campers either cross under the transmission line to access campgrounds or view the ROW through trees. In each of the four USFS campgrounds (Pine Creek Campground, Mike Harris Campground, Moose Creek Campground, and Trail Creek Campground), views are of the surrounding forest. There is not a major focus on the ROW, although the ROW is close to the camps. This is also the case with the one private campground. Campers use tents, pop-up trailers, and RVs at these campgrounds.

Map 5 shows these campgrounds.

One undeveloped campsite was inventoried. Campers cross under the transmission line briefly to access the campsite, but the ROW is not a dominant feature in the view from this camp.

Mountain bikers use many USFS roads and trails along the entire ROW. Mountain bikers rely on the ROW for recreation and would be less sensitive to viewing the ROW. Through the Pine Creek area, mountain bikers pass briefly under the line and follow USFS roads away from the ROW. These bikers' experience with the transmission line is brief.

Mountain bikers in the Teton Pass area view the ROW on Phillips Pass and Ski Lake Trails. Their sensitivity to views of the ROW is high when they are not cycling, but lower while riding because of the concentration required to negotiate the trails. Bikers using the abandoned State Route 22 roadbed in Teton Pass have some clear views of the ROW. One mountain-biking outfitter, Hobak Sports, is currently permitted by Bridger-Teton National Forest to use areas near the ROW on Phillips Ridge. Outfitters commonly ride the ROW access road in this area.

Horseback riders use the same facilities described for hikers and backpackers. Tie posts are provided at some of the trailheads. Moose Creek Ranch holds an outfitter permit for horseback rides in the Mike Harris area of the powerline. Sensitivity levels to the ROW are the same as for hikers using these facilities.

In general, backcountry skiers use the trails described before. The existing recreation experience for skiers is similar to that for hikers, except views and time of year differ. Figure 3-4 shows the view of the ROW from Ski Lake Trail in winter.

Two backcountry ski outfitters hold permits to use areas close to the existing ROW. Jackson Hole Ski Club skis under the transmission line along Phillips Ridge for training early in the season if snowfall in the valley is inadequate. Jackson Hole Mountain Guides operates a facility near Ski Lake during the winter (Langerman, 1996).

Backcountry skiers, and snowboarders also use natural bowls on both sides of Teton Pass. On the eastern side of the pass, skiers ski down the face of the mountain, under the transmission line, then follow the abandoned State Route 22 roadbed to the bottom of the hill. They park cars at the base of the abandoned highway bed at the bottom of the hill and either hitchhike or drive back up to the summit of Teton Pass (Marsh, 1996). These skiers are less sensitive to the view of the ROW because they rely on the cleared area to ski partway downhill.

3.4 Wilderness, Wilderness Study Areas, Recommended Wilderness, and Roadless Areas

The Targhee and the Bridger-Teton National Forests contain areas with highly intact wild natural systems. These areas are valued for their recreation, education, scientific, conservation, historic and scenic uses. Many areas have been or are being considered for preservation as wilderness or roadless areas and are managed by the Forest Service to ensure that special characteristics are not lost or overused. Some special areas crossed by the existing transmission line and ROW, or close to the ROW are described in this section.

3.4.1 Designated Wilderness

Both designated wilderness areas on the Targhee National Forest are north of the existing ROW. Winegar Hole Wilderness is about 59 km (37 miles) north of the ROW. Jedediah Smith Wilderness is adjacent to the existing ROW in the Teton Pass area (see Map 6). The existing transmission line and access roads do not cross into the wilderness. The Jedediah Smith is intensively used in the summer for hiking, backpacking and horseback riding. It is a spectacular mountainous area on the west slope of the Teton Mountain Range.

Three designated wilderness areas on the Bridger-Teton National Forest are far from the existing transmission line. The Bridger Wilderness Area is about 68 km (42 miles) north of the ROW; the Teton Wilderness Area is about 39 km (24 miles) north of the ROW; and the Gros Ventre Wilderness Area is about 21 km (13 miles) east of the ROW.

3.4.2 Designated Wilderness Study Area

The Wyoming portion of the Palisades Roadless Area was designated by Congress as a Wilderness Study Area in 1984. The study area contains about 129,000 acres. About 80,000 acres are administered by the Bridger-Teton National Forest, and about 49,000 acres are administered by the Targhee National Forest.

BPA's existing transmission line was built before the passage of the Wyoming Wilderness Act of 1984. When the line was built, BPA and the Forest Service jointly decided on the existing route to meet long-range plans for forest and recreational development and aesthetics, and to avoid difficult terrain such as avalanche areas (Williams, August 30, 1966).

About 0.8 km (0.5 mile) of the line and ROW crosses into the Palisades WSA administered by the Bridger-Teton National Forest. (See Map 6). There are existing trunk and spur roads to access the structures (29/1 and 29/2) in this area, but these are temporary roads that have since revegetated. The Bridger-Teton National Forest manages the WSA to protect its long-term wilderness attributes. Existing uses, such as snowmobiling and mountain biking, are allowed, but activities that may jeopardize the eligibility of the WSA for future congressional designation as wilderness are not.

The existing transmission line and roads do not cross into the Palisades WSA administered by the Targhee National Forest.

3.4.3 Recommended Wilderness

Some areas in the Targhee National Forest are recommended for wilderness, but have not been designated as wilderness by Congress. (See Map 6.) These areas will be managed by the Targhee National Forest to retain their wilderness character until Congress takes legislative action on the wilderness issue. The existing transmission line and roads do not cross any areas that the Targhee National Forest has recommended for wilderness.

3.4.4 Roadless Areas

The existing transmission line is just south of the Garns Mountain Roadless Area and the West Slope Tetons Roadless Area of the Targhee National Forest. The existing line crosses the Palisades Roadless Area of the Targhee National Forest in the Pine Creek area (see Map 6). The short stretches of ROW (from structures 12/1-12/7 and from structures 13/5-15/2) where the existing line crosses the Targhee's Palisades Roadless Area have existing roads to structure sites. In other stretches (from structures 18/5-19/4 and from structures 21/5-22/1) the transmission line is just within the boundary of the Palisades Roadless Area. These areas are in ***Management Prescription*** 8.1 (Concentrated Development Area) and have existing roads to structure sites.

For Your Information

*A **management prescription** defines management practices selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.*

The Phillips Ridge Roadless Area of the Bridger-Teton National Forest is bounded on the east by BPA's ROW. The existing transmission line and roads are adjacent to, but do not cross into the roadless area.

In January 1998, the Forest Service issued a Notice of Proposed Interim Rule to temporarily suspend road construction, including building temporary roads and road reconstruction. None of the alternatives propose any new construction in roadless areas on the Bridger-Teton National Forest, so the policy does not affect this project on the Bridger-Teton National Forest. In addition, National

Forests that have a signed Record of Decision (ROD) revising their forest plans and have an administrative appeal process underway or completed are exempt from the rule. The Targhee National Forest Revised Forest Plan was appealed. Thus, the Targhee National Forest Travel Plan is also exempt since the ROD for the Revised Forest Plan was signed in 1997.

3.5 Public Health and Safety

Transmission facilities provide electricity for heating, lighting and other services essential for public health and safety. These same facilities can potentially harm humans. Contact with transmission lines can injure people and damage aircraft. This section describes public health and safety concerns, such as shocks and noise, related to transmission facilities.

3.5.1 Electric and Magnetic Fields

Transmission lines, like all electrical devices and equipment, produce electric fields and magnetic fields (EMF). ***Current***, movement of electrons in a wire, produces the magnetic field. Voltage, the force that drives the current, is the source of the electric field. The strength of magnetic fields depends on the design of the line and on distance from the line. Field strength decreases rapidly with distance.

Electric and magnetic fields are found around any electrical wiring, including household wiring and electrical appliances and equipment. Throughout a home, the electric field strength from wiring and appliances is typically less than 0.01 kilovolts per m (kV/m). However, fields of 0.1 kV/m and higher can be found very close to electrical appliances. Typical electric and magnetic field strengths for some common electrical appliances are given in Table 3-2.

For Your Information

*A **milligauss** is one thousandth of a gauss. A **gauss** is a unit of magnetic induction.*

Average magnetic field strength in most homes (away from electrical appliances and home wiring, etc.) is typically less than 2 ***milligauss*** (***mG***). Very close to appliances carrying high current, fields of tens of hundreds of milligauss are present. Unlike electric fields, magnetic fields from outside power lines are not reduced in strength by trees and building material. So, transmission lines can be a major source of magnetic field exposure throughout a home located close to the line. Typical electric and magnetic field strengths for some BPA transmission lines are given in Table 3-3.

There are no national standards for electric or magnetic fields. Some states have established electric or magnetic field standards, but Idaho and Wyoming have not. BPA has an electric field standard of 9 kV/m maximum on the ROW and 5 kV/m at the edge of the ROW.

Both electric and magnetic ***alternating-current*** (***a-c***) fields induce currents in conducting objects, including people and animals. These currents, even from the largest transmission lines, are too weak to be felt. However, some scientists believe that these currents might be potentially harmful and that long-term exposure should be minimized. Hundreds of studies on electric and magnetic fields have been conducted in the U.S. and other countries. Studies of laboratory animals generally show that these fields have no obvious harmful effects. However, a number of subtle effects of unknown biological significance have been reported in some laboratory studies (Frey, 1993).

Much attention has focused on several reports suggesting that workers in certain electrical occupations and people living close to power lines have an increased risk of leukemia and other cancers (Sagan, 1991; National Radiological Protection Board, 1992; Oak Ridge Associated Universities Panel, 1992; Stone, 1992). Most scientific reviews, however, find that the overall evidence is too weak to establish a cause-and-effect relationship between electric or magnetic fields and cancer. A review of some of the studies relating to EMF and possible biological and health effects are included in Appendix D, **Transmission Line EMF**.

3.5.2 Noise

For Your Information

Corona *is a discharge, often glowing, at the surface of a conductor or between two conductors of the same transmission line. A technical definition is in Chapter 9,* ***Glossary and Acronyms****.*

3.5.2.1 Transmission Line Noise

Audible noise can be produced by transmission line ***corona***. It is usually associated with higher voltages. (See **3.5**.3, **Radio and TV Interference**.)

3.5.2.2 Substation Noise

Teton Substation is surrounded by a residential neighborhood and pasture land. As a result, the site is relatively quiet. A single set of spot audible noise measurements was made at various locations around the substation perimeter fence on November 18, 1996 (see Appendix E, **Noise Study**). The measured noise levels ranged from 33 to 42 decibels (***dBA***). At the fenceline nearest the residences, the measured noise levels were in the mid-30s dBA. These are levels typical of a normally quiet office. Please note that these levels are associated with one-time spot measurements and reflect the noise only at the specific time of measurement. Noise levels can vary greatly as a result of weather conditions like wind, rain, etc., and other factors such as highway traffic, airplanes, construction activity, etc. Thus, depending on these conditions, the noise on any particular day or at any particular time could be higher or lower than the levels measured.

Table 3-2. Typical Electric and Magnetic Field Strengths 30.5 cm (1 ft.) from Common Appliances

	Electric Fields	Magnetic Field (1)
Appliance	**(kV/m)**	**(mG)**
Coffee maker	0.03	1-1.5
Electric Range	0.004	4-40
Hair dryer	0.04	0.1-70
Television	0.3	0.4-20
Vacuum cleaner	0.016	20-200
Electric blanket (2)	0.01-1.0	15-100

kV/m = kilovolt per meter; mG = milligauss
1. By 1 to 1.5 meters (3-5 ft.), the magnetic field from appliances is usually decreases to less than 1mG.
2. Values are for distances from a blanket in normal use, less than 30.5 cm (1 ft) away.
Source for appliance data: Miller 1974; Gauger 1985

Table 3-3. Typical Electric and Magnetic Field Strengths from BPA Transmission Lines

	Electric Fields	Magnetic Field	
115-kV Transmission Lines	**(kV/m)**	**(mG)**	
		Maximum (1)	**Average (2)**
Maximum on Right-of-way	1.00	62	30
Edge of Right-of-way	0.50	14.00	7.00
60 m (200 ft.) from center	0.01	1.00	0.50

kV/m = kilovolt per meter; mG = milligauss
1. Under annual peak load conditions (occurs less than 1 percent of the time)
2. Under annual average loading conditions
Note: Above information obtained from a BPA study to characterize nearly 400 transmission lines located in the Pacific Northwest. Based on 1995 data.

Jackson Substation is located on a busy road and surrounded by mixed use residential and commercial businesses. While no measurements were made at this particular site, it is likely that the urban, commercial setting of this substation results in higher noise levels than those at Teton Substation.

3.5.3 Radio and TV Interference

For Your Information

EMI *(electromagnetic interference) is a high-frequency noise caused by corona that can cause radio and television interference.*

Corona may cause radio and television reception interference by generating a high-frequency noise called electromagnetic interference (***EMI***). EMI is the static sometimes heard over a car radio when driving beneath high-voltage lines. It is usually associated with higher voltage lines, that is, 345-kV and above.

3.5.4 Toxic and Hazardous Materials

Minimal amounts of hazardous waste result from routine maintenance procedures performed on substation equipment and transmission lines. Kinds and volumes of waste such as oily rags, minor leaks from vehicles, etc., depend on the maintenance procedure.

Swan Valley Substation has several transformers and power circuit breakers that contain oil. ***Polychlorinated biphenyl*** (***PCB***)-contaminated oil has been removed over time. There is no oil spill containment system, but BPA does have a Spill Prevention Control and Countermeasure Plan that puts in place protocols and procedures for response in case a spill occurs.

Teton Substation also has a transformer and power circuit breakers that contain oil. PCBs have been removed. BPA has a spill containment plan for this substation.

Jackson Substation has oil-filled circuit breakers and a transformer; none contain PCBs. An oil containment berm surrounds the entire substation.

3.5.5 Fire

Succession *is the progressive change in plant communities toward climax, or the final stage of succession.*

Nonstocked *category is a stand of trees or group of stands that have a stocking level below the minimum specified for meeting the prescribed management objectives.*

Stocking is a measure of timber stand density as it relates to the optimum or desired density to achieve a given management objective.

Wildfire plays a major role in forest ***succession*** throughout the western United States, including the forests in northeastern Idaho and western Wyoming. The Targhee National Forest has had significant timber harvest activities and both national forests have maintained aggressive wildfire suppression activities within non-wilderness lands. Only 4 percent of the forested stands in the Big Hole mountain area and 1 percent in the Teton Range are in the ***nonstocked***, seedling or sapling age category (U.S. Department of Agriculture, Forest Service, January 1996a). Many of the shrublands are also in late age classes. This creates hazards for

large fires, disease problems, and insect infestations. In the project area, the most common cover type is lodgepole pine/ Douglas fir mixed with lodgepole pine converting to Douglas fir as succession proceeds. Aspen has declined with fire suppression, as conifers take over or give way to a shrub/grass plant community. Often forests that are mature or older have less diversity and productivity than plant communities that are undergoing succession. Of the conifers, mature Douglas fir is the most fire resistant because of the thick bark that develops with age. Engelmann spruce and subalpine fir have very low resistance, and lodgepole pine is moderately resistant to fire (Bradley, et al., 1992).

3.6 Water Quality

Most precipitation in the region falls as snow, with as little as 25 cm (10 inches) of precipitation per year at lower elevations, and as much as 114 cm (45 inches) per year at higher elevations. Precipitation is about 38 cm (15 inches) annually at Swan Valley and Jackson and increases with elevation. The amount of sediment in area streams varies with the season. Streams and rivers carry the most sediment as snow melts in May and June (U.S. Department of the Interior, U.S. Geological Survey, 1996). Occasional, intense summer rains also raise flows and the amount of sediment in rivers and streams.

Streams are part of the Upper Snake River drainage basin and ultimately flow into the Snake River. Pine and Trail creeks in Idaho, and Fish and Lake creeks in Wyoming are prominent streams crossed by the existing ROW (see Map 7, **Floodplains and Wetlands**). Many smaller ***perennial*** and ***intermittent*** drainages are also crossed. ***Wetlands*** crossed by the existing ROW are associated with riparian habitat. Surface water in the area is of sufficient quality to support a number of uses including fish and wildlife habitat, agriculture, and recreation. Tributaries to Pine and Trail creeks are steep, high energy streams capable of carrying significant amounts of sediment to Pine Creek during spring runoff. The Teton River headwaters, above the confluence of Trail Creek, are listed as "water quality limited" under Section 303(d) of the Federal Clean Water Act due to extensive habitat modification. Idaho water bodies listed as water quality limited are being assessed. A current listing does not mean such water bodies are not presently in compliance with state water quality standards. Regulations that better identify if water bodies meet water quality standards are being developed. Once approved, the list of water bodies that are water quality limited could be re-evaluated.

For Your Information

Waters affected by point and/ or non-point source pollution and not currently in compliance with or expected to satisfy applicable water quality standards are listed with EPA as "water quality limited."

Pine Creek and its perennial tributaries from 91 m (100 yards) downstream of the existing ROW crossing near Pine Basin Lodge to the confluence with the South Fork Snake River are designated "natural" rivers (Idaho Water Resource Board, 1996). Pine Creek

from the headwaters to 91 m (100 yards) downstream of the existing ROW crossing near Pine Basin Lodge and some of its perennial tributaries (Tie Canyon, Poison Creek, West Pine Creek and Mike Spencer Canyon) are also designated "recreational" rivers (Idaho Water Resource Board, 1996). A recreational or natural river is defined as a "waterway which possesses outstanding fish and wildlife, recreation, geologic or aesthetic values" (Idaho Code 42-1731[7] and [9]). These designations do not restrict or interfere with expansion or maintenance of existing uses including activities necessary to maintain and improve existing utilities and roadways (Idaho Water Resource Board, 1996.) Federal agencies are encouraged to manage lands to compliment these designations.

Principal groundwater ***aquifers*** include ***alluvial*** and glacial deposits within valley floors and sedimentary rocks of pre-Tertiary age (Columbia-North Pacific Basins Commission, 1970). Groundwater quality is generally good to excellent throughout the area. Groundwater is a source for irrigation water in the region.

3.7 Soils and Geology

Diverse landforms and geologic features exist within the project area, which is in the Middle Rocky Mountain physiographic ***province***. From Swan Valley Substation, at an elevation of 1700 m (5600 feet), the existing ROW crosses a broad level slope extending from the base of the Snake River Range (see Map 8, **Soil Limitations**). Known as the Pine Creek Bench, the deep ***loess*** soils are used extensively for dryland farming.

For Your Information

Loess *is a windblown deposit of fine-grained* ***silt*** *or clay.*

The Snake River Range is characterized by long parallel ridges trending to the southeast that are cut or separated by valleys and canyons. These mountains are made of folded sedimentary rock that has been pushed eastward upon low angle fault planes. Erosion has worn away the less resistant rock layers, leaving the harder rocks standing as ridges. Soils have formed in materials derived from these sedimentary rocks, including limestone, dolomite, sandstone and shale.

The Tetons, one of the youngest ranges in the Rocky Mountains, abuts the Snake River Range near Teton Pass. The Tetons are made up of mostly darker metamorphic ***gneiss*** and lighter-colored granite. Sedimentary rocks are exposed on the western slopes, forming cliffs of stratified rocks. Teton Pass, at an elevation of 2620 m (8600 feet), is the highest elevation along the existing ROW. The Teton fault, which can generate a magnitude 7.5 earthquake, is crossed by the existing line. The fault parallels the eastern front of the Teton Range and is an integral part of the Intermountain Seismic Belt. Recent investigations indicate that the

Gneiss *is a banded or foliated metamorphic rock, usually of similar composition as granite.*

fault is overdue for a moderate-to-large earthquake (Glass, 1996). The Teton Range is the product of uplift along this fault that began about 9 million years ago.

Much of the landscape in the Jackson Hole area reflects the impact of past glaciation. Several cycles of climatic cooling followed by warming during the past 2 million years caused the advance and retreat of both alpine and ***piedmont*** glaciers. Teton Substation, at 1890 m (6200 feet), is on soils derived from ***glacial outwash*** and re-sorted by present day streams. Soils at Jackson Substation formed in alluvial deposits along Flat Creek.

For Your Information

*The **piedmont** is the area of land at the foot of a mountain or mountain range.*

Geologic hazards include ***landslides***, avalanches, ***seismic*** risk, steep slopes and erosion (see Map 8). ***Mass movement*** is one of the most active erosion processes in this area due to the high relief, steep slopes, deformed weak bedrock, high water-holding capacities of soils, frequent seismic disturbances, and slope undercutting by streams (U.S. Department of Agriculture, Soil Conservation Service, July 11, 1985). Unstable slopes on both sides of Teton Pass have shown signs of recent movement.

***Mass movement** is the dislodgment and downhill transport of soil and rock materials under the direct influence of gravity. Includes movements such as creep, debris torrents, rock slides, and avalanches.*

3.8 Floodplains and Wetlands

The Federal Emergency Management Agency (***FEMA***) identifies areas that have a 1 percent chance of being flooded in a given year as ***100-year floodplains***. The existing ROW crosses areas that have been identified as 100-year floodplains on Flood Insurance Rate Maps (***FIRM***) (see Map 7). The 100-year floodplains crossed by the existing ROW and/or existing access roads are:

- Pine Creek: T2N, R43E, Sec. 14; T2N, R44E, Sec. 6; T3N, R44E, Sec. 31; T3N, R44E, Sec. 29; T3N, R44E, Sec. 28
- Trail Creek, Idaho: T3N, R46E, Sec. 30
- Fish Creek: T41N, R117W, Sec. 2
- Lake Creek: T41N, R117W, Sec. 2.

Teton Substation is located between Fish Creek and the Snake River in an area FEMA designated as Zone X. Zone X areas are defined as areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from a 100-year flood (FEMA, 1989).

Within the mountainous regions of the project area, wetlands can be found associated with the floodplain of ***low-gradient*** streams and along narrow riparian zones of steeper streams**.** Two major drainages support riparian wetlands: Pine Creek, which drains into the Snake River; and Trail Creek, which drains into the Teton River. These wetlands are characterized by *Salix* (willow)

***Low-gradient** means with gentle slopes.*

species and have an understory dominated by sedges and grasses. Wet mountainside meadows characterized by *Carex* (sedge) species are also found in the project area.

For Your Information

***Emergent** plants have their bases submerged in water.*

Wetlands are also found associated with Fish Creek and Lake Creek by Teton Substation. A high groundwater table, and surface and irrigation runoff, support ***emergent*** vegetation types such as grasses, rushes and sedges.

3.9 Vegetation

***Aspect** is the degree of exposure to the sun.*

The vegetation in the region is a diverse mix because of differences in topography, climate, ***aspect***, and soils. Most of the existing ROW is on mountainous terrain with steep slopes. Disturbances such as fire, disease, grazing, and clearing (for roads, timber harvest, campgrounds, etc.), as well as avalanches and landslides, have also helped determine vegetation cover types.

***Habitat type** is defined as lands capable of producing similar plant communities at **climax**. **Climax** is the end point in plant succession when the community will perpetuate itself if the current environmental conditions prevail.*

Since the vegetation in the existing ROW will always be manipulated for safety and reliability of the line, this discussion concentrates on cover type. Cover type describes the vegetation that currently exists in the project area. Cover type differs from ***habitat type*** in that habitat type indicates what would exist on a site if ***climax*** vegetation is allowed to develop. Because of disturbances, such as fire, logging, grazing, human disturbances and insect and disease outbreaks, not all of the land currently supports climax vegetation.

*A **forb** is any herbaceous plant that is not a grass or not grasslike.*

*An **outcrop** is an exposure of bedrock through the overlying cover of soil.*

Most of the vegetation communities can be classified into four general categories: forest, shrublands, grass/***forb*** communities and agriculture. Dominant vegetation communities are shown on Map 9, **Vegetation**. Other smaller plant communities and features can also be found interspersed within the larger categories, such as wetlands, riparian areas, rock ***outcrops*** and disturbed areas. Disturbed areas are prone to invasive species such as knapweed and thistle, and include roads, the existing ROW, and recreational areas such as campgrounds or hiking/biking trails.

3.9.1 Forested

Mixed coniferous forests cover a great portion of the project area. Mixed conifer cover types are dominated by Douglas fir and lodgepole pine, with Engelmann spruce, subalpine fir, and whitebark pine mixed in at upper elevations. Cottonwoods and aspens are the most common deciduous species. Cottonwoods are commonly found along riparian areas. Open canopy forests of mixed conifers and quaking aspens are often found on south facing slopes. Dry, open areas with juniper, mountain mahogany, and rock outcrops are also prevalent on the western portion of the project area.

Forested areas have an understory that consists of various shrubs and forbs, depending on environmental conditions such as moisture, light, slope and aspect. Common shrubs are snowberry, Rocky Mountain maple, serviceberry, mountain ash, and blue huckleberry. Prevalent forbs found in forested areas are violets, strawberry, lupine, paintbrush and arnica. Pinegrass is often associated with these species.

3.9.2 Shrubland

For Your Information

Jurisdictional wetlands *are inundated or saturated by water often enough to support vegetation adapted for saturated soil.*

Shrubland includes both upland and riparian scrub/shrub cover types. Most of the riparian scrub-shrub sites could be classified as ***jurisdictional wetlands*** and are dominated by willows, with occasional spiraea, red-osier dogwood and mountain alder.

Upland shrublands are dominated by several species. In drier areas, especially on south-facing slopes, a shrub-steppe community includes mountain mahogany, big sagebrush, rabbitbrush, bitterbrush, and juniper. Because shrubs are low-growing species, they often dominate the ROW along with various grasses and forbs. Some of these species include hawthorn, chokeberry, serviceberry, and snowberry.

3.9.3 Grasses/Forbs

Plant communities dominated by herbaceous species occur in both wetland and upland habitats. Various upland herbaceous plant communities can be encountered along the ROW. Communities of grasses, forbs, and short shrubs make up much of the existing ROW because of maintenance practices to keep the ROW free of trees and tall shrubs. Weed species and non-native grasses and forbs tend to occur in disturbed habitats such as farmed areas, pasture lands, along roads, and at the base of transmission structures. Smooth brome, a non-native grass species, is found throughout the project area, often dominating large areas. Other grasses found include needle-and-thread grass, giant wild rye, Idaho fescue and cheatgrass. Pinegrass and wheatgrass are also found in the ROW, and as an understory species to Douglas fir and subalpine fir off the ROW. Various native forb species occur along the existing ROW such as lupine, Indian paintbrush, arrowleaf balsamroot, heartleaf arnica, mule's-ears, triteleia and sticky purple geranium.

Emergent wetlands are often associated with small creeks and dominated by various sedge and rush species. Moisture-loving grasses and forb species such as tall mannagrass, cow parsnip, bog-candle, and bluebells are also commonly found in these habitats.

At high elevations, a forb-dominated community known as the "tall forb community" can be found. This community is located on the east side of Teton Pass at about 2590 m (8,500 ft) and supports forbs growing up to five feet high. Some of the more common forbs are nodding helianthella, giant hyssop, western coneflower, cinquefoil, and Jacob's ladder.

Open slopes, rocky outcrops and ridges of high elevations support a low-growing forb and grass community. This plant community is adapted to harsh conditions and short summers and includes forbs such as yarrow, northern goldenrod, and showy fleabane.

3.9.4 Agriculture

The first 6.4 km (4 miles) of the existing ROW from Swan Valley Substation and the last 1.6 km (1 mile) to Teton Substation have been affected by agricultural and ranching practices or human development. Except for narrow riparian areas, most of the native vegetation inside the ROW in agricultural areas has been moderately to severely disturbed. Around Swan Valley Substation, cultivated fields support wheat and barley; by Teton Substation fields are in pasture.

3.9.5 Special Status Plants

For Your Information

"Sensitive" is used here as a general term to describe a plant that holds special status.

3.9.5.1 Threatened and Endangered and other "Sensitive" Species

This section describes federal and state special status plants that may occur in the project area. More detail is provided in Appendix F, **Swan Valley - Teton Line Right-of-Way Threatened, Endangered and Sensitive Plant Species Survey and Noxious Weed Survey**.

The U.S. Fish and Wildlife Service (USFWS) identified Ute Ladies'-tresses (Spiranthes diluvialis) (a ***threatened*** plant species) as potentially occurring in the project area in their letter responding to a request for a species list (USFWS, 1998).

A list of additional special status or sensitive plants that could potentially occur within the geographic area of the project was developed from the following lists:

- US Forest Service, Intermountain Region Sensitive Plants;
- Idaho State Plant Species of Special Concern; and
- Wyoming State Plant Species of Special Concern.

The final list was narrowed down to those species likely to occur within the range of elevations, geographic areas and habitats present within the proposed project area. These species were then surveyed for occurrence within the proposed project area and existing ROW during the summer of 1997.

The survey documented the presence of four sensitive species within the Wyoming portion of the survey area:

- Payson's bladderpod (*Lesquerella paysonii*);
- Scouler hawkweed (*Hiericium scouleri*)
- Columbia brome (*Bromus vulgaris*)
- Western twayblade (*Listera caurina*)

For a complete discussion of the plant survey and methodology see Appendix F.

3.9.5.2 Noxious Weeds

A preconstruction noxious weed inventory was conducted during the summer of 1997 to document existing noxious weed infestations. The inventory provides baseline data to establish the need for and/or to develop a noxious weed control plan.

The noxious weed survey was a targeted species survey in which the noxious weed species that were surveyed were determined prior to the survey. An initial list was compiled of weed species that could potentially occur within the project area from the following lists:

- Idaho Regional designated noxious weeds;
- Wyoming Regional designated noxious weeds;
- Wyoming State designated noxious weeds; and
- Idaho State designated noxious weeds.

The list was narrowed down to those species likely to occur within the proposed project area. (See Appendix F for target weed species list.) The survey documented the presence of 13 noxious weed species within the project area. The size and distribution of the populations of each of these species differs.

The most common species found in the project area were Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*) and hound's tongue (*Cynoglossum officinale*).

Other less common species were spotted knapweed (*Centaurea maculosa*), bull thistle (*Cirsium vulgare*), erect cinquefoil (*Potentilla recta*), ox-eye daisy (*Chrysanthemum leucanthemum*) and leafy spurge (*Euphorbia esula*).

Other species observed at only one location include quack grass (*Agropyron repens*), yellow toadflax (*Linaria vulgaris*), and common burdock (*Arctium minus*). Only one individual of tansy ragwort (*Tanacetum vulgare*) and St. John's-wort (*Hypericum perforatum*) were found.

3.10 Wildlife

This section provides information about wildlife that use the existing ROW. See Map 2, for general structure locations. More detail about wildlife is provided in Appendix G, **Wildlife Report**.

3.10.1 The Pine Creek Bench Area of Swan Valley, Idaho

The existing ROW crosses about 6.4 km (4 miles) of open cropland at Swan Valley Substation (from structure 1/1 to structure 3/7). Open cropland supports many birds, most notably a number of hawks (Northern harriers and red-tails) and owls.

Between structures 3/7 and 4/7, the line crosses Pine Creek. This area could be used by nesting raptors and other wildlife associated with riparian zones such as breeding songbirds, amphibians, and reptiles. The lower Pine Creek basin is used as transitory range for deer and elk during spring and fall, when they are moving between summer and winter ranges (U.S. Department of Agriculture, Forest Service, 1996a). The Pine Creek benches of Swan Valley and the Rainey Creek feeding ground are wintering areas for deer and elk.

3.10.2 First Pine Creek Crossing to Second Pine Creek Crossing and Crossing of State Route 31

From where it crosses Pine Creek, the ROW enters the steep, forested terrain that continues to gain elevation for about 40 km (25 miles) to Teton Pass, generally following State Route 31 in the Pine Creek Valley. Occasional rock outcrops in this area could contain habitat for hawks and other birds to nest and perch, roosting habitat for bats, and habitat for other birds, mammals, and reptiles.

Pine Creek meanders in a relatively flat, riparian zone about 250 m (820 feet) wide. This riparian area is a known transitional range (between winter and summer ranges) for deer and elk; it is also good habitat for nesting songbirds and other wildlife associated with riparian areas. Sandhill cranes may travel into this area during mid-to-late summer with their young. Both bald eagles and peregrine falcons occasionally use Pine Creek drainage (see Section 3.10.6, **Threatened and Endangered Species**). Pine Creek

drainage could be used as a flyway by trumpeter swans and other waterfowl between Swan Valley and the Teton Basin. There are no trumpeter swan nests near the existing ROW.

3.10.3 Second Pine Creek Crossing to State Route 33 Crossing, Including Targhee Tap

This forested section is typical of much of the habitat next to the existing ROW. Fire suppression has created a large proportion of dense stands of mature lodgepole pine and Douglas fir. This habitat is used by many species including cavity-nesting birds, such as woodpeckers and nuthatches. Northern goshawk, a USFS sensitive species, could forage and nest in these surrounding forests (see Section 3.10.8, **U.S. Forest Service Sensitive Species**). In addition, habitat is suitable for great grey owl (Oechsner, 1997).

The ROW crosses northwest to southeast-oriented ridges and hilltops with open juniper and aspen shrubland on their southwest slopes and along ridgetops. These open areas provide good deer and elk summer habitat, and habitat for birds favoring open habitats, including ravens, great horned owls, and red-tailed hawks.

Just east of Coalmine Creek (at structure 14/3), the habitat grades into dense forest of mostly lodgepole pine, Douglas fir, and subalpine fir intermixed with patches of aspen. This habitat is likely used by songbirds.

Teton Basin is important waterfowl habitat, including wintering habitat for trumpeter swans and breeding and migratory habitat for sandhill cranes. The habitat near the ROW is at a transition point between forest and agricultural habitat types and may be used by many species. For example, red-tailed or Swainson's hawks, which occur in agricultural areas, may nest in the forested slopes next to cropland.

Other birds may also take advantage of the transitional area, including black-billed magpie, common raven, American robin, northern flicker, pine siskin, and American goldfinch. Mammals, including deer, raccoon, coyote, and bats may rest and den in the woods while foraging in and around the basin's cropland.

3.10.4 State Route 33 Crossing to Teton Pass Area

This area is shrubby, similar to habitat within the ROW, and likely supports different birds and small mammals than the forest previously described.

3.10.5 Teton Pass Area to the Jackson area

Near Teton Pass, narrow avalanche chutes containing very shrubby thickets and occasional patches of ***talus*** and other open rock habitats cross the forest. These chutes provide a varied habitat used by songbirds and small mammals and, because of the high elevation, may be used by migratory songbirds during spring and fall migration. These more alpine habitats are also the known habitat for boreal owl, pika, and wolverine (a rare species reported at Teton Pass). The eastern portion of the pass is a USFS-designated wildlife viewing area.

Going east from Teton Pass, the ROW follows a steep slope to a relatively flat alpine basin of mature subalpine fir and Douglas fir (ranging to 90 cm [35 inches] in diameter and over 30 m [100 feet] high) interspersed with open meadows. This habitat is potentially suitable for boreal and great gray owls, and other mountain birds, including Clark's nutcracker, rosy finch, white-crowned sparrow, and broad-winged hummingbird. Great-horned owls may be present in this area because the open meadow is typical foraging habitat and the adjacent mature forest is typical nesting habitat.

The north side of Phillips Ridge is densely forested with a mix of small lodgepole pine (averaging 4 to 15 cm [1.5 to 6 inches] in diameter and 2 to 6 m [7 to 20 feet] high) and spruce, Douglas fir, and subalpine fir. The five percent that are dead are good habitat for woodpeckers and many other insect-eating birds such as nuthatches and chickadees.

From Phillips Ridge the ROW drops down steeply to cross the relatively flat open sageflats, ranches, hayfields, and riparian habitat of the Jackson area to the Teton Substation. The area includes Fish Creek and associated tributaries called the spring creeks. Typical species include willow flycatchers, sparrows, and several species of warblers. American white pelican, Barrow's and common goldeneye, common merganser, and bufflehead also use the creeks (Raynes and Wile, 1994). Waterfowl including Canada goose, trumpeter swan, green-winged teal, and American widgeon (Raynes, 1995) and bald eagle and osprey use the agricultural fields and the associated wetlands and riparian habitats. These riparian areas are also critical habitat for wintering moose (Bohne, 1996). Collisions with overhead wires and fences are a source of trumpeter swan mortality in the Jackson Hole area (Bohne, 1986). Many of the collisions occur in late fall and winter when dense fog reduces visibility.

Forested groves next to Teton Substation are habitat for many birds and mammals. Swainson's and red-tailed hawks nest in this habitat in the valley.

Forested portions of this section of the ROW are suitable for northern goshawks (Oechsner, 1997).

For Your Information

Idaho has its own list of threatened and endangered species; Wyoming uses the federal list as their state list.

3.10.6 Threatened and Endangered Species

This section describes federal and state threatened and ***endangered*** species that may occur in the project area. More detail is provided in Appendix G, **Wildlife Report**, and Appendix H, **Biological Assessment**.

3.10.6.1 Bald Eagle

Bald eagles are federally-listed as threatened in Idaho and Wyoming and state-listed as endangered in Idaho. Bald eagles are more likely to occur in the vicinity of the existing ROW during October through March because resident breeding pairs are more likely to wander during winter, and migrating or wintering eagles move into the Swan Valley area. The eagles are mostly found along the Snake River, and occasionally venture into its tributaries, including Pine and Rainey creeks.

Nesting and wintering bald eagles are also present in the Jackson area. The closest nest site is about 2 km (1.2 miles) south of the Teton Substation (Bohne, 1996). Another nest is near the southern edge of Grand Teton National Park, and a third is near Wilson. The existing ROW is relatively far from these nests but within the potential foraging range of all three. Nesting eagles are mostly likely to concentrate their foraging efforts along the Snake River, but may also forage within creeks near Teton and Jackson substations. The location of wintering bald eagles depends on the availability of food and changes daily.

Bald eagles do not regularly occur in the central portion of the project area, but individual bald eagles could travel through this area.

3.10.6.2 Peregrine Falcon

Peregrine falcons are listed as endangered in Idaho and Wyoming on federal and state lists. No peregrine falcon nests occur within or next to the existing ROW. The closest peregrine nest site is in Swan Valley, Idaho, on the south side of the Snake River, about 3 km (2 miles) south of the Swan Valley Substation. Other reported nests are near Heise, Idaho; several kilometers south of the Teton Substation; and in the Sheep Creek drainage near Palisades Dam, Idaho (U.S. Department of Agriculture, Forest Service, 1996b). Peregrine falcons hunt in the Teton Basin and nest in Teton Canyon, 21 (km) (13 miles) north of the existing ROW, and potential nesting habitat is present in other canyon drainages in the Basin (Oechsner, 1997).

Peregrine falcons are wide ranging (Ratcliffe, 1993; Call, 1978), with breeding ranges extending up to 16 km (10 miles) from nest sites. The first 18 km (11 miles) of the ROW is within the foraging range of the Swan Valley pair. This includes most of the Pine Creek drainage, which contains potential habitat. The ROW is outside of the typical maximum foraging range for the other nest sites, but these birds and their offspring could occasionally occur in the project area during particularly long flights.

The most likely places for peregrine falcons to occur are in the Swan Valley and Jackson areas especially near the Snake River, where waterfowl and other potential prey are concentrated. The densely forested portion of the central project area is not typical foraging habitat, but peregrines could forage within or travel through this area during nonbreeding seasons.

3.10.6.3 Whooping Crane

Whooping cranes are listed as endangered on federal and state lists. The U.S. Fish and Wildlife Service attempted to start an experimental population in the Rocky Mountain region, but was unsuccessful. Potentially, up to three individuals remain in the Teton Basin area (Fisher, 1996), but this species is no longer considered viable in the area, and has been removed from the Targhee National Forest's endangered species list it maintains through consultation with the USFWS (Oechsner, 1997). Therefore, this species is not considered an element of the affected environment for this project.

3.10.6.4 Grizzly Bear

The project area is within the historical range of the grizzly bear but outside the Yellowstone Grizzly Bear Ecosystem, an area for which the USFWS has identified management goals to bring population numbers up enough to de-list grizzly bears from the threatened list (U.S. Department of Agriculture, Forest Service, January 1996a). The USFS does not manage habitat within the project area for grizzlies because grizzlies use the area infrequently. Grizzly bears could occasionally travel across or near the project area. Grizzlies have been reported in the general vicinity and sighted within the project area. None of these sightings has been verified.

3.10.6.5 Gray Wolf

The project area is within historical wolf habitat and the Yellowstone Nonessential Experimental Area (U.S. Department of the Interior, Fish and Wildlife Service, 1994b). Land managers may temporarily restrict land use near active den sites.

For Your Information

The USFWS has reintroduced the gray wolf, an endangered species, into Yellowstone National Park. These wolves are classified as nonessential experimental wolves according to the Endangered Species Act. Under the Act, a listed species reintroduced outside of its current range, but within its historic range, may be designated "experimental." The Act requires animals used to form an experimental population be separated geographically from nonexperimental populations of the same species.

Nonessential animals located outside of national wildlife refuges and national parks (e.g., on USFS land) are treated as if they were only proposed for listing. The intent of nonessential populations is to give the USFWS and other federal agencies additional management flexibility to protect species from becoming extinct.

Wolves have been sighted near the project area, but no den sites are known in the area. One male who recently lost its mate has been traveling widely, including within and near the project area (Alford, 1996).

3.10.7 Category 1 Candidates

Category 1 candidate species are species the USFWS tracks that have the potential to be listed as threatened or endangered in the future. Mountain plovers were identified as potentially occurring in the project area but no nests have been reported in the area. Potential habitat is present in the Swan Valley and Jackson areas. However, because these areas are in relatively intensive agricultural use and because the species has not been reported in the area, few breeding pairs are likely to be present.

Western boreal toads may occur in the project area because their habitat is present. They use wetlands and streams during the breeding season.

Canada Lynx may occur in the project area. They could use the existing ROW as a foraging area because the open habitat (including young lodgepole pine saplings) supports the species' primary prey, the snowshoe hare.

3.10.8 U.S. Forest Service Sensitive Species

Table 3-4 lists U.S. Forest Service Sensitive Species, presence of their habitat, and if they are known to be in the project area. Appendix G includes a detailed description of these species and their habitats.

3.10.9 Winter Range for Deer, Moose, and Elk

Winter range for deer and elk begins at the Swan Valley Substation and continues to the Poison Creek area in the Pine Creek drainage (about structure 9/4). The quality of this winter range changes with location, and is described below.

From the Swan Valley substation to structure 3/7, much of the winter range has been converted to agriculture lands (farm land and pasture land), which greatly reduces the value of this area for wintering deer and elk. Because of the lack of forage and cover, deer and elk usually do not remain in this area during most of the winter period.

From structure 3/7 to the Targhee National Forest boundary (about structure 5/1), there is a combination of both agriculture land and natural range and forest lands; natural range and forest lands provide forage and cover that is higher quality habitat for wintering animals.

Table 3-4. U.S. Forest Service Sensitive Species

Species	Habitat Present	Known in Area
Spotted Bat	Yes	No
Townsend Big-eared Bat	Yes	No
Canada Lynx	Yes	Unknown, probably
Wolverine	Yes	Yes
Boreal Owl	Yes	Yes
Flammulated Owl	Yes	Yes
Common Loon	No	No
Harlequin Duck	Yes	Probably
Three-toed Woodpeckers and Other Cavity-nesting Species	Yes	Yes
Great Gray Owl	Yes	Likely
Northern Goshawk	Yes	Likely
Spotted Frog	Yes	No
Trumpeter Swan	Yes	Yes
Fine-spotted Cutthroat Trout	Yes	Yes
Fisher	Yes	Probably

Natural range and forest lands occur from structures 5/1 to 9/4, providing the highest quality winter habitat for deer and elk.

Four small areas of deer and elk winter range occur on south facing slopes from structures 15/2 to 18/6. These four small areas are natural range and forest lands.

Elk also winter from the Idaho/Wyoming state line east to about Mail Cabin Creek (from structure 22/8 to about 27/2). Wintering elk use this area usually during early December, but winter use may be longer depending on winter weather conditions.

Moose are more widely dispersed during the winter period, and evidence of wintering moose is found along most of the existing ROW, except for the highest elevations over Teton Pass. An area of noted moose winter range occurs in a section about 100 m (328 ft.) long where the new line would cross Fish Creek near Teton Substation (structures 35/5 to 35/6). As with deer and elk, agriculture lands have lower value as moose winter range, and natural range and forest lands have the highest value. In many

places along the existing ROW, tree clearing has increased desirable forage (willow, maple, serviceberry, young aspen) for wintering deer, elk, and moose.

Winter range provides protection and food for these animals and is critical for their survival over winter. It is much more limited than summer range and its availability may be the single most important factor in determining population levels in the area. Human development along river bottoms and valleys has greatly reduced available winter range and has increased the value and importance of remaining winter range on federal lands.

3.11 Fisheries

The only indigenous trout in the streams and rivers of the project area is the fine-spotted form of the Yellowstone cutthroat trout, which is a USFS sensitive species. Other trout, including rainbow, German brown, and brook trout, have been introduced to many of the drainages in the region. Other fish species in the region include mountain whitefish, bluehead suckers, Utah sucker, redside shiners, longnose dace, and mottled and Paiute sculpin.

The existing ROW can be divided into several distinct drainages identified by structure numbers (see Map 2 for general structure locations). In steeper terrain, streams are generally confined within steep-sided valleys or canyons. The streams are capable of moving large amounts of sediment after natural disturbances such as high-intensity summer rains and fire. Human disturbances include diversions, livestock grazing, road construction, timber harvest, and recreation.

Because of the rugged topography, the existing line spans valleys, and is usually well above creeks. Roads typically cross the upper reaches of drainages. Drainage crossings are normally made over culverts or existing bridges. BPA has used ***fords*** on Pine Creek, Little Pine Creek, and Murphy Creek to access the existing line.

For Your Information

*A **ford** is a travelway across a stream where water depth does not prevent vehicle movement. Ford construction can include grading and stabilizing stream banks at the approaches and adding coarse fill material within the channel to stabilize the roadbed.*

3.11.1 Pine Creek Bench, Idaho

The existing ROW from structures 1/1 to 5/1 primarily crosses agricultural lands. The ROW crosses several small intermittent streams (tributaries to Holland and Pine creeks) that have limited fish habitat.

The transmission line spans Pine Creek (a perennial stream) between structures 3/7 and 4/1, which has a narrow riparian buffer of Douglas fir and aspen. Some trees have been removed to protect the conductors from damage. Cutthroat trout are present in this section of the creek, which probably provides some rearing habitat. Adult cutthroat trout migrate through this reach to spawning areas higher in the drainage.

3.11.2 Pine Creek Drainage, Idaho

For Your Information

The Targhee National Forest 1997 Revised Forest Plan has expected values for specific native fish habitat features. The expected values are intended to guide management of native cutthroat trout habitat.

The existing ROW parallels Pine Creek from the mouth of the valley to Pine Creek Pass, up to structure 6/12 (near Pine Creek Ranch), where it spans Pine Creek and continues up the valley south of the creek. Although rated as having poor-to-fair fisheries habitat (USFS, 1996), Pine Creek provides a significant portion of spawning habitat for Snake River populations of Yellowstone cutthroat trout. Most spawning occurs between West Pine Creek and Tie Canyon (Dean, 1996). Tie Canyon, and North Pine and West Pine Creeks are the only tributary streams to Pine Creek that provide significant cutthroat trout spawning and rearing habitat (USFS, 1996). Grazing, roads, and recreation have contributed to sedimentation and poor bank stability in Pine Creek (USFS, 1996).

3.11.3 Little Pine Creek Drainage, Idaho

The existing ROW from structure 14/2 to structure 15/1 parallels Little Pine Creek, spanning several small, intermittent tributaries. Little Pine Creek flows into the Teton River. Little Pine Creek, Coalmine Fork, Wood Canyon, and Murphy Creek likely provide spawning and rearing habitat for cutthroat trout (Dean, 1996).

3.11.4 Teton River Drainage, Idaho

*The Wyoming Department of Game and Fish (**WDGF**) has classified streams based on an appraisal of the existing trout fisheries. Classification provides the basis for planning, management practices and assessing impacts of proposed projects.*

From structure 15/2, the existing line turns due east and spans several small, intermittent headwater tributaries to the Teton River. Pole Creek has cutthroat trout rearing and spawning habitat.

3.11.5 Trail Creek Drainage, Idaho and Wyoming

Trail Creek east of structure 22/7 is in Wyoming. This reach of the stream has been classified as a Class 3 stream, that is, it has important trout waters and fisheries of regional importance.

At structure 21/2, the existing line spans Trail Creek (a tributary to the Teton River) and State Route 31. The ROW parallels Trail Creek up to structure 28/1, near the top of Teton Pass. The lower reaches of Trail Creek provide cutthroat trout spawning and rearing habitat. However, fish habitat is likely limited in the upper reaches due to steeper gradients. Brook trout also may be present in Trail Creek.

Coal Creek runs between the highway and the ROW between structures 26/8 and 27/6. Coal Creek crosses the highway through a culvert which likely prevents fish passage due to its grade.

For Your Information

This section of Trail Creek has been classified as a Class 4 stream, that is, it has low production trout waters, and the fisheries are of local importance.

3.11.6 Trail Creek Drainage, Wyoming

From structure 28/5 the ROW drops down into a valley containing another stream called Trail Creek. At structure 30/3, the transmission line spans this other Trail Creek, leaving the valley and rising onto Phillips Ridge. This second Trail Creek provides some habitat for cutthroat trout.

3.11.7 Phillips Ridge, Wyoming

The existing ROW at structure 30/5 is near the top of Phillips Ridge. Drainage from the alignment is toward North Fork Trail Creek and Phillips Canyon. However, the ROW does not cross any streams with a defined bed and bank.

3.11.8 Fish Creek Drainage, Wyoming

Fish Creek has been classified as a Class 3 stream, that is, it has important trout waters and fisheries of regional importance.

From structure 35/1, the transmission line drops down into the Jackson area, spanning Fish Creek and two small tributary streams. The line spans Fish Creek between structures 35/5 and 35/6. Fish Creek provides habitat for Yellowstone cutthroat trout (fine-spotted form), brook trout, mountain whitefish, Bonneville red-sides, speckled dace, Utah suckers, and mottled sculpin (Novak, 1996). Bluehead suckers also are present.

Lake Creek is a Class 4 stream managed under a wild management concept by WDGF.

The transmission line spans Lake Creek (a tributary to Fish Creek) between structures 35/7 and 35/8. Lake Creek provides habitat for cutthroat and brook trout, whitefish, and suckers.

A tributary to Lake Creek is in a drainage ditch that flows around the northwest corner of Teton Substation. The tributary flows somewhat parallel to the ROW until reaching its confluence with Lake Creek. This tributary has suitable rearing habitat for trout.

3.12 Cultural Resources

*A **traditional cultural property** is defined generally as one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs (e.g., traditions, beliefs, practices, lifeways, arts, crafts, and social institutions) of a living community that are rooted in that community's history, and are important in maintaining the continuing cultural identity of the community.*

There has been prehistoric and historic activity in the project area. However, only a small amount of land in and near the project area within Idaho and Wyoming has been inventoried and, likely, only a small fraction of the existing prehistoric and historic sites have been recorded. Existing cultural resources sites and projects described in the literature within one mile of the existing ROW are described in Appendix I, **Cultural Resources Report**. A cultural survey of the existing and proposed ROW and access road system was completed during 1997 to determine if any cultural resources, including ***traditional cultural property***, are present and would be impacted. A detailed description is provided in Appendix I. A survey of the potential staging areas was completed in 1998.

3.12.1 Prehistory and Traditional Cultural Property

The project area is situated in the heart of aboriginal territories of several Native American tribes including the Wind River (Eastern) Shoshone, the Northern Shoshone-Bannock, and the Sheepeaters (Kroeber, 1937; Shimkin, 1947; Walker, 1980). Other groups such as the Western Shoshone, Crow, Nez Perce, Atsina, Flathead, Blackfoot, Arapaho, Cheyenne, Gros Ventre, and Comanche also used the area.

Stone gathering for tools and implements was an important activity and occurred at local obsidian sources particularly near Teton Pass. The region was also seasonally used for hunting and plant gathering. Native American use of the area, particularly by the Wind River Shoshone and the Shoshone Bannock Tribe, is indicated by the sites described in the literature, in other ways identified by informants, and confirmed by tribal members from the Wind River (Eastern) Shoshone and the Shoshone Bannock Tribe.

No prehistoric sites were found during the survey in 1997 or 1998.

3.12.2 History

The Wyoming and Idaho border area near the Teton Mountain Range traces its historic beginnings to the fur trapping era, which lasted from 1808 through 1840. Following the Lewis and Clark Expedition of 1804 to 1806, American fur trappers began arriving in search of new trapping territory. The British, through the Hudson's Bay Company and the North West Company, also sent trappers into the region. The conflict between the two nations over the Oregon Territory and beaver pelts fueled an era of exploration and trapping competition that lasted for nearly two decades.

American government explorers and surveyors entered the area, but it was settlers emigrating along the Oregon Trail during this period that would have the greater impact on the region. Between 1845 and 1865, hundreds of thousands of emigrants passed through the area bound for Oregon and California.

The designation of the nation's (and the world's) first national park, Yellowstone National Park (1872), of the nation's first forest reserve, Yellowstone Park Timberland Reserve (1891), and other national forests, had a profound effect on the recreation and tourism industry of the area.

Two historic sites were found during the survey in 1997 (see Appendix I). One site is an historic wagon road that also served as a stock trail between Jackson Hole, Wyoming and Teton Basin, Idaho. There is a visible section on the east side of Teton Pass. This site is eligible for the NRHP.

The second historic site is a ditch just south of Pine Creek, northeast of the Pine Creek Bench in Swan Valley. The ditch was used to carry water to Pine Creek Bench. It has not been used since the early 1920s. The ditch is preserved in some places, but may have been destroyed in others. This site is eligible for the NRHP.

3.13 Socioeconomics

The socioeconomics of the project area are influenced heavily by its geography and geology, particularly the spectacular beauty of the world renowned public lands, and the industries that exist because of it. Agriculture, mining, ranching, lumber and wood products, recreation, and tourism all are important industries in the region that result from the physical characteristics of eastern Bonneville County, Idaho and western Teton County, Wyoming.

3.13.1 Population

The population within the project area is sparsely located and is characterized as being largely rural, due to the lack of large population centers in the area, with the exception of the Town of Jackson. The population centers that do exist include Swan Valley, Victor and Driggs, Idaho, and Wilson and Jackson, Wyoming. Caucasians are the majority population group in the area, with minorities comprising less than 5 percent of the population. Minorities consist of mostly Native Americans and people of Hispanic origin (University of Idaho/Bonneville County Cooperative Extension System, 1993; and Wyoming Department of Administration and Information, Division of Economic Analysis, 1995).

Wyoming's population expanded by 40 percent during the 1970s primarily because of the energy boom that occurred in the country. During this 10-year period, Teton County, Wyoming's population almost doubled. The county's high growth rate continued in the 1980s, although at a slower rate, and the state estimates that the county's population will expand to 14,000 by the end of the millennium (U. S. Department of Commerce, Bureau of the Census, 1993, and the Wyoming Department of Administration and Information, Division of Economic Analysis, 1995).

Bonneville County's population is also expanding; however, the growth rate has been slower than that experienced by Teton County, Wyoming. In 1990-95, Bonneville County's population has grown by 2 percent per year, while Teton County, Wyoming's growth rate has expanded by 2.5 percent per year (Wyoming Department of Administration and Information, Division of Economic Analysis, 1995; and Idaho Department of Employment, Research and Analysis Bureau, February 1996).

3.13.2 Economy

The economy of northeastern Idaho, of which Bonneville County is a part, is driven by agribusiness, nuclear and high-tech research, manufacturing, recreation and tourism. Agribusiness includes farming and ranching, food processing, and the manufacture of farm machinery. Of the nine counties of northeastern Idaho, Bonneville County, along with Madison County provided over 75 percent of the service sector jobs in the last 5 years, with most located in Bonneville County. Primary service sector employment in the area is found in the following employment categories: miscellaneous services, retail trade, wholesale trade and government (Idaho Employment, Idaho Department of Labor, Research and Analysis Bureau, August 1996).

The economy of Teton County, Wyoming is heavily dependent on tourism. As a result the principal employment sectors are miscellaneous services (including the hospitality industry), and retail trade. Construction services is also a major sector in the local economy (U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Analysis Division, 1994).

3.13.3 Employment and Income

A good share of Teton County's employment, relative to the state as a whole, is in the services sector; manufacturing employment is only half what it is statewide (U.S. Department of Commerce, Bureau of the Census, 1993). High employment in the services sector, and low employment in the manufacturing sector is indicative of a county with relatively low average annual wages. The average annual wages for Teton County for 1994, the most recent information available, was 10 percent below the state average ($19,960 vs. $22,070) (Wyoming Department of Employment, Research and Planning Section, 1996). Though wages are relatively low in Teton County, per capita incomes are the highest of any county in the state. Teton County's per capita income for this same year was $37,430. This disparity between low average annual wages and high per capita incomes results from the Jackson area being a relatively affluent retirement community.

Though the services sector is the largest non-farm employment sector in northeastern Idaho, the goods producing industries, including manufacturing, mining, and construction are major contributors to the local economy. Average annual wages in Bonneville County in 1995, were $23,575, compared to $22,840 for the state as a whole (Idaho Department of Labor, Research and Analysis Bureau, August 1996). Both the county's and the state's per capita income were below the county's average annual wage for this year (Idaho Department of Employment, March 1997).

3.13.4 Taxes

A variety of taxes is collected by state agencies to fund state and local government programs and services. These taxes include those that would be assessed on major capital improvements, including construction: sales and use taxes; property taxes; and income taxes assessed on construction labor. Additional taxes could also be affected, although to a lesser degree, and are not covered here. These taxes would include such taxes as locally assessed "room taxes" on commercial lodging facilities, fuel taxes, cigarette taxes, and other taxes.

3.13.4.1 Sales Tax

Both Idaho and Wyoming assess a tax on goods and services sold within these states, commonly known as a sales tax. The two states also assess a tax on goods and services purchased elsewhere that would be consumed or used within their borders, commonly referred to as a use tax. Federal agencies are exempt from paying both the sales and use tax in Idaho, except when government contractors would be employed on a project (Garret, 1996). According to Sales Tax Rule 12(10) *Materials Provided by Project Owner*,

> If material needed for a contract is purchased or supplied by an owner who is exempt from sales and use taxes, then the use by the contractor is subject to use tax. This is true even if the property is owned by an exempt entity such as the federal government, or a state government agency. For example, if a contractor has a public works contract to build a structure using materials owned and supplied by the government, whether federal, state or local, he/she is the consumer of the materials and is subject to a use tax on their value.

In Wyoming, federal agencies are exempt from paying sales and use taxes regardless of who constructs a project. Materials, such as supplies, equipment and other incidental purchases bought directly by a contractor for a federal project, however, would not be exempt (Bright, 1996).

3.13.4.2 Property Tax

BPA acquires land rights (easements) from private property owners for the purpose of building, operating and maintaining transmission facilities. Such rights are for a specific purpose, and the underlying property owner retains ownership of the property. Because the landowner retains ownership, the landowner continues to pay property tax on the entire parcel, including that within any BPA easement. Because BPA is a federal agency, and exempt from paying local property taxes, improvements owned by BPA, such as transmission facilities, would not be taxed.

BPA acquires land grants instead of easements from federal agency land managers such as the USFS. Because the USFS, as a federal agency, is also exempt from paying local property taxes, no property taxes are paid on land managed by the USFS, including that within a ROW granted to BPA for constructing transmission facilities.

3.13.4.3 Income Tax

Idaho assesses a state income tax, however, Wyoming does not. The taxes are assessed based on where individuals work, rather than where they reside. Idaho's tax is capped at 8.2 percent for those with taxable incomes over $20,000 filing individually, or $40,000 for those filing a joint return.

3.14 Air Quality

3.14.1 Swan Valley and Teton Valley Airsheds

The Swan Valley ***airshed*** has no significant air quality problems. The Teton Valley airshed has little trouble with air pollution problems because frequent southwest airflow prevents pollution buildup.

For Your Information

Particulate matter *is airborne particles including dust, smoke, fumes, mist, spray, and aerosols.*

Microns per liter or ***ug/m³*** *is a common measure of pollutants in air.*

3.14.2 Jackson Airshed

During January through April, the Jackson airshed can become inverted and suspended ***particulate matter*** can negatively affect local air quality. In 1986, the Wyoming Department of Environmental Quality placed a particulate monitor in downtown Jackson to observe this problem. So far the National Ambient Air Quality Standard for particulate matter at this monitoring station has not been exceeded. The highest 24-hour ambient particulate matter concentration at this station was 120 ***ug/m³*** (150 ug/m^3 is the 24-hour particulate matter National Ambient Air Quality Standard); the highest reported annual average was 30 ug/m^3 (50 ug/m^3 is the National Ambient Air Quality Standard). The Department of Environmental Quality has concluded that the particulate matter problem in downtown Jackson is primarily due to road dust.

3.14.3 Protected Airsheds

Section 160 of the Clean Air Act requires the protection, preservation or enhancement of air quality in national parks, wilderness areas and monuments. The 1977 Clean Air Act amendments called for a list of existing areas to be protected under section 160. These are called Class I areas (40 CFR 81 Subpart D).

There are several protected airsheds in the vicinity of the project area. Air quality, visibility and plant and animal vigor in these protected airsheds should not be compromised. These airsheds include national parks and wilderness areas, some of which have been listed as Class I (one) areas under the Federal Clean Air Act. (See Section 5.15, **Emission Permits under the Clean Air Act** for a legal discussion of Class I areas.)

The following are protected airsheds in or near the project:

- Grand Teton National Park (a Class I area), about 10 km (6 miles) north of the existing ROW at Teton Pass;
- Palisades Wilderness Study Area in the Bridger-Teton National Forest, surrounds the existing ROW (protected, but not listed under the Clean Air Act);
- Jedediah Smith Wilderness Area in the Targhee National Forest (protected, but not listed under the Clean Air Act), about 150 m (492 feet) north of the ROW at its closest point;
- Yellowstone National Park, (a Class I area), about 121 km (75 miles) north of the project;
- the ***Wild and Scenic*** Snake River (protected but not listed under the Clean Air Act), about 8 km (5 miles) from the ROW;
- Winegar Hole Wilderness Area, about 59 km (37 miles) north of the ROW (protected but not listed under the Clean Air Act);
- Bridger Wilderness Area, about 68 km (42 miles) north of the ROW (a Class I Area);

- Teton Wilderness Area, about 39 km (24 miles) north of the ROW (a Class I Area); and
- the Gros Ventre Wilderness Area, about 21 km (13 miles) east of the ROW (protected but not listed under the Clean Air Act).

Some of the wilderness areas do not hold the Class I designation because they were (or will be) designated as Wilderness Area(s) after the 1977 revisions to the Federal Clean Air Act created Class I Areas. Nonetheless, these wilderness areas are treated as Class I Areas by local branches of the U.S. Department of Agriculture and Interior. For example, the Driggs Ranger District (on Targhee National Forest) will be monitoring visibility on the summit of the Grand Targhee Ski area, beginning in summer 1997. Monitoring will help the Forest and Park Services protect visibility around Grand Teton National Park. The USFS is also considering launching a lichen study in the park to monitor the impacts of ***acid rain***.

For Your Information

Sulfur and nitrogen oxides mix with water drops (snow, rain, and fog) in the atmosphere and make sulfuric and nitric acid. These acids fall to the earth as ***acid rain*** *or snow. The presence of these compounds in the air can cause respiratory problems and affect visibility.*