8.0 LAND MANAGEMENT AND USE

This report includes an assessment of land management and use in the Yale Project study area in compliance with 18 CFR 4.51. This assessment focuses on the compatibility of land uses within and adjacent to the FERC project boundary and plans and policies of land management agencies. The following topics are addressed:

- Existing development and uses of lands within and abutting the FERC project boundary;
- Wetlands and floodplains in the project vicinity;
- Consistency with comprehensive plans and policies;
- Effects associated with the continued operation of the project;
- Measures to protect land uses; and
- Implementation, cost, and schedule information.

8.1 EXISTING RESOURCES

8.1.1 Land Use and Management in the Project Vicinity

The Yale Project is located in the rural Cascade foothills of southwestern Washington State, within a study area that encompasses portions of 3 counties: Cowlitz, Clark, and Skamania (Figures 2.1-1 and 2.1-2). Primary land uses in this region are forestry, rural residential sites, recreation, and some agriculture. The Yale study area boundary, depicted on Figure 2.1-2, encompasses a 16,000-acre area that includes the 3,800-acre Yale Lake, Yale and Saddle dams, the powerhouse and switchyard adjacent to Yale Dam, and a 10.5-mile-long transmission line extending west from the powerhouse. It also encompasses lands and facilities associated with Cowlitz County PUD's Swift No. 2 project and a limited area influenced by the Swift No. 1 project.

Within this area, the FERC project boundary forms an approximately 200-foot-wide PacifiCorp-managed corridor around the perimeter of Yale Lake. The boundary expands to include the powerhouse, the 2 zoned embankment dams, several operators' residences, Speelyai Canal, and the transmission line corridor (Figure 2.1-2).

The study area for land use focuses on lands within and immediately surrounding the FERC project boundary. Lands within the 16,000-acre study area are addressed in a more general way.

Land uses in the upper Lewis River valley have been heavily influenced by the presence of Yale Lake and other major impoundments. These influences are most apparent in summer, when thousands of recreationists are attracted to the lake and the 5 park sites that PacifiCorp has developed on its perimeter. During the remainder of the year, land uses are more typical of the Cascade Mountain foothill region: rural residential, forestry, and some agriculture and farming where topography is suitable. The conversion of forest and agricultural lands to home sites and recreational dwellings began altering the character of the area over the last decade.

8.1.1.1 Land Ownership/Management

A variety of published sources were examined for this evaluation, including the management plans of federal, state, and local government agencies, to compile this description. Land ownership and management in the study area include federal, state, county, and private lands (Figure 8.1-1 and Table 8.1-1). Areas along the east side of Yale Lake are in mixed private, state, and county ownership, with state and federal ownership dominating the region beyond the study area boundary. Areas to the west are owned by a mixture of private interests, the state, and 1 parcel of federal land at Yale Dam. Land management designations are depicted on Figure 8.1-2.

Federal Lands

The Bureau of Land Management (BLM) retains a 38-acre parcel within the Yale Project boundary on which Yale Dam was constructed. Access roads to Yale and Saddle dams, the switchyard, and project support facilities also are within this parcel. The BLM relies on PacifiCorp to manage this parcel for maintenance of the hydropower facilities. PacifiCorp's right to occupancy is authorized under a long-term Federal Power Act (FPA) withdrawal. Similarly, 2 other BLM parcels, totaling 166 acres, lie within the inundation zone of Yale Lake. PacifiCorp pays an annual fee for its right to occupy and use these parcels.

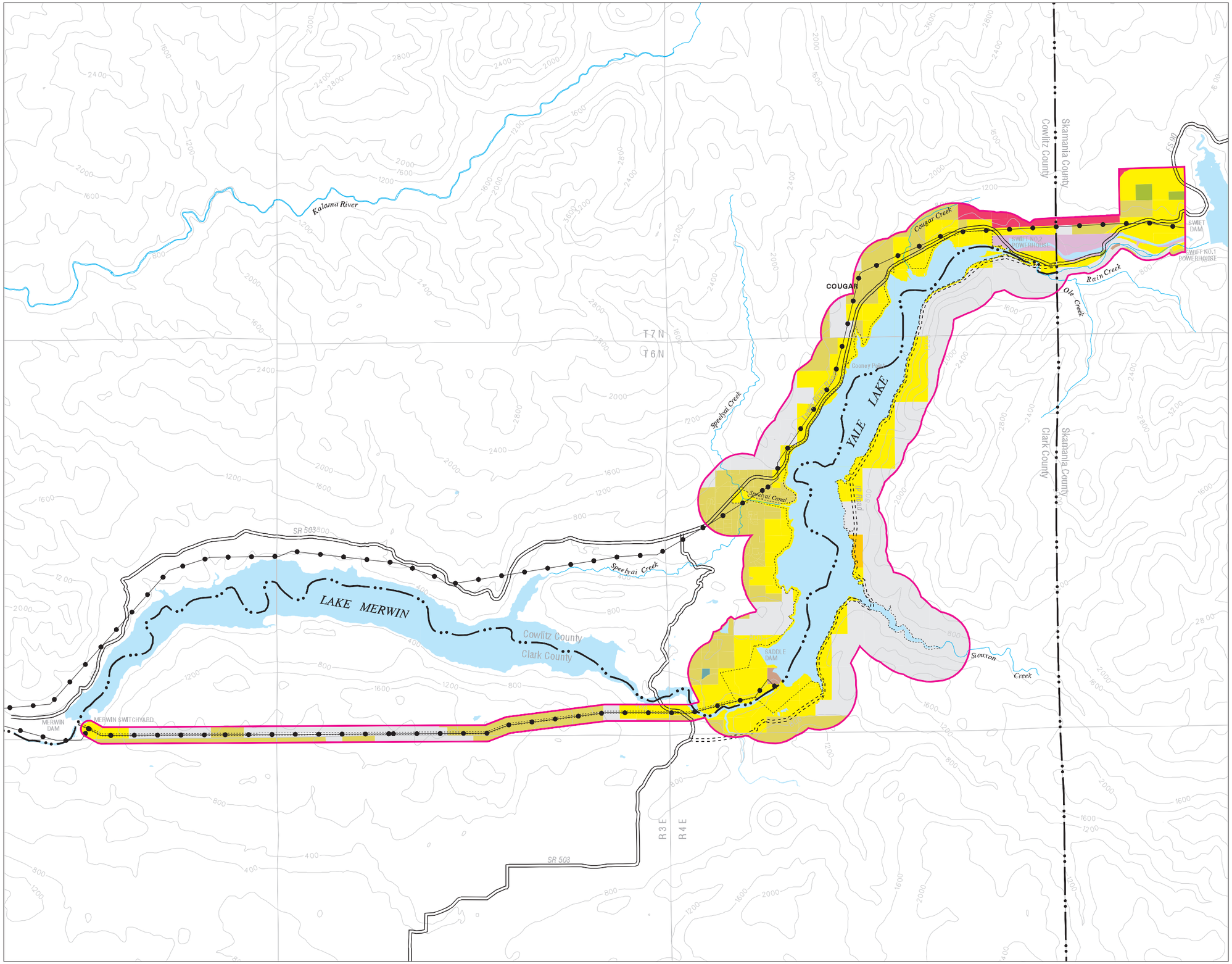
The study area includes a narrow strip of land within the Mount St. Helens National Volcanic Monument. Monument lands extend to the north of the Yale Project. Approximately 300 acres of PacifiCorp land north of Beaver Bay Campground has been incorporated within the boundary of the Monument; PacifiCorp is discussing the sale or exchange of these lands for unencumbered parcels with the USFS. Until that occurs, these lands are managed for purposes of all Monument lands, to protect geologic, ecologic, and cultural resources for scientific study and research, while providing for compatible recreation.

Additionally, 2 small parcels of land managed by the Gifford Pinchot National Forest (GPNF) lie within the eastern part of the study area, north of the Swift No. 2 canal.

State-Owned Lands

State-owned lands in the study area are managed by the DNR and Department of Transportation (WSDOT).

Department of Natural Resources - Approximately 32,000 acres of land due east of Yale Lake are managed by the DNR under its Siouxon Landscape Plan (DNR 1996) (Figure 8.1-3). In addition, DNR manages 2 large parcels within the study area on the west side of Yale Lake (most of the north half of Section 29, north of Saddle Dam; and most of Section 8, north of Speelyai Canal). These lands are divided into various state trust blocks and are managed for sustained timber production, while incorporating



Legend

Land Ownership
- BLM
- Gifford Pinchot National Forest
- Mt. St. Helens National Monument
- Washington DNR
- Clark County
- Cowlitz County
- Cowlitz County PUD
- PacifiCorp
- Private

- FERC Boundary
- Study Area
- County Line
- Transmission Line

HYDROGRAPHY
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

NORTH

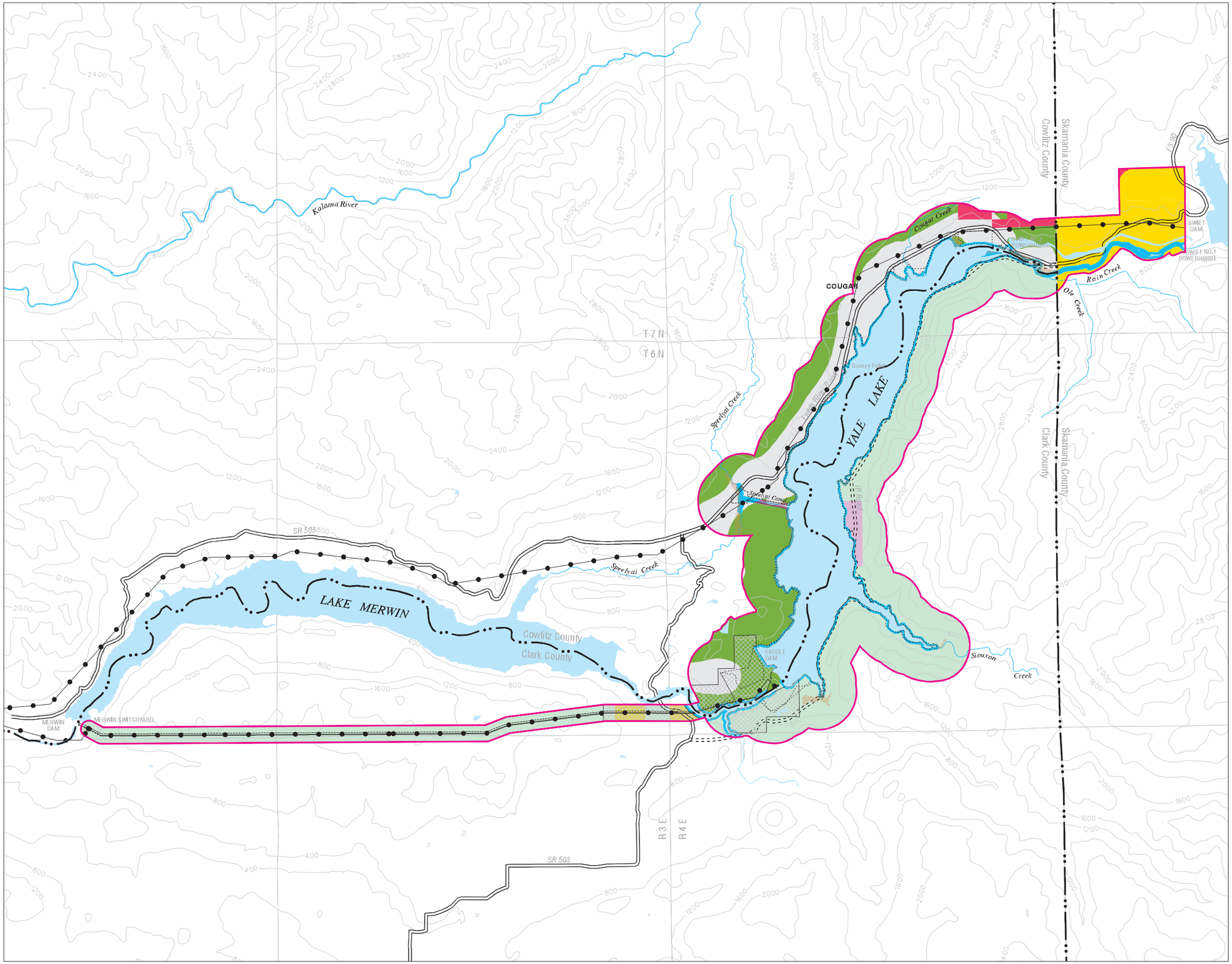
0 5000 10000 15000 Feet

Scale 1:90000

Yale Hydroelectric Project

Figure 8.1-1
Land Ownership

Created by VESTRA Resources for PacifiCorp
/p1/proj_map/projects/yale/license/exe/landuse/ownership.map
February 24, 1999



Legend

- Study Area
- County Line
- Transmission Line
- Shoreline Conservancy Environment
- Merwin Wildlife Habitat Area

FEDERAL DESIGNATIONS
- FEMA, Flood Zone A
- Mount St. Helens National Volcanic Monument
- FERC Project Boundary

COWLITZ COUNTY
- Forestry - Open Space
- Shoreline Conservancy Environment/ Forestry - Open Space
- Shoreline Conservancy Environment/ Rural Residential 2
- Rural Residential 2

CLARK COUNTY
- Forest Tier 1
- Forest Tier 2
- County Park

SKAMANIA COUNTY
- Unzoned

HYDROGRAPHY
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

NORTH

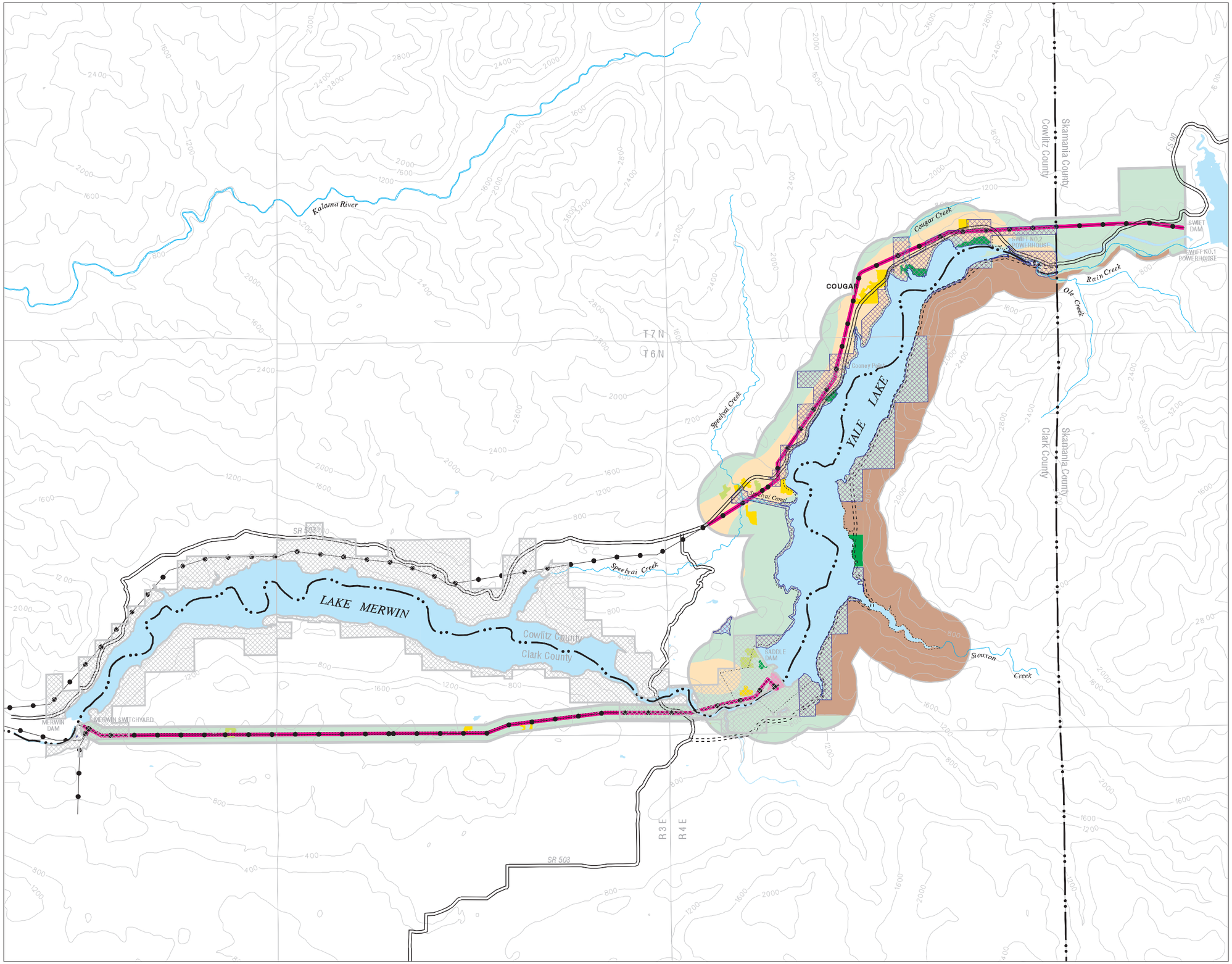
0 5000 10000 15000 Feet

Scale 1:90000

Yale Hydroelectric Project

Figure 8.1-2 Land Management Designations

 PACIFICORP *Created by VESTRA Resources for PacifiCorp* */p1/proj_map/projects/yale/license/exe/landuse/land_use.map* *February 24, 1999*



Legend

LAND USE
- Recreation
- Residential
- Rural Residential
- Industrial
- Agriculture
- Forestry/Open Space
- Siouxon Landscape Area
- Merwin Wildlife Habitat Management Area
- Proposed Yale Wildlife Habitat Management Plan

- Study Area
- County Line
- Transmission Line
- FERC Project Boundary

HYDROGRAPHY
- Water
- Stream

TRANSPORTATION
- Primary Road
- Secondary Road

NORTH

0 5000 10000 15000 Feet

Scale 1:90000

Yale Hydroelectric Project

Figure 8.1-3 Project Area Land Uses

Created by VESTRA Resources for PacifiCorp
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February 24, 1999

the objectives of protecting aquatic systems, cultural resources, and recreation. Revenues from timber harvesting partially fund the state school system. While the majority of these lands are heavily forested, large harvested patches are interspersed.

Table 8.1-1. Land ownership within the Yale study area.

Federal	1%
State	32%
County	1%
PacifiCorp and Cowlitz County PUD	49%
Private	17%
Total	100%
Source: Vestra GIS data.	

Primary access to the Siouxon Landscape Area is via the IP Road, to which DNR holds an access easement for timber/fiber production. This private, gated road restricts public access to Siouxon Landscape Area lands and to the eastern shore of Yale Lake. In its Siouxon Landscape Plan, the stated management objectives are to maintain an active road network for land management activities and fire protection. Another objective is to work with local recreation groups to improve the quality of current recreation opportunities within the Siouxon block and to expand the variety of opportunities available. A related objective is to allow recreation on state forest land when it is compatible with the objectives of the State Forest Resource Plan (DNR 1992). Achieving these objectives will partially depend on the ability of the DNR and other Siouxon Area land owners to negotiate a public access agreement and to reach consensus on management and maintenance responsibilities for the IP Road.

Washington State Department of Transportation - SR 503, also known as the Lewis River Road, bisects the study area to the west of Yale Lake (Figure 2.1-2). This is the main east-west transportation corridor in the vicinity, extending from I-5 to Swift Dam. Approximately 1.5 miles west of Swift Dam, this road transitions to Forest Road 90. Forest Road 90 is a secondary access route to the Monument, a route popular among climbers and used by visitors to Ape Cave and other recreation destinations (Figure 7.1-2). Use of SR 503 has increased substantially since the Mount St. Helens eruption and as residents of the greater Portland/Vancouver area have discovered the recreational amenities of the Lewis River reservoirs. WSDOT, which manages this transportation corridor, completed a major bridge replacement project in 1996 where SR 503 spans Rock Creek in the vicinity of Lake Merwin. The only other major project scheduled in the general Yale vicinity in the 1995 to 1997 biennium was to replace the deck and railings on Yale Bridge, an historic structure downstream of Yale Dam. WSDOT's 20-year plan defined no other specific projects in the vicinity (pers. comm., J. Horrocks, WSDOT, Vancouver, Washington, December 4, 1996).

County Lands

The study area includes lands within 3 counties: Cowlitz, Clark, and Skamania. County land management designations are mapped as Figure 8.1-2.

Cowlitz County - All of the land west and north of Yale Lake is within Cowlitz County, a 1,146-square-mile, predominantly rural county. Its land management designations in the study area are Forestry/Open Space and Rural Residential 2, the latter allowing 2- to 5-acre divisions of land for single home sites. Figure 8.1-2 depicts these land management designations. Areas where these designations overlap with the more stringently protected shoreline environment (see Section 8.1.3.2*)* are also depicted on Figure 8.1-2.

Cougar, the only town within the study area, is located in Cowlitz County. A few commercial enterprises and a concentration of homes make up this small community. Northeast of Cougar, Cowlitz County PUD owns the Swift No. 2 Hydroelectric Project, located within the Yale Project study area. It uses flow diverted from the Lewis River at PacifiCorp's Swift No. 1 Project. Water is routed to the PUD facility through an open embankment canal, which lies within the Yale study area.

Clark County - Lands to the east and south of Yale Lake lie along the northeastern boundary of the 630-square-mile Clark County. While parts of this county are among the faster growing areas of the state, lands within the study area are heavily forested and penetrated by few roads, so remain remote. Study area lands are designated by the County Comprehensive Plan (Clark County 1994a) primarily as Forest Tier I, suitable for productive forestry uses, with minimum parcel size established as 80 acres.

Clark County owns an approximately 80-acre undeveloped parcel just north of Siouxon Creek with approximately 0.5 mile of Yale Lake frontage. This parcel is accessible only by the IP Road or by boat. During the 1960s, the site contained 8 campsites, but these were abandoned in later years due to maintenance problems, a severe economic recession, and lack of a recreation easement along the IP Road. Although the County Comprehensive Plan identifies it as a park/wildlife refuge, access limitations continue to prevent development of this parcel. Public entry is prohibited along the IP Road and the county possesses an access easement to this parcel only for its employees.

The Yale transmission line corridor, extending 10.5 miles west from the Yale powerhouse to the substation near Merwin Dam, lies almost entirely within Clark County (the initial mile below the Yale powerhouse is in Cowlitz County). Most of the route is designated as Forest Tier I, although 2 segments shown on Figure 8.1-2 are Forest Tier II. These designations coincide with the SR 503 road corridor and a recreational development on the shore of Lake Merwin. Forest Tier II allows denser development, setting a minimum lot size of 40 acres.

Skamania County - Much of the North Fork Lewis River channel between upper Yale Lake and Swift Dam lies within Skamania County. Approximately 80 percent of this 1,672-square-mile county is within the GPNF. It is heavily forested and sparsely populated, characteristics shared by the portion of the county within the study area. Because of the remote location, Skamania County has not mapped lands within the study area and has applied no land use or development designations. Figure 8.1-2 identifies these lands as unzoned.

Private Lands

Most of the lands within the FERC project boundary are owned by PacifiCorp, with the exception of a limited number of parcels held by various private owners, Clark County (as referenced above), and the BLM. Some private lakefront ownership can be found in the vicinity of Speelyai Canal, south of Cougar Park, at the north end of Yale Lake, and a parcel along the IP Road. Within the FERC project boundary, PacifiCorp holds flowage easements from these private owners. PacifiCorp does not grant private easements to the reservoir, as its land management objective is to minimize operational conflicts and provide a balanced use of the resources for public benefit.

Within the approximately 16,000-acre study area boundary, privately owned lands can be found in the same general area as that within the FERC project boundary, as well as along the Lewis River Road corridor. Private ownership along the eastern side of Yale Lake is predominantly PacifiCorp, with some timber company holdings. The Lewis River Road corridor, along the west side of the reservoir, has a more diverse ownership pattern, including PacifiCorp, various timber companies, and residential and commercial properties. The nature of many of the commercial facilities that have been established along this road corridor is described in Section 7.0 (Recreation Resources), as most have evolved to support recreationists.

8.1.1.2 Land Uses in the Project Vicinity

Land uses within the Yale Project area are depicted on Figure 8.1-3 and are described below.

Residential Uses

Residential development in the project area is concentrated around the community of Cougar, to the north and west of Speelyai Canal, and isolated home sites south of the canal between the reservoir and Lewis River Road. In addition, PacifiCorp maintains several single-family homes for employees and a project warehouse downstream of Yale Dam.

The most easterly home sites in the study area are located due north of the Beaver Bay Campground. This grouping of about 7 homes is clustered within an area surrounded on three sides by dense forest. This area is designated as Rural Residential 2 by the Cowlitz County Comprehensive Plan, permitting a density of 1 dwelling per 2 acres.

The population of the Town of Cougar is clustered predominantly on either side of a 2,800-foot stretch of the Lewis River Road. Homes and small farms extend northward toward the actively managed forest lands of large timber companies. This area is also designated as Rural Residential 2.

Westward traveling highway users encounter no developed land uses from Cougar until approaching the Speelyai Canal area, where low density rural residences have been built along the highway and in the wooded area extending toward the lake. Approximately

2,000 feet north of the canal is a lake-front subdivision that has been approved for 7 units. Homeowners share lakefront access. Inland from this forested section are several farms. Proceeding south along the lake from Speelyai Canal, there are a few isolated home sites in an otherwise forested peninsula, designated by the county plan as Forestry-Open Space.

Downstream of Yale Dam, on the north side of the Lewis River, are 6 homes maintained by PacifiCorp for its project employees. Adjacent to this cluster of homes is a large storage building and yard used to stockpile maintenance materials and as a work area. These uses occur within an area designated as Forestry-Open Space, and as such are not compatible with the intent of the classification. This cluster development is within a large PacifiCorp holding and is intended to support the nearby industrial hydropower facilities.

Agricultural Uses

Elevation and land ownership patterns confine agricultural uses in the study area to the north and west of Yale Lake. Along the western side of Yale Lake, clusters of farms appear no farther northward than the Speelyai Canal vicinity. Immediately downstream of Saddle Dam lands are actively farmed as part of the Merwin Wildlife Habitat Management Program. Proceeding downstream along the Yale transmission line corridor, both large and small scale agricultural operations are interspersed with forested areas. These uses are compatible with the Cowlitz and Clark county comprehensive plans, which define agriculture as a recommended use within their respective forestry designations. Agricultural uses along the Lewis River Road corridor are consistent with the recommended uses of the Cowlitz County Rural Residential 2 use designation.

Recreation Uses

The study area offers a variety of water- and land-based recreation opportunities that seasonally are very heavily used. PacifiCorp owns and operates 4 developed recreation facilities on Yale Lake, including 3 campgrounds with day use areas, and 1 park for day use only. Only Yale Park, the day use area, is open year round. Dispersed recreation occurs throughout the study area, mostly adjacent to the lake and streams. These and other recreation uses are fully described in Section 7.0 (Recreation Resources).

Industrial Uses

Industrial uses within the study area are related to the hydropower generating facilities operated by PacifiCorp and Cowlitz County PUD. In addition to Yale and Saddle dams, industrial facilities include the Yale powerhouse, an adjacent substation, and the overhead transmission line that extends 10.5 miles from the substation to an interconnection near Merwin Dam. Within the larger study area, Cowlitz County PUD owns the Swift No. 2 Hydroelectric Project near the northern end of Yale Lake. In addition to a powerhouse and substation, features within the Yale study area include a wide embankment canal that transports the outflow from the Swift No. 1 powerhouse to the Swift No. 2 powerhouse. It discharges at the upstream end of Yale Lake. These facilities are described in greater detail below, beginning with the upstream-most development.

Swift No. 1 Hydroelectric Project - The eastern edge of the Yale study area incorporates some of the support facilities associated with PacifiCorp's Swift No. 1 Project. These facilities are located on the north side of both the Lewis River channel and the power canal linking Swift No. 1 with Swift No. 2. A cleared service area includes storage buildings and an outdoor storage yard. A gravel road extending from the state highway to the Swift No. 1 powerhouse bisects this service yard. This road forms part of the southern perimeter of an approximately 10.5-acre wetland complex within the study area. An overflow outlet maintains the water level in the wetland, draining through a culvert beneath the service road and discharging to the Swift No. 2 canal, approximately 800 feet downslope. A paved road also links the highway with Swift No. 1. This road is built on the north embankment of the canal.

The Swift No. 1 support facilities are located entirely within Skamania County, which has not assigned any management designation to this portion of the county.

Swift No. 2 Hydroelectric Project - As described previously, the Swift No. 2 facilities are owned by Cowlitz County PUD. Lands that support this FERC licensed project occupy over 270 acres within the Yale study area. Facilities include an embankment canal, powerhouse, switchyard, and service yard.

The 1.75-mile-long power canal between Swift No. 1 and No. 2 is approximately 100-feet-wide throughout most of its length, widening at the downstream end to form the Swift No. 2 intake pool. The canal roughly parallels the remnant channel of the North Fork Lewis River.

The 5,000-square-foot Swift No. 2 powerhouse is situated adjacent to the Lewis River Road. It is constructed on the canal embankment and discharges flow into an outlet bay at the head of Yale Lake. An approximately 12,500-square-foot fenced switchyard is located on the west side of the outlet bay, accessed by a short paved road. The Swift No. 2 overhead transmission lines extend 1,000 feet northward to a point of interconnection with the lines running westward from Swift No. 1.

Swift No. 2 project features are within 2 counties and span several land management categories. In Skamania County, the embankment canal is located in an unzoned area. In Cowlitz County, the canal is within 2 management categories: Forestry-Open Space and the Shoreline Conservancy environment. Industrial uses generally are discouraged within areas managed as Forestry-Open Space. The powerhouse itself falls within the boundaries of the Cowlitz County Shoreline Master Program (Cowlitz County 1977). The Economic Development component of this program reflects the water-dependent nature of some industrial activities, and presents a policy for utilities that produce and carry electricity. Such developments are authorized when aesthetic impacts and effects on vegetation can be minimized; therefore, Swift No. 2 is compatible with the Shoreline Master Program.

Swift Transmission Line Corridor - An approximately 100-foot-wide transmission corridor extends through much of the Yale study area. It leads westward from the Swift No. 1 switchyard, along the north side of the Swift canal and Yale Lake to the vicinity of

Speelyai Canal, where it proceeds in a westerly direction outside of the project study area. While this cleared corridor crosses the Lewis River Road at 3 locations in the study area, it is otherwise not highly visible due to forest cover or its distance from the main transportation corridor.

Within this corridor, vegetation is managed to prevent potential interference with the overhead line. Very limited use is made of herbicides; when required to contain vegetation, low toxicity applications are performed in accordance with state agricultural standards. Much of the habitat in the cleared corridor is open meadow. Vegetation management of this corridor is consistent with sound environmental practices emphasized in the Cowlitz County Comprehensive Plan, Utility Corridor element.

Within Skamania County, no land management designations have been applied. In Cowlitz County, the transmission line is located primarily in areas designated as Rural Residential 2. In addition, an approximately 700-foot-long segment adjacent to Swift Canal is in the Forestry-Open Space environment, and a very short segment spanning Speelyai Creek and canal is within the Shoreline Conservancy environment. While industrial uses are largely incompatible with residential uses, the presence of an overhead utility corridor is a less intrusive use than a typical industrial site. Further, while this is an acknowledged use of forestry lands under the Utility Corridor element of the Cowlitz Comprehensive Plan, careful planning and control are encouraged. Utility systems are a permitted use within the Shoreline Conservancy environment, indicating that the segment spanning the creek and canal is appropriately located.

Speelyai Canal - This 3,200-foot-long channel was excavated to direct flow from Speelyai Creek into Yale Lake. A diversion structure is located approximately 600 feet downstream of the intersection of the creek and the Lewis River Road. This structure was heavily damaged by bedload material in the 1996-1997 floods and remains inoperable.

A gated road provides access to the entire length of the canal along its south bank. In spite of restricted access, there is evidence of informal camping on PacifiCorp property at the end of this road. The northern side of the canal is heavily vegetated, creating a dense buffer between the canal and adjacent residential and agricultural uses. The canal banks are sharply undercut near its mouth.

Cowlitz County Shoreline Conservancy and Forestry-Open Space guidelines apply to the canal. Its presence appears compatible with these designations.

Yale and Saddle Dams - Yale and Saddle dams are among the most significant industrial features in the upper Lewis River valley, yet are probably the least visible. These embankment structures are accessible by boat or via an unpaved 2-mile-long secondary road extending from Highway 503. Dense forest remains at both abutments of Saddle Dam, while immediately downstream are farmed fields and a public campground. Approximately 500 feet to the southeast is the overflow spillway for Yale Dam, which adjoins the zoned embankment structure. Forests dominate the southeastern side of Yale

Dam as well. Both powerhouse and switchyard are located in a narrow canyon at the base of Yale Dam.

Saddle Dam and half of Yale Dam are within Cowlitz County; the other half of Yale Dam, the powerhouse, and switchyard are within Clark County. These industrial facilities are within the Shoreline Conservancy environment of both counties. As such, Cowlitz County permits power generating facilities where they create minimal visual impact and when shoreline restoration is performed.

Yale Transmission Line - The overhead transmission line (Figure 8.1-1) extends from the powerhouse north across the canyon below Yale Dam, over the spillway to a cleared area between the dams, from where it is redirected in a westerly direction for a distance of 4,900 feet downstream. At this point, the line crosses the Lewis River into Clark County and then continues westward to an interconnection point near Merwin Dam. This 10.5-mile-long corridor is maintained at a width of approximately 100 feet.

Most of this route is managed under right-of-way easements from a variety of landowners. Active management of the corridor by PacifiCorp is limited to vegetation containment, with the objective of keeping a low vegetative cover that does not interfere with the transmission structures. Very limited use is made of herbicides; when required to contain vegetation, low toxicity applications are performed in accordance with state agricultural standards. A track suitable for 4-wheel drive vehicles provides access along much of the corridor, while a number of segments are accessible by foot from local roads that bisect the corridor.

Land uses along this corridor are predominantly forestry, interspersed with remote residences, typically associated with farming or grazing operations. Most residences are at least 500 feet from this corridor, although a few are noted within and adjacent to the corridor.

All but the initial 6,000 feet of this corridor are located within Clark County. The Clark County portion passes through lands designated mostly as Forest Tier 1. Two segments of line, totaling 1 mile in length, are within the Forest Tier 2 designation. While the management objective for forest lands is to sustain the forest product production capability, the County 20-Year Comprehensive Growth Management Act (Clark County 1994a) recognizes that other land uses will occur on forest lands. One of the stated goals of the 20-year plan is to ensure that utilities and other capital facilities are protected from conflicting development. It appears that the existing transmission line corridor is compatible with this limited mixed use objective. The line segment located within Cowlitz County is almost entirely within the Shoreline Conservancy environment where utility systems are a permitted use.

8.1.2 Existing Wetlands and Floodplains

8.1.2.1 Existing Wetlands

As described in Section 5.1.1.1, there are 5 wetland complexes within the study area, totaling 157 acres. The complexes are described below, in descending order of size.

Swift No. 2 Bypass Reach (North Fork Lewis River Remnant Channel)

The 2.7-mile-long section of remnant channel of the North Fork Lewis River, between Swift Dam and Yale Lake, supports 84 acres of wetlands. The wetland hydrology is sustained primarily by seasonal flow in the reach originating from groundwater, inflow from Ole Creek, and seepage from the Swift Canal that enters the reach through a series of very small side channels and seeps. This has created a mosaic of riverine and palustrine wetlands, made up of unconsolidated bottom, emergent, shrub scrub, and forested wetland classes (Cowardin et al. 1979).

This wetland complex supports a high density of amphibians, including the red-legged frog, tailed frog, Cascade torrent salamander, and western red-backed salamander. The patchwork of vegetation provides high quality habitat for big game and neo-tropical migratory birds. Aquatic habitat in the adjacent channel segment of this reach is dominated by low gradient riffles and glides, characterized by a cobble and boulder substrate with limited effective cover and no barriers precluding upstream or downstream migration of fish.

Wetlands in this reach are relatively isolated from human activity but are periodically affected by spill from Swift Dam, which can cause scouring when flows are very high. These periodic stresses alter but do not destroy the wetland habitat.

Beaver Bay Wetlands

This wetland complex covers 36 acres adjacent to the Beaver Bay Campground and the Lewis River Road corridor. While there is hydraulic connection between the wetlands and Yale Lake, studies reveal that water levels actually are maintained by a series of large beaver dams, inflow from a stream, and precipitation. Yale Lake levels showed little correlation with wetland water levels. Wildlife studies revealed that this wetland supports the greatest diversity of birds in addition to numerous species of fish, amphibians, and beaver. Observations of pileated woodpecker and red-legged frog were made in this wetland.

The 40-acre Beaver Bay Campground bounds 2 sides of this wetland, with an unpaved parking area, septic tank, and restrooms on its perimeter. These features are affected by seasonally encroaching wetland water levels. This conflict becomes a management concern during the recreation season, extending from late April through September, when the campground is open. As described in Section 7.0 (Recreation Resources), potential approaches to reducing the conflict between wetland habitat and recreational uses may be to: (1) relocate a portion of the campground away from the wetland, or (2) to develop an

interpretive trail or signage focusing on wildlife and habitat values of the wetland. Recent measures taken by PacifiCorp minimized conflicts between recreation facilities and the wetlands. A small berm has been constructed to prevent the wetland from flooding the parking area.

Frazier Creek Wetlands

Originally created by a beaver dam, this 19-acre wetland has been maintained by a rock gabion dam since 1993. Although the wetland is located on lands owned by a private timber corporation, PacifiCorp entered into a cooperative agreement under which it constructed and maintains the dam. The benefit of this arrangement is that the structure and pond maintain flow to a series of small wetlands located on adjacent PacifiCorp land. These small wetlands are managed under the Merwin Wildlife Habitat Management Program.

The habitat in this wetland offers excellent waterfowl habitat. Breeding and wintering waterfowl use was high, including wood duck and hooded merganser. Wildlife species observed here include the pileated woodpecker, painted turtles, and bullfrogs.

Roads into the area are controlled by locked gates, and no conflicts have been identified between this wetland complex and adjacent land uses. Adjacent lands are second-growth conifer forest. Future timber harvest could affect water quality and habitat.

Swift Wetland

This 10.5-acre wetland is located in the northeastern part of the study area. The drainage of 2 streams was altered by construction of an access road and the Swift No. 1 maintenance area, forming a dike which impounds flow and created the wetland. It currently drains through a standpipe and culvert, discharging to the Swift canal. This mosaic complex includes shrub scrub and forested wetland types.

Wildlife observed include beaver, salamander, red-legged frog and other amphibians, and birds. A small number of elk winter near this wetland. No fish have been observed in this area.

No conflicts have been identified between adjacent land uses and the wetland. The road through the area is gated and is used only by project personnel. The adjacent maintenance yard is isolated from the wetland by an embankment.

IP Wetland

The IP Road along the eastern shore of Yale Lake bisects a 7.3-acre wetland complex. The water level in this wetland historically is controlled by a culvert linking it to Yale Lake; however, during hydrologic studies in 1997, the culvert was observed to be blocked by a beaver dam and other debris. This accounts for the relatively stable water levels that were recorded.

Wildlife species commonly observed in this mixed deciduous wetland include the song sparrow, hooded merganser, belted kingfisher, rufous hummingbird, and various species of woodpecker. Red-legged frogs, Pacific chorus frogs, and other amphibians were identified during field studies. Snags offer high quality bird habitat and nesting habitat for hooded merganser.

While the wetland is bisected by the unpaved IP Road, use conflicts appear limited to firearms target practicing, affecting wildlife use rather than wetland characteristics.

PacifiCorp proposes measures to ensure that water levels are sustained in this wetland habitat through the construction of a water control structure. This will alleviate reliance on the stability of the beaver dam.

8.1.2.2 Floodplains

As part of its program to map flood hazard zones, the Federal Emergency Management Agency (FEMA) has delineated the reservoir and land within approximately 125 feet of much of its western shores as Flood Zone A. These areas are within the 100-year floodplain (Figure 8.1-2). The remainder of the western and eastern shore and all surrounding lands are classified as Zone C, with minimal potential to flood.

Activities within the floodplain are regulated at the local level. In its comprehensive plan, Clark County identifies lands on the eastern shore of Yale Lake and the Lewis River as outside of the floodway and the flood fringe. Project area lands therefore are not subject to development restrictions; however, any proposed development would be reviewed for compliance with county floodplain ordinances (pers. comm., G. Fish, Clark County Department of Community Development, Vancouver, Washington, April 10, 1998). Cowlitz County does not administer any floodplain management programs (pers. comm., J. White, Cowlitz County Planning Department, March 12, 1998).

8.1.3 Compliance with Established Land Use Plans, Policies, and Laws

Section 10(a)(2) of the FPA requires that the FERC consider the extent to which a project is consistent with comprehensive plans for improving, developing, or conserving waterways affected by the project. This section evaluates the consistency of the Yale Project with the comprehensive plans that encompass the North Fork Lewis River basin and have been submitted to FERC. Other resource plans that appear relevant but are not included on the FERC list are addressed in Section 8.1.3.3.

8.1.3.1 FERC Recognized Plans Relevant to the Yale Project

There are 66 plans listed on FERC's January 26, 1996 list of comprehensive plans for the State of Washington. Of the 66 plans, 14 have been identified as relevant to this project and are addressed in this section. The most current versions of these plans were used to prepare this section. The list of relevant plans cited in this section contains only 12 entries because item 3 cites more than 1 plan. The remaining plans on FERC's list are either specific to geographical locations not affected by the Yale Project, do not apply to

existing or relicensing projects, or are not relevant to the Yale Project for the other reasons given in Section 8.1.3.2 below.

1. *Northwest Conservation and Electric Power Plan.* Northwest Power Planning Council. 1991. Portland, Oregon.

   This plan outlines a strategy to ensure that the Pacific Northwest will have an adequate, efficient, economical, and reliable supply of electricity well into the 21st century. The plan acknowledges the wide range of uncertainty with regard to future energy needs, but concludes that the region needs new supplies of electricity now. The plan identifies 4 objectives for obtaining that power in the most cost-effective and environmentally responsible way. The 4 objectives are: (1) conserve electricity in new and existing residences, commercial buildings, industrial processes, and irrigated farming practices; (2) shorten the time needed to bring new resources into the power system to improve flexibility; (3) conduct research to confirm cost and availability of newer technology resources; and (4) adopt regulatory changes and other actions that encourage implementation and improve power system planning.

   With regard to hydropower, the plan recommends making better use of existing resources so future energy demand can be met more inexpensively and the need to build new generating resources can be delayed. (However, the plan does recommend that 150 megawatts of new low-cost hydropower, and 100 megawatts of somewhat more expensive hydropower be developed by the year 2000.) The Yale Project is an existing generating resource and therefore is consistent with the objectives of the plan. Issuance of a new license will contribute to the power supply goals described in the plan. Denial of a license will diminish the available power in the region and increase the need to develop new generating resources.

2. *Columbia River Basin Fish and Wildlife Program.* Northwest Power Planning Council. 1994. Portland, Oregon.

   In accordance with the Northwest Power Act of 1980, this program is designed to "protect, mitigate and enhance fish and wildlife...affected by...[Columbia River Basin hydropower facilities] while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply." The program has set goals for salmon and steelhead, resident fish, and wildlife. The program's recommendations for achieving these goals are numerous and involve implementation of policies as well as actions and plans. Some of the policies, actions, and plans address specific fish or wildlife species, and some address specific subbasins.

   Thirty-one subbasin plans were prepared to identify actions to help specific salmon populations. *The Lewis River Subbasin Plan* (NPPC 1990) describes individual production plans for spring chinook, fall chinook, coho, and chum salmon, and for summer and winter steelhead. The production plans include continuing use of hatcheries, enhancing flows, revegetation, protection and

enhancement of habitat, and trap and haul operations. The program is designed to complement the policies and plans of the fisheries agencies and tribes. To ensure the Yale Project's consistency with the Columbia River Basin Fish and Wildlife Program, fish and wildlife agencies and tribes are being consulted throughout the relicensing process.

3. *State Scenic Rivers System Statute*, Chapter 79.72 RCW. State of Washington. 1977. *Washington State Scenic Rivers Assessment.* Washington State Parks and Recreation Commission. 1988b. Olympia, Washington. *Scenic Rivers Program -Report.* Washington State Parks and Recreation Commission. 1988a. Olympia, Washington.

   No segment of the North Fork Lewis River is listed as part of the State Scenic River System. Although the statute (RCW 79.72) does not preclude listing additional river segments, it establishes certain criteria that must first be met. The first criterion is that a river be "free-flowing without diversions that hinder recreational use." If this remains a criterion for "scenic" classification, the reaches affected by the Yale Project will remain ineligible. This statute therefore is not applicable to the Yale Project at this time.

   The Washington State Scenic Rivers Assessment (September 1988) identifies 18 rivers which the Washington State Parks and Recreation Commission (WSPRC) believes have outstanding characteristics that make them worthy of consideration as additions to the Scenic Rivers System. The Lewis River is included as one of the 18, but only that portion upstream of the backwater of Swift Reservoir to the headwaters. The Yale Project will have no effect on this portion of the North Fork Lewis River.

   The Scenic Rivers Program Report (January 1988) is an explanation of the State Scenic Rivers Program to the State Parks Commissioners. It also includes an explanation of the program's authority and a list of rivers determined to be eligible for submission to the program. That list is the same as the 18 rivers identified in the Washington State Scenic Rivers Assessment, discussed in the previous paragraph.

4. *1987 Strategies for Washington's Wildlife*. Washington State Department of Game. 1986. Olympia, Washington.

   This strategic plan sets goals, identifies problems, recommends solutions, and establishes priorities for wildlife and fish in the State of Washington. Individual wildlife programs describe goals and objectives for big game species, upland game species, waterfowl, furbearers, and nongame wildlife. Individual fisheries programs describe goals and objectives for steelhead, cutthroat and Dolly Varden; lowland lakes trout, alpine lakes, warmwater fisheries; and resident streams and beaver ponds. The goal statements in this plan were written in 1986 and are intended to apply to the following 12 to 15 years, or until roughly 1998 - 2001.

Some of the species addressed in this plan are present in the project vicinity. Current protection measures for the fish resources are addressed by compliance with Article 32 of the existing Yale license. Although no terrestrial resource mitigation is stipulated in the Yale license, PacifiCorp has been working with WDFW since 1989 to develop a Wildlife Habitat Management Plan. The relicensing process includes continued and thorough consultation with the fish and wildlife agencies.

5. *Hydroelectric Project Assessment Guidelines.* Washington State Department of Fisheries. 1987. Olympia, Washington.

The 1987 guidelines were developed to present the policies and explain the management goals of the WDF regarding hydropower development. It provides instructions for conducting studies to gather information necessary to assess the potential impacts of a proposed project on salmon and their habitat. The guidelines call for cooperation with all involved agencies to identify anadromous and resident fish and wildlife issues related to a specific project and steps needed to protect and enhance species of concern. Consultation with WDFW will continue throughout the relicensing process for the Yale Project.

6. *Application of Shoreline Management to Hydroelectric Developments.* Washington State Department of Ecology, Shorelands and Coastal Zone Management Program. 1986. Olympia, Washington. September 1986.

While this document is no longer available from WDOE, PacifiCorp is aware of Washington state coastal zone program requirements. These apply to all activities conducted by federal agencies or by holders of federal permits and licenses if those activities occur in, or may directly affect, land or waters in Washington's 15 coastal counties. The Yale Project is not located in a "Coastal Zone" county, but is located west of the crest of the Cascade Mountains. Therefore, although it is not anticipated that the project will have an effect on the coastal zone, the project must be reviewed by WDOE to determine its consistency with this federal program.

Washington's Coastal Zone Management Program includes the Shoreline Management Act, local government shoreline master programs approved under the Shoreline Management Act, the Washington State Environmental Policy Act (SEPA), the CWA, the Clean Air Act, and the Washington State Energy Facilities Site Evaluation Council (EFSEC) Act. The Yale Project will be consistent with each of these laws. No construction is proposed at this point for the Yale Project; however, should land-disturbing activities within 200 feet of a project shoreline be proposed and included in the FERC license, PacifiCorp will apply to either Clark or Cowlitz County for a Shoreline Substantial Development Permit. Further discussion of each county's policy is presented in Section 8.1.3.3.

7. *A Resource Protection Planning Process Identification of Prehistoric Archaeological Resources in the Lower Columbia Study Unit.* Washington State Department of Community Development, Office of Archaeology and Historic Preservation. 1987a. Olympia, Washington.

This document is a Resource Protection Planning Process study. It reflects current knowledge of the archaeological resources of the study unit. It is one of a series of studies designed to organize the available archaeological data into a consistent thematic account to support development of resource-based planning in the State of Washington. The North Fork Lewis River is in the center of the Lower Columbia Study Unit. The document provides general and somewhat specific cultural resource information about the project vicinity. Section 6.0 of this document summarizes cultural resource information known about the vicinity.

Consultation with the Cowlitz Tribe, the Yakama Indian Nation, and the State Historic Preservation Officer (SHPO) has been undertaken during the relicensing process to define the means by which known cultural sites will be handled, and to ensure compliance with the Resource Protection Planning Process.

8. *Resource Protection Planning Process -- PaleoIndian Study Unit.* Washington State Department of Community Development, Office of Archaeology and Historic Preservation. 1987b. Olympia, Washington.

The PaleoIndian Study Unit is 1 of 14 prehistoric resource study units established to identify, evaluate, and protect archaeological resources throughout the state. This document summarizes current knowledge of the archaeological resources of the PaleoIndian Period (extending from initial human occupation of Washington to an arbitrary terminus of 7,500 years before present). Archaeological finds attributed to the PaleoIndian Period have been found throughout Washington State. Consequently, the Study Unit encompasses the entire state. No PaleoIndian sites are documented in the vicinity of the North Fork Lewis River. The nearest documented site, an "Old Cordilleran Site," is located on the Cispus River in the Cowlitz River Basin.

Consultation with the Cowlitz Tribe, the Yakama Indian Nation, and the SHPO has been undertaken during the relicensing process to define the means by which known and later-discovered cultural sites will be handled, and to ensure compliance with the Resource Protection Planning Process.

The Bureau of Indian Affairs (BIA) has reported that there are no Indian Trust interests in the study area (letter from E. Poe on behalf of Portland Area Director, BIA, to S.A. DeSousa, PacifiCorp, February 23, 1996).

9. *Resource Protection Planning Process -- Study Unit Transportation.* Washington State Department of Community Development, Office of Archaeology and Historic Preservation. 1989.

The Transportation Study Unit is 1 of 18 historic resource study units established to better identify, evaluate, and protect heritage resources throughout the state. This plan identifies transportation resources that are eligible for listing or have been listed on either the State or National Register of Historic Places. The Yale bridge, approximately 2 miles downstream of Yale Dam (outside of the project boundary), is included on the National Register. Inclusion on the National Register does not place restrictions on property owners, although Section 106 of the NHPA of 1966 requires federal agencies to consider the impact of their actions upon National Register listed properties. The continued operation of the Yale Project is not expected to affect the Yale bridge.

10. *State of Washington Natural Heritage Plan: 1993/1995 Update.* Washington State Department of Natural Resources. 1995. Olympia, Washington.

This plan identifies special plants, special animals, terrestrial ecosystems, wetland and aquatic ecosystems, and unique geologic features throughout the state. Each element is given a priority number used by the resource agencies to determine the level of protection the specific element should receive. The plan also contains lists and a map of all existing "natural areas" in Washington. A natural area is defined as "any tract of land or water which supports high quality examples of terrestrial or aquatic ecosystems, habitats and populations of rare or endangered plant or animal species, or unique geologic features, and is managed specifically to protect those examples."

No portion of the Yale Project is located within a designated natural area. Only one TES plant species is known to occur in the project vicinity—the green fruited sedge. There are 26 TES wildlife species either known to occur or which potentially could occur in the project vicinity. Section 5.1 of this document describes the TES plant and wildlife species.

It is not anticipated that the continued operation of the Yale Project will have an adverse effect on any TES species. However, throughout the relicensing process, consultation with DNR, WDFW, and USFWS will be maintained to ensure compliance with this comprehensive plan.

11. *Washington Outdoors: Assessment and Policy Plan, 1995-2001.* Washington State Interagency Committee for Outdoor Recreation. 1995. Tumwater, Washington.

This plan is a component of the SCORP program. It provides an inventory of lands and facilities operated for public recreational use, and it analyzes how well recreation providers are keeping up with demands for recreation resources and opportunities. The plan is used by public land managers in their attempts to supply outdoor recreation diversity in the state. The plan is updated every 5 years. In this update, the IAC conducted no new surveys because it was determined that "data from 1990, in all probability, remains fresh," and "1990 participation projections, to the year 2000, remain accurate."

The 1990-1995 Assessment and Policy Plan forecasts regional demand for specific recreation opportunities between the years 1987 and 2000. The state is divided into 4 geographic regions for the purpose of assessing recreation demand and need, and into 13 planning districts for the purpose of describing recreation supply. The Yale Project lies within Region 2, Planning District 6.

Region 2, which is comprised of Clark, Cowlitz, Klickitat, Skamania, Wahkiakum, Lewis, Mason, Thurston, King, Kitsap, Pierce, and Snohomish counties, is the origin for the majority of the state's recreation demand for all recreation activity categories. With the exception of camping activities, Region 2 also is used as the destination for more recreation demand than any other region. However, many households in Region 2 recreate in other regions to satisfy their demand. Between the years 1987 and 2000, Region 2 is expected to experience significant growth in demand for most types of recreational activities, as illustrated by the following projections:

Activity	Percent Growth
freshwater fishing from a boat	28
freshwater fishing from a dock	24
swimming/wading at beaches	33
lake powerboating	30
lake non-motorized boating	36
visiting interpretive displays	49
day hiking	42
car camping	37
RV camping	38
picnicking	46

A description of existing recreational resources and management in the project vicinity is provided in Section 7.0. This section also describes existing enhancement measures associated with the project.

12. *Washington State Trails Plan: Policy and Action Document.* Washington State Interagency Committee for Outdoor Recreation. 1991. Tumwater, Washington.

This plan is an element of the SCORP that seeks to identify issues surrounding trail-based recreation and proposes solutions in the form of action plans. These action plans are presented as management objectives rather than specific development scenarios. The State Trails Plan does not show any existing trails in the project vicinity, nor does it propose any new trails in this area. The Siouxon Landscape Plan (see item 7 under Section 8.1.3.3 below) states that the DNR maintains the 11-mile Mitchell Peak hiking trail, completed in 1988, in the forested area immediately east of the Yale Project. The Siouxon Plan also states that there are also many non-maintained, "unofficial trails" in that area.

8.1.3.2 FERC Recognized Plans Not Relevant to the Yale Project

Of the 66 plans identified on FERC's January 26, 1996 list of comprehensive plans for the State of Washington, 14 have been identified as relevant to this project and are addressed above. Forty-six plans are specific to geographical locations not affected by the Yale Project, or are outdated and the more current version is also included on FERC's list. These plans are not addressed in this document. The remaining 6 plans (2 included with item 1) on FERC's list either do not apply to existing or relicensed projects, or are not relevant to the Yale Project for the other reasons given below.

1. *Final Environmental Impact Statement (EIS) and Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California Commencing in 1978.* Department of Commerce, National Marine Fisheries Service, Seattle, Washington and Pacific Fishery Management Council, Portland, Oregon. (Also includes amendments to the Plan dated October 1984, October 1986, January 1988, December 1988, December 1990 and December 1993.)

   The preferred action in this EIS is the continued management of the commercial and recreational salmon fisheries off the coast of the western states to achieve optimum yield from the fishery, to conserve the stocks, and to equitably allocate the resource among all domestic fishermen including treaty Indians. The EIS assesses the effects of implementing the management plan. It contains no recommendations for regulation changes and focuses instead on stock allocations. The management objectives described in this document are as follows:

   1. Maintain or increase spawning stock escapement to optimum levels.
   2. Reduce fishery-caused mortality.
   3. Move toward fulfilling Indian treaty obligations (50 percent of the total harvest).
   4. Provide continuing opportunity to harvest salmon.
   5. Maximize poundage yield to the commercial fishery.
   6. Recognize the recreational value of the fishing experience.

   Implementation of this fishery management plan occurs at sea, outside of state boundaries, and contains no provisions for stream or lake habitat protection. Therefore, this ocean fishery management plan is not directly applicable to the Yale Project. The Yale Project has been and will continue to be operated in accordance with the goals and objectives of the Columbia River Basin Fish and Wildlife Program (see above Section 8.1.3.1, Item 2).

2. *Settlement Agreement Pursuant to the September 1, 1983, Order of the U.S. District Court for the District of Oregon in Case No. 68-513. Columbia River Fish Management Plan*. State of Washington. State of Oregon. State of Idaho. Confederated Tribes of the Warm Springs Reservation of Oregon. Confederated Tribes of the Umatilla Indian Reservation. Nez Perce Tribe. Confederated Tribes and Bands of the Yakama Indian Nation. Portland, Oregon. November 1987.

   The Columbia River Fish Management Plan is an agreement entered into by the parties listed above pursuant to the September 1, 1983 Order of the United States District Court for the District of Oregon in the case of United States et al. v. Oregon, Washington et al. (Case No. 68-513). It is stated in the management plan that the agreement shall terminate on December 31, 1998.

   The purpose of the management plan is to "provide a framework within which the parties may exercise their sovereign powers in a coordinated and systematic manner in order to protect, rebuild, and enhance upper Columbia River fish runs while providing harvests for both treaty Indian and non-Indian fisheries." The Plan defines "upper river" as the portion of the Columbia River and its tributaries upstream of Bonneville Dam. It stipulates that tributary harvest and production plans shall be developed for 19 subbasins in this upriver area. The Lewis River is over 60 river miles downstream of Bonneville Dam and is therefore not affected by this management plan.

3. *State Wetlands Integration Strategy*. Washington State Department of Ecology. Shorelands and Water Resources Program. 1994. Olympia, Washington.

   This document analyzes the various wetlands protection programs and laws in Washington State, and itemizes 47 recommendations for government agencies to implement to achieve "a more effective, efficient, and coordinated system to better protect the wetland resources of Washington State." The recommendations consist entirely of actions for government agencies to take to affect a more streamlined and uniform governance of wetland regulations. The document, therefore, does not directly pertain to the Yale Project.

4. *Protected Areas Amendments and Response to Comments.* Northwest Power Planning Council (NPPC). 1988. Document 88-22. Portland, Oregon.

   The NPPC's Protected Areas program does not apply to existing dams or existing hydro projects.

5. *Washington State Hydropower Development/Resource Protection Plan.* Washington State Energy Office. 1992. Olympia, Washington.

   This plan does not apply to existing hydroelectric projects such as Yale. The executive summary of this plan states "This plan applies to new hydropower development at sites that do not have existing hydropower generation. An existing dam that is not used for hydropower generation, but is the proposed site

for hydropower development, is within the scope of this plan. This plan does not apply to facilities or projects that meet either of the following conditions at the time this plan takes effect:

1. Facilities generating power, including facilities undergoing relicensing.
2. Projects where the applicant has completed, at a minimum, the first stage consultation requirements in the FERC licensing process, as defined in FERC Order 533 (18 CFR Parts 4, 16, 375 and 380) or subsequent amendments."

8.1.3.3 Other Relevant Resource Plans

In addition to the comprehensive plans from FERC's list, the following resource plans have been identified as pertinent to the Yale Project. These are the land management plans of the various entities which own and/or manage land in the project vicinity.

1. *Merwin Wildlife Habitat Agreement*. Developed by PacifiCorp pursuant to Article 48 of the Merwin Hydroelectric Project FERC License. FERC Project No. 935. PacifiCorp 1990.

   Project lands in the vicinity of Yale and Saddle dams are a component of PacifiCorp's Merwin Wildlife Habitat Management Area (MWHMA), as shown in Figure 8.1-2. The MWHMA, which encompasses 5,600 acres of land downstream of Yale Dam, fulfills a condition of the Merwin Project license (FERC Project No. 935) for the mitigation and management of wildlife. Yale Project lands within the MWHMA boundary have been managed for the protection and enhancement of natural resource values since 1984. Pockets of land are managed for the following values:

   - Forest health and wildlife habitat (clear-cut and commercial thinning);
   - Old-growth retention;
   - Shrubland management;
   - Wetland management areas;
   - Orchard management at old homestead sites; and
   - Farmland management to provide winter forage for big game.

2. *Clark County 20 Year Comprehensive Growth Management Plan.* Clark County Planning Department. December 1994a.

   Much of the land bordering the eastern shore of Yale Lake (the Clark County side) is owned and managed by DNR (see description of the Siouxon Landscape Plan in item 7 below). The Clark County 20 Year Comprehensive Growth Management Plan designates this undeveloped eastern side of Yale Lake as Tier I Commercial Forest. The goal in this management designation is maintenance of productive forest lands. The area is zoned FR80, which restricts parcel size to a minimum of 80 acres. Continued operation of the Yale Project is not expected to affect this land.

3. *Cowlitz County Comprehensive Plan.* Cowlitz County Planning Department. May 1981.

   Lands within Cowlitz County, along the western side of Yale Lake, are predominantly owned and/or managed by PacifiCorp, BLM, DNR, and the GPNF. The Cowlitz County Comprehensive Plan designates most of the land along the perimeter of the lake as Forestry-Open Space, which permits timber management, recreation, and minimum 20-acre residential parcels. Uses unrelated to timber production are discouraged in Forestry-Open Space areas. The land around the northwestern perimeter of Yale Lake, within the Highway 503 corridor, is designated as Rural Residential 2, suitable for residential development on 2-acre lots. The objective of this designation is to provide a buffer between high intensity uses and low density agricultural and forestry uses.

   Continued operation of the Yale Project will be consistent with the Cowlitz County Comprehensive Plan. Currently, no changes are proposed for project operation, and no additional facilities are proposed. In the event any further development is proposed as a result of the agency consultation process, coordination with Cowlitz and Clark counties will be maintained to ensure consistency with county comprehensive plans.

4. *Skamania County Comprehensive Plan "A."* Skamania County Department of Planning and Community Development. July 1977.

   The Skamania County Comprehensive Plan does not apply to any lands in the project vicinity. It includes only those portions of the county that lie to the south of the Gifford Pinchot National Forest. This is an area approximately 27 miles south of Yale Lake.

5. *Shoreline Management Act*

   Under the state Shoreline Management Act, local governments are required to develop master programs for the regulation of shoreline uses. Program jurisdiction applies to lands within 200 feet of the ordinary high water mark as well as to swamp areas and floodplains. Yale Lake is designated a "Shoreline of Statewide Significance" under this program. Each of the 3 counties in the study area designates the shores of the lake and the Lewis River as Conservancy Environments or Elements.

   Cowlitz County defines Conservancy Environment as shoreline areas endowed with resources which may be harvested and naturally replenished, and other areas which are not suitable for high density human use because of natural parameters such as flooding or unstable soils (Cowlitz County 1977). The objective for conservancy areas, such as the shore of Yale Lake, is to manage those lands with a sustained yield philosophy, and establish suitable areas for non-intensive recreation uses, non-intensive agriculture, and limited intensive public access.

Clark County's definition of the Conservancy Environment is "a shoreline area of sparse, scattered settlements, existing relatively free of urban activity. It is an area that, because of biophysical characteristics, is intolerant of intensive land uses and used primarily for dispersed recreation, timber harvesting on a sustained yield basis, and passive agricultural practices" (Clark County 1974). The Clark County Shoreline Management Plan (SMP) states that large concentrations of intensive recreational use should be discouraged in conservancy areas.

Skamania County's policy for activities within the Conservancy Element is to preserve the aesthetic qualities of the shoreline, to protect wildlife habitat, and to restore damaged features (Skamania County 1986). Management actions should have minimal adverse effect upon the environment.

6. *Gifford Pinchot National Forest Land and Resource Management Plan*. U.S. Department of Agriculture. 1990. Olympia, Washington. 186 pp. and appendices and amendments. *Final Environmental Impact Statement for the Comprehensive Management Plan for Mount St. Helens National Volcanic Monument*. U.S. Department of Agriculture. 1985. Olympia, Washington.

   The 1982 Act creating the Monument (P.L. 97-243) absorbed 300 acres of project land near the northern end of Yale Lake. This parcel is the southernmost portion of the Monument, which encompasses approximately 110,000 acres and is managed by the USFS. The Comprehensive Management Plan for the Monument (Alternative D of the Final Environmental Impact Statement) describes management practices for the area near the Yale Project. This area has been titled the "Cave Basalt/Goat Marsh Management Concept Area." The management prescription is Protection Class 3, which has a goal of allowing natural processes and features to proceed substantially unimpeded by relying on the relative natural resiliency of the landscape. Continued operation of the Yale Project is not expected to affect the ability of the USFS to manage the Monument in accordance with the Comprehensive Management Plan.

7. *Siouxon Landscape Plan Summary*. Washington State Department of Natural Resources, Southwest Region. 1996. Also *Habitat Conservation Plan*. Washington State Department of Natural Resources. September 1997.

   DNR's Habitat Conservation Plan (HCP) is a long-term land management plan authorized under the ESA to conserve threatened and endangered species. This draft plan is a multi-species HCP which covers approximately 1.6 million acres of state trust lands managed by DNR within the range of the northern spotted owl. The plan allows timber harvesting and other management activities to continue while providing for species conservation. The HCP offsets any harm caused to individually listed animals with a plan that promotes conservation of the species as a whole. The HCP stipulates that the Siouxon Landscape Area (adjacent to and south of the Yale project lands - see paragraph below) is to be managed for protection of northern spotted owl nesting, roosting, and foraging (NRF) habitat.

The plan includes guidelines for management activities allowed in NRF habitat areas.

The Siouxon Landscape Area is a 32,000-acre block of state trust land managed by DNR, located adjacent to the Yale Project boundary. It is bounded on the north by Swift Reservoir and on the west by Yale Lake. The majority of the forest is a mixture of 60- to 90-year old stands of Douglas-fir and western hemlock, with some true fir at higher elevations. The Landscape Plan states that an annual timber harvest, not to exceed 600 acres, has been estimated for this area during the next 10 years, but adds that habitat protection for northern spotted owls will cause changes in harvest scheduling. The plan also prescribes management objectives for aquatic systems, cultural and historic sites, wildlife habitat, transportation systems, and recreation. For example, the plan states that special protective measures will be provided for the habitat needs of raptors within 0.25 mile of both Swift Reservoir and Yale Lake. DNR will manage the land within 200 feet of the shoreline by selective partial cutting and salvage operations over an extended time period as provided within the Shoreline Management Act. The land between 200 and 1,300 feet from the shoreline will feature dominant trees among the required Forest Practices reserve trees.

In February 1998, DNR issued a management directive for the Siouxon Landscape area stating that because lands in Yale vicinity are within nesting and roosting areas for spotted owl, management is to be targeted for the conservation of this habitat. Late successional forest management practices will be applied, which are expected to be consistent with those already implemented by PacifiCorp on its adjacent lands. PacifiCorp objectives on the east side of Yale Lake are to maintain a mosaic of forage and cover, retaining older forests to promote growth of larger trees. In summary, continued operation of the Yale Project is not expected to affect DNR's ability to manage the Siouxon area in accordance with the Siouxon Landscape Plan or the HCP.

8. *Integrated Landscape Management for Fish and Wildlife in the Lewis-Kalama River Watershed, WRIA #27, A Pilot Project*. Washington Department of Fish and Wildlife. September 14, 1995.

This integrated plan for managing fish and wildlife in the Lewis-Kalama River Watershed was developed as a cooperative management plan between landowners, the public, and fish and wildlife managers. WDFW's intent in preparing this plan was to change its management approach from a species by species approach to a broader, landscape (ecosystem) approach.

The Lewis-Kalama River Watershed includes 839,010 acres. The North Fork Lewis River is located approximately in the center of this watershed which is bounded on the north by the Cowlitz, Toutle, and Coweeman rivers and Mount St. Helens; on the east by the White Salmon and Klickitat rivers and Mount Adams; on the south by the Wind and Washougal rivers; and on the west by the Columbia River.

The plan identifies priority areas in the watershed where land use changes are needed to achieve the desired future condition for fish and wildlife over the next 20 years. Specific actions are described that will achieve multiple species objectives. Habitat plans were developed which differ from individual species and habitat plans by addressing the needs of the other species, habitats, and recreation.

In summary, the plan provides management objectives for spotted owls, Larch Mountain salamanders, bald eagles, elk winter range, elk forage-cover, bull trout, kokanee salmon, coho salmon, chinook salmon, steelhead, caves, riparian habitat, and snags. The plan also identifies which objectives are not expected to be met in the next 20 years. The plan calls for public landowners to be contacted sometime after January 1996 for their contribution toward meeting the plan objectives. The plan assumes that landowners will cooperate and be willing to partake in the wildlife projects if the incentives are good enough. PacifiCorp is a participant in this plan, and will be in close consultation with WDFW in this regard throughout the relicensing process for the Yale Project.

9. *Lower Lewis River Watershed Analysis.* 1996. Gifford Pinchot National Forest, Mount St. Helens National Monument Ranger District. July 1996.

This watershed analysis describes current and desired future conditions in a 164,145-acre area encompassing 37 subbasins. Subbasins within this plan surround Swift Reservoir and the northern half of Yale Lake. Existing conditions are compared to historic, or reference conditions (100 to 200 years ago). Management recommendations emphasize restoration and monitoring activities. The subbasin encompassing the upper Yale Lake tributaries is not identified as highest priority for any specific restoration or monitoring measures. Recommended actions include cooperative restoration among land owners; verifying ecological inventory data; and combing the watershed analyses for the entire Lewis River drainage.

It is expected that continued operation of the Yale Project will be in compliance with this management plan; the project will contribute significantly to the scientific and management database for the basin.

8.1.3.4 Wetland and Floodplain Policies

Wetlands and floodplains in the study area are subject to the regulations of federal, state, and local jurisdictions. Federal and state guidelines pertain to all project area wetlands, while local jurisdiction applies to floodplains and wetlands within boundary of each county. The following policies and laws apply to the Yale project area:

- Clean Water Act, Sections 404 and 401
- Rivers and Harbors Act of 1899: Section 10
- Hydraulic Project Approval (RCW 75.20) for Projects Constructed in State Waters
- County-administered Plans

Clean Water Act

Protection of wetlands is an objective of the Clean Water Act and is administered by the U.S. Army Corps of Engineers. Under Section 404 of this act, the Corps regulates dredging, filling, excavation, draining, removing vegetation from, or otherwise degrading a wetland or stream in most waters of the U.S. If instream work is proposed as part of the Yale Project enhancement package, it is likely that a 404 permit would be required. If the proposed action is minor, it may qualify for a more streamlined approval process known as Nationwide Permits. Responsibilities for Section 401 of the Clean Water Act are delegated to the WDOE, which regulates the quality, and in some situations, the quantity of water in reaches affected by an action.

Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act regulates activities that would obstruct or alter navigation in the nation's waters. The Corps of Engineers implements Section 10 through the process and criteria applied to individual permits under Section 404 (described above).

Hydraulic Project Approval

The State of Washington regulates activities within the ordinary high water mark of freshwater streams. The objective is to protect fish habitat and fish life. To ensure that projects do not adversely affect fish or their habitat (including wetlands adjacent to flowing waters), the WDFW will apply timing and construction restrictions as conditions to this development permit.

Cowlitz and Clark Counties

Cowlitz County was contacted to identify any floodplain management programs that it administers. It is reported that there is no program currently in effect (pers. comm., J. White, Planning Division Manager, Cowlitz County, Washington, March 12, 1998).

Clark County reviews activities within the floodplain as a component of Shoreline Management Act compliance, and follows the guidelines of its flood control zone ordinance (pers. comm., G. Fish, Clark County Department of Community Development, Vancouver, Washington, April 10, 1998). Additionally, Clark County recently adopted Critical Area ordinances, which are now part of its Growth Management Act Plan. Activities in the Yale area would be examined under 2 components of this ordinance: Geohazards and Habitat Conservation. The first applies to areas where slopes exceed 25 percent and soils are unstable; the second seeks compliance with environmental stewardship objectives.

8.1.4 Existing Measures

As described in Section 8.1.3, PacifiCorp is in compliance with the objectives of most land management guidelines administered by a variety of agencies. PacifiCorp seeks to

preserve uses of project lands for the benefit of the general public and, to the extent possible, for the preservation and enhancement of wildlife habitat. To this end, extensive recreational amenities have been provided (see Section 7.0), and wildlife habitat is actively managed. For example, project lands in the vicinity of Yale Dam are actively managed to benefit wildlife (Figure 8.1-2) pursuant to agreements for the Merwin Project. In addition, PacifiCorp does not grant development easements, permits, or concessions to project lands in keeping with the objective of maximizing public use while retaining the rustic character of the area. Activities occurring on adjacent lands are not within PacifiCorp control; uses are regulated by county and state agencies.

8.2 PROPOSED ENHANCEMENT MEASURES

PacifiCorp examined a variety of issues related to land use, wetlands, and floodplains during the relicensing process. This analysis showed that continued operation of the project would have limited adverse effects on these elements. Enhancement measures to protect and sustain wetlands currently proposed by PacifiCorp include the following:

- Maintenance of the existing water control structure at Frazier Creek wetland;
- Management of the Beaver Bay wetland to minimize encroachment into the buffer or wetland and other disturbances related to the adjacent campground;
- Installation and maintenance of a water control structure at the IP wetland; and
- Establishment of hydrophytic shrubs, as appropriate, along selected sections of wetland shoreline.
- Establishment of buffers along wetland areas in PacifiCorp ownership that meet or exceed State Forest Practices requirements to provide protection from disturbances related to project operations, recreation, or timber harvest.
- Protection of trees and snags in wetland areas used by raptors
- Assessment of the feasibility of revegetating selected portions of the drawdown zone to improve wetland habitat adjacent to Yale Lake.

8.3 AGENCY AND TRIBAL CONSULTATION

Consultation with resource agencies has been an ongoing part of the relicensing effort.

8.3.1 Stage 1 and Stage 2 Consultation Prior to the Draft License Application

No comments pertaining to land use issues were received during Stage 1 and Stage 2 consultation prior to the draft License Application.

8.3.2 Stage 2 Consultation - Comments on the Draft License Application

One observation regarding land use was made by 3 different agencies on the draft License Application. USFWS, WDFW, and WDOE each requested that PacifiCorp land ownership be depicted on the project maps. This information has been added to Figure 8.1-1.

8.4 CONTINUING IMPACTS

The continued operation of the project is not expected to have additional effects on land use, wetlands, or floodplains in the project vicinity. The project will continue to be in compliance with applicable land management plans and policies.

8.5 IMPLEMENTATION, SCHEDULE, AND COSTS

Measures currently proposed are related to sustaining existing wetland habitat. These include water control structures at the IP and Frazier Creek wetland complexes. In combination with wetland vegetation enhancement described in Section 5.0, costs are anticipated to be approximately $100,000 over the term of a new license. While maintenance activities will be ongoing, implementation of new measures will begin in 2001.