Appendix B-4

Terrestrial Wildlife Report
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TERRESTRIAL WILDLIFE REPORT

Pit 3 and 4 Hydroelectric Project License

Hat Creek Ranger District, Lassen National Forest
Shasta Lake Ranger District, Shasta-Trinity National Forest

May 2003

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PROJECT AREA AND MANAGEMENT DIRECTION

Current management direction for Sensitive species can be found in the following documents:

-Forest Service Manual and Handbooks (FSM/H 2670)
-National Forest Management Act (NFMA)
-National Environmental Policy Act (NEPA)
-Lassen National Forest Land and Resource Management Plan (LRMP 1992), as amended in 1994
-Shasta-Trinity Forest Land and Resource Management Plan (LRMP 1995)

Most of the NFSL within the project area are to be managed as Late Seral Reserves (Chalk Mountain), or as riparian reserves. A small portion (around 10%) is under Matrix management. Matrix lands may be managed for multiple uses, but there is an emphasis on maintaining snags and coarse woody debris. This area is on the northeast end of the project area on lands managed by the Lassen.

FOREST PLAN MIS/SPECIES ASSEMBLAGES

The National Forest Management Act (NFMA) directs the Forests to select management indicator species and use them to estimate the effects on wildlife populations. The Forest Service Manual provides direction on the minimum requirements for analysis. These steps include: 1) determine species found within the analysis area; 2) determine if the project complies with Forest Plan direction for the maintenance of viable populations and habitat objectives for MIS; 3) describe treatments needed to achieve objectives; 4) are they any modifications needed to meet the MIS habitat objectives; and 5) propose necessary monitoring to determine if objectives are being met.

MANAGEMENT INDICATOR SPECIES

The Lassen LRMP (1992) identified 14 terrestrial Management Indicator Species (MIS), several of which have been addressed as species with special status. The following table shows the Lassen MIS and special habitats, as identified in the Lassen Forest Plan.

Table 1. Lassen Management Indicator Species

SPECIES	SPECIAL HABITATS
Peregrine falcon	Cliffs
Bald eagle	Late seral forest; and large snags near water
Goshawk	Late seral forest
Spotted owl	Late seral forest and large snags
Mallard	Wetlands
Osprey	Large snags near water
Bufflehead	Snags near water, meadows and wetlands
Pileated woodpecker	Large snags and downed wood
Hairy woodpecker	Snags and downed wood

Deer	Early seral stages, downed wood, hardwoods, meadows and riparian
Pronghorn	Early seral stages, meadows
Black bear	Early and late seral forest; snags and downed wood; hardwood; meadows and riparian
Pine marten	Late seral forest; large snags near water; downed wood and riparian
Gray squirrel	Snags and hardwoods

The first four species have already been addressed as threatened, endangered or sensitive species and won't be discussed further here. Analysis for these species is found in the FEIS or Biological Evaluation.

Several of the species aren't expected to be present in the project area, or affected by the proposal. There is no habitat for pronghorns in the project area. Buffleheads may use the reservoirs in the winter, but do not use the area in the summer. None of the actions would affect suitability of reservoirs to provide winter habitat. Pine marten are not expected to be present in the project area. It is too low in elevation, and dominated by warmer, drier forest types than those preferred by pine marten.

Table 2. MIS considered in this analysis

SPECIES	SPECIAL HABITATS
Mallard	Wetlands
Osprey	Large snags near water
Pileated woodpecker	Large snags and downed wood
Hairy woodpecker	Snags and downed wood
Deer	Early seral stages, hardwoods, meadows and riparian
Black bear	Early and late seral forest; snags and downed wood; hardwood; meadows and riparian
Gray squirrel	Snags and hardwoods

EXISTING CONDITION

Cover types

Table 3. Dominant cover types in the project area (this includes Pit 3, 4 and 5 reaches).

COVER TYPE	PERCENT OF PROJECT AREA
Non-vegetation	37%
Reservoirs	34%
Transmission corridors	2%
Other	1%
Upland vegetation	62%
Douglas-fir or Sierran mixed conifer	34%
Jeffrey pine	8%
Oregon white oak	5%
Ruderal (disturbed, weeds)	4%
Eastside ponderosa pine	3%
Canyon live oak	2%
Jeffrey pine-Oregon white oak	2%

Black oak	1%
Other	3%
Riparian	1%
Torrent sedge or wet herb	<1%
Brickellbrush	<1%
Willow shrub	<1%
White alder	<1%
Black cottonwood	<1%
Oregon ash	<1%
Black oak	<1%

Other minor types (<1%) in the non-vegetation include basalt cliffs, mines and seeps. These three types combined account for about 1% of the project area. Minor upland vegetation cover types include annuals/non-natives, bracken fern, wedgeleaf ceonothus/chapparal, greenleaf manzanita/chaparral, rubber rabbitbrush and ponderosa pine/Sierran mixed conifer dominated by ponderosa pine. These types combined, comprise about 3% of the project area.

Hairy woodpecker

This is a widely distributed species across North America, and is found almost anywhere that forests exist. They roost in cavities at night and feed primarily on wood-boring insects and their larvae, as well as other insects, nuts, seeds and tree sap (Alsop 2001). Nests are excavated in cavities. High habitat capability for this species includes nest trees >17” DBH, > 45’ tall. (USFS 1998). The Lassen Forest Plan lists this species as a common resident of the Forest.

About 45% of the project area is dominated by conifer cover types. Conifer cover types were not well-represented during point count surveys in the spring of 2000, but they did detect this species from one point (PG&E report April 2001). California Partners in Flight did not identify this as a bird species of special concern.

Direct and Indirect Effects. This species is dependent on standing live and dead trees for nesting and foraging habitat. About 45% of the project area is Douglas fir, Sierran mixed conifer or Douglas-fir dominated or ponderosa pine. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable over the project area.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with generally lower potential for habitat for this species.

Habitat for this species would be maintained at current levels across the project area with implementation of the license conditions.

Cumulative effects. Firewood gathering is not permitted in the LSR. About 10% of the project area is within matrix lands and on those lands outside of the Bald Eagle Management Area firewood gathering may occur. Those areas close to open roads may have decreased snag densities but overall the project area will continue to provide habitat for this species.

Mallard

This is a widespread species and can be found almost anywhere shallow freshwater occurs and some reside in salt marshes and bays. This species forages in shallow water, on plant matter, insects, crustaceans and molluscs and they also forage in fields. They nest on the ground among concealing vegetation, most often near water, but may be up to a mile away (Alsop 2001).

This was one of the most common waterfowl species observed during past surveys. Most shorelines of the reservoirs may lack shoreline vegetation, but this species may nest in areas where there is sufficient shoreline or upland vegetation for cover. California Partners in Flight did not identify this as a bird species of special concern. Mallard populations across the U.S. have current breeding populations well above their long-term means and are meeting population objectives (Flather et al, 1999).

Direct and Indirect Effects. Management of water levels in the reservoirs would be similar to what it is currently, and no changes in the quantity of shoreline vegetation or the unmapped wetlands are expected. In the reaches, increasing minimum flows would remove some areas of sedge, but they would be likely to re-establish along the new ordinary high water mark to just below previous densities in a relatively short amount of time (5-10 years). It is expected that there could be a small but negligible loss of habitat over the long term.

Habitat for this species would be maintained at close to current levels across the project area with implementation of the license conditions.

Cumulative Effects. None.

Pileated woodpecker

These are large woodpeckers. Each member of a mated pair excavate several roosting cavities. They bore deep into wood and peel off large strips of bark when foraging for food. They also dig in the ground and in downed logs. They eat ants, beetles and a variety of other insects, acorns, seeds of tree cones etc. They nest in cavities excavated in large live or standing dead trees (Alsop 2001).

About 45% of the project area is dominated by conifer cover types. High habitat capability for this species includes having nest trees >26” DBH, >80’ high. In the area adjacent to the nest tree there should be a 1-2 acres patch of >8 snags/acre, >20” DBH. In

the surrounding 300-acre territory, there should be >3.5 snags/acre greater than 15” DBH to provide high habitat capability (USFS 1998).

The Lassen Forest Plan says that populations on the Forest are unestimated (pg S-2). They also list potential conflicts with management for this species as activities that remove the older age class of forest, remove snags and downed logs or salvage recent mortality. Fuelwood gathering also limits the number of snags where vehicle access is easy (pg 3-45).

There are several records from 1994 to 1998 in the areas around Burney Falls and Arkright Flat. California Partners in Flight did not identify this as a bird species of special concern.

Direct and Indirect Effects. This species is dependent on standing live and dead trees for nesting and foraging habitat. About 45% of the project area is Douglas fir, Sierran mixed conifer or Douglas-fir dominated or ponderosa pine. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable over the project area.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with generally lower potential for habitat for these two species.

Habitat for this species would be maintained at current levels across the project area with implementation of the license conditions.

Cumulative effects. Firewood gathering is not permitted in the LSR. About 10% of the project area is within matrix lands and on those lands outside of the Bald Eagle Management Area firewood gathering may occur. Those areas close to open roads may have decreased snag densities, but overall the project area will continue to provide habitat for this species.

Osprey

Ospreys breed on relatively large bodies of water (rivers, lakes and reservoirs) that contain standing populations of suitable-sized fish. When nesting, ospreys utilize snags or broken-top conifers and often tolerate a greater human presence near their nests than do bald eagles. Ospreys colonized the Lake Britton area in the early 1980’s with no observable effect on bald eagle reproduction. Ospreys migrate out of the area in the winter.

The Lassen Plan indicates that they had about 32 nesting pairs on the Forest in 1994. These nests are found around Lake Britton (in the project area), Lake Almanor, and Eagle

Lake. Surveys in the area in 2000 found three active territories and one inactive territory on Lake Britton. One active and two inactive territories were found downstream. (report April 2001). The active one is on the Pit 5 reach, outside of the project area. Four osprey were seen on 2 plots of the point count surveys for breeding birds. California Partners in Flight did not identify this as a bird species of special concern.

Direct and Indirect Effects. Effects on this species are related to availability of nesting habitat, and prey availability. Some proposed activities would occur in upland forested habitats, but would not remove existing nest trees. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Prey availability would be expected to be similar to that for bald eagles, explained in the DEIS.

There are expected to be no measurable effects on osprey habitat, and numbers should be maintained, or continue to increase over the project area.

Cumulative Effects. None.

Black bear

This omnivorous species utilizes a wide range of habitats. Key elements for high capability habitat include meadow, riparian and montane shrub inclusions, oaks, moderate levels of rotten woody debris, and low road densities. They will forage on berries, fish, grubs, grass, mice, ground squirrels and deer. Bears utilize caves, root-wads, log piles and hollow trees as den sites.

Black bear populations across the Pacific Coast have been steadily increasing since 1975 and are expected to continue to increase over time (Flather et al, 1999). The Lassen Plan identifies this as a fairly common resident and they estimated 500 bears Forest-wide. They are fairly common in the analysis area.

Direct and Indirect Effects. Proposed projects that could occur in upland forested oak or pine habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Because much of the area is managed as Late Seral Reserve, maintenance of coarse woody debris is emphasized. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable over the project area.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with potential for habitat for this species. Prescribed burning would reduce habitat for this species over the short-term, but would stimulate new growth for cover and foraging habitat over the long-term.

Changes in minimum river flows could result in a short-term decrease in riparian shrub habitats, but over the long-term they would be likely to re-establish along the new ordinary high water mark in a relatively short amount of time (5-10 years).

Overall, these proposals will result in little change in habitat for black bears over the long-term.

Cumulative Effects. None.

Western gray squirrel

The gray squirrel is a tree dweller, nesting in cavities or building nests twenty or more feet off the ground. They are most active during the daylight hours (S-T website). This species is dependent on fungi and seed-producing plants, particularly oaks and pines. This species is restricted to lower elevations as deep snows hamper its foraging abilities. Large (>24" DBH) mixed conifer and oak dominated ecotypes are the preferred habitat (USFS 1998). About 56% of the project area has upland cover types that include oak and/or pine.

The Lassen Plan states that there are abundant populations on the Forest. Opportunities exist to improve habitat for this species by manipulating young stands of hardwoods to produce older age classes, by protecting oak stands during timber harvest activities, and by regenerating older oak stands through timber management and burning.

Direct and Indirect Effects. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Proposed projects that could occur in upland forested oak or pine habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable over the project area.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with potential for habitat for this species. Prescribed burning would reduce habitat for this species over the short-term. However, this should not affect populations, as the trend in habitats is to more mature stands that favor this species.

Habitat for this species would be maintained at current levels across the project area with implementation of the license conditions.

Cumulative Effects. None.

Deer

The project lies adjacent to the area identified by CDFG as winter range for the Lake Britton deer herd. This herd is part of the McCloud Flats deer population, a management

planning unit that includes the summer range of at least nine deer herds. Rocky Mountain deer (*Odocoileus hemionus hemionus*) and black-tailed deer (*O. h. columbianus*) inhabit the planning area. Migration studies indicate that summer and winter ranges overlap and that the deer traditionally intermingle throughout the higher-elevation summer ranges. (PG&E report April 2001).

There were few deer in the management planning unit area at the turn of the last century. The number of deer increased in the mid-1930's and continued to increase into the early 1960's. This was followed by a significant decline thru the mid 1970's. The deer population then increased until 1981 and declined; the estimated size of the Lake Britton herd at that time was 3,000 animals (CDFG 1983). The goal for this herd at that time was to increase this number by 5% through summer range habitat improvement.

Deer have experienced a significant decline in the past decade. Current populations are felt to be about 25% of their populations in the mid-1980's. Since the winter of 1992-3, some recovery has taken place (Lassen Monitoring and Evaluation Report, 2000).

The Lassen Plan identifies this species as abundant and estimates that there are 49,000 deer Forest-wide. Of the 200,000 acres of winter range on the Forest, about 53,000 acres are suitable for treatment to increase carrying capacity. Most of this is in wedgeleaf ceonothus cover types.

Direct and Indirect Effects. About 55% of the area is in oak or pine vegetation series. Proposed projects that could occur in upland forested oak or pine habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with potential for habitat for this species. Prescribed burning would increase browse availability on winter range and benefit this species. However, the overall trend in habitats is to more mature stands.

Cumulative Effects. None.

WILDLIFE ASSEMBLAGES

The Shasta-Trinity LRMP used wildlife assemblages for management indicators. The S-T developed direction to address MIS at the project level. These include 1) determine which habitat assemblages are present in the project area; 2) analyze which of the assemblages present would be affected by the project; 3) review MIS within those assemblages affected; 4) develop assessment objectives; 5) review this species list for the selection of a MIS that best represents effects of the action; and 5) analyze possible MIS responses to management actions.

The assemblages from the Plan are discussed below. The analysis should be conducted according to the level of risk associated with the proposal. The major issue associated with the license conditions for the re-licensing is related to changes in flow. As a result, more emphasis will be placed on the riparian and aquatic assemblages and species.

Riparian Wildlife Assemblage

The riparian assemblage represents species that use the terrestrial vegetation of the riparian zone. Riparian vegetation is dependent on a high water table. Riparian areas have a high diversity of plant and wildlife species. Many wildlife species are dependent on this habitat type and adjacent vegetation. With the dense canopy providing cover, shade and cooler temperatures, riparian forests provide corridors, connective habitat, and migration routes. Some species represented by this wildlife assemblage are; willow flycatcher and fisher. The S-T attempted to determine population trends for the willow flycatcher using California breeding bird data. However, breeding bird surveys do not adequately address this species and results are not reliable.

Increasing minimum flows to levels recommended by agencies could remove small amounts of alder and willow. However, they would be likely to re-establish along the new ordinary high water mark in a relatively short period of time (5-10 years). Information suggests that there could be a 10% decrease at 600 cfs, however the recommended flow change is 400/450 cfs. As a result, the temporary loss of habitat is expected to be less than 10%. There could be a short-term loss of habitat but would be expected to return to existing conditions within a few years.

Direct and Indirect Effects. Willow flycatcher was analyzed as a sensitive species, in the Biological Evaluation. Information about this species life history and habitat preference used for that analysis is provided in Appendix A of the BE. That analysis found that there would not be any impact on the one breeding site that was found to be occupied in recent surveys. This site is above Lake Britton and would not be affected by changes in flows. Otherwise there would be a short-term decrease in willow/alder habitats along the river reaches as a result of increased flows.

Other conditions include some recreational use management in the Lake Britton dispersed use area. This is the area potentially used as breeding habitat in 2000. These

include a boat launch area (already disturbed), closure of a parking area and development of an interpretive drive loop road (using existing road). Loss of habitat is not an issue with these proposals.

Habitat for this species would be maintained at current levels across the project area over the long-term, with implementation of the license conditions.

Cumulative Effects. The potential for nest parasitism by cowbirds is addressed in the BE.

Aquatic Wildlife Assemblage

These are large reservoirs, lakes, rivers and streams. Aquatic dependent wildlife need good water quantity and quality, riparian and forested cover, fish or aquatic insects, and large woody debris. Some species in this assemblage are western pond turtle and bald eagle.

The project area supports two small wetland habitats that could be used for nesting, wintering and staging by waterfowl and other waterbirds. These habitats are on the shoreline of Lake Britton (PG&E report April 2001).

Management of water levels in the reservoirs would be similar to what it is currently, and no changes in the quantity of shoreline vegetation or the unmapped wetlands are expected. In the reaches, increasing minimum flows would remove some areas of sedge, but they would be likely to re-establish along the new ordinary high water mark in a relatively short amount of time. It is expected that there would be no net loss over the long term.

Bald eagles and northwestern pond turtles have both been previously analyzed. The northwestern pond turtle was analyzed as a sensitive species, in the Biological Evaluation. Information about this species life history and habitat preference used for that analysis is provided in Appendix A of the BE. That analysis found that during the first year, eggs or hatchlings could be vulnerable to trampling, during the second summer the young turtles move down into the reservoirs or ponded areas of the river and could be vulnerable to predation (bullfrogs and bass). However, changes in flow conditions is not expected to be an issue: reservoir habitats would not change; ponded areas in the river reaches would be somewhat deeper, but still suitable; and small amounts of new habitat could be created in shallows.

Habitat for this species would be maintained at close to current levels across the project area with implementation of the license conditions.

Late Seral Stage Wildlife Assemblage

The late seral stages are important to wildlife for cover, thermal cover, large trees for nesting, large snags and downed logs, vertical diversity, older over-mature habitat, etc. Some species represented in this assemblage are northern spotted owl, goshawk and

fisher. The S-T attempted to determine population trends for the northern goshawk using California breeding bird data. However, breeding bird surveys to not adequately address this species and results are not reliable.

About 45% of the project area is Douglas fir, Sierran mixed conifer or Douglas-fir dominated or ponderosa pine. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would not affect the stands seral stage or structure.

Fishers, northern spotted owls and goshawks have all been analyzed in other documents. The goshawk would serve as the best indicator as part of the project area contains suitable habitat, and there is a known nest territory adjacent to the project area. The goshawk was analyzed as a sensitive species, in the Biological Evaluation. Information about this species life history and habitat preference used for that analysis is provided in Appendix A of the BE.

Openings and early seral stage Wildlife Assemblage

Meadows, shrublands and early forest seral stages provide diversity within the forest landscape. The openings provide forage areas for some big game species and habitat for small birds and mammals. Some species represented with assemblage are song sparrow, California vole and deer. The S-T attempted to determine population trends for the song sparrow using California breeding bird data. This data suggests a slight decrease in populations from 1966 to 2000 but the data is of moderate precision and may not provide valid results.

There are no projects on the S-T portion of the project area that would affect or create early-seral habitats. There will be no further analysis for this assemblage.

Multi-habitat Wildlife Assemblage

Some wildlife species depend upon a variety of vegetated habitats, seral stages, and special habitat components. Their needs may vary from winter to summer, from night to day or during breeding season. Some harvest species are represented in this multi-habitat assemblage; black bear, mule deer, elk and turkey. The S-T attempted to determine population trends for the wild turkey using California breeding bird data. However, breeding bird surveys to not adequately address this species and results are not reliable.

Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would not affect the stands seral stage or structure. There are no projects on the S-T portion of the project

area that would affect or create early-seral habitats. Because both black bear and mule deer were discussed as MIS for the Lassen, they will not reanalyzed here.

Snag and Down Log Wildlife Assemblage

Snags and downed logs, components of decadence, are requirements for many wildlife species. Some species represented by this assemblage are; pileated woodpecker, black bear, western screech owl, pygmy owl, saw-whet owl and tree swallow. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized.

Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from the other projects would be limited to small areas of tree removal and would be unmeasurable.

Effects on pileated woodpecker and black bear were addressed above, as MIS for the Lassen. The will not be reanalyzed here.

Hardwood Wildlife Assemblage

Hardwoods are found throughout the Forests either in pure stands or as individual trees in conifer forest types. Hardwoods have a high value to wildlife. Wildlife use hardwoods for forage, nesting and shelter. Acorn production from the oaks is especially important as a food source. One species represented by this assemblage is the acorn woodpecker. The S-T attempted to determine population trends for the acorn woodpecker using California breeding bird data. This data suggests a slight increase in populations from 1966 to 2000 but the data is of moderate precision and may not provide valid results.

Proposed projects that could occur in upland forested habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from the other projects would be limited to small areas of tree removal and would be unmeasurable. There are no projects on the S-T portion of the project area that would create early-seral habitats. Because most of the S-T part of the project area is in Late Seral Reserve, there is an emphasis on retention of large trees, snags and coarse woody debris.

Acorn woodpecker. This species is a common, yearround resident below 6900 feet in California in hardwood and hardwood-conifer habitats. They require stands with large oaks and snags. They feed mostly on acorns, flying insects and sap. They live in communal groups of 2-16 (CWHR 1982).

Direct and Indirect Effects. These species are dependent on standing live and dead trees for nesting and foraging habitat. About 55% of the project area is in oak or pine cover types. Because much of the area is managed as Late Seral Reserve, maintenance of large trees and snags is emphasized. Proposed projects that could occur in upland forested

habitats include trail, road, bridge, recreation site construction or reconstruction, and upland vegetation management. Effects from these projects would be limited to small areas of tree removal and would be unmeasurable over the project area.

Prescribed burning may occur in Oregon white oak series, Jeffrey pine series and chaparral (wedgeleaf ceanothus and greenleaf manzantia series); types with generally lower potential for habitat for this species.

Cumulative effects. Firewood gathering is not permitted on the lands managed by the S-T as they are in the LSR.

Chaparral Wildlife Assemblage

Chaparral is the general name given to a diverse combination of shrubs that provide habitat for many wildlife species. Chaparral is maintained as a shrubland through time. It is also included within the early seral stage category. Many rodents inhabit chaparral, and deer and other herbivores find forage here. Chaparral can vary in elevation, and can provide winter range, summer range, escape cover and fawning areas for deer. The shrubs provide flowers, seeds, and leaves for birds in addition to providing cover and nest sites. Some species represented by this assemblage are green-tailed towhee and wrentit. The S-T attempted to determine population trends for the green-tailed towhee using California breeding bird data. This data suggests a slight increase in populations from 1966 to 2000 but the data is of moderate precision and may not provide valid results.

There are no projects on the S-T portion of the project area that would affect or create early-seral habitats. There will be no further analysis for this assemblage.

Cliffs, Caves, Talus and Rock Outcrops Wildlife Assemblage

Cliffs, caves, talus and rock outcrops are geologic features that provide unique habitat for wildlife. These features provide nesting, denning and shelter. Because of rough, broken terrain and less vegetation, these features are normally protected from change. Some species represented by this assemblage are peregrine falcon and Townsends big-eared bat. The DEIS says they mapped 39 acres of basalt cliff in the project area.

There would be no modification of cliff or rock outcrops. Effects on associated species would be tied to other factors such as disturbance. Both the peregrine falcon and Townsend's big-eared bat were analyzed in the Biological Evaluation as sensitive species.

Impacts to MIS

The project will not adversely impact Lassen MIS or S-T MIS and habitat assemblages. Potential impacts to MIS would be minimized through adherence to the Land and Habitat Management Plan that is part of the license conditions. This Plan includes direction for the monitoring of northwestern pond turtle populations, bald eagles, and peregrine

falcons, installation of a structure to address concerns for Townsend's big-eared bat, and preparation of a Biological Evaluation when new project features may affect a sensitive species (several of which are also MIS).

It is difficult to relate population trends to habitat changes at the project level. There are many factors that contribute to population changes, including predation, yearly weather variation, disease, changes on other seasonal use areas outside of the project area etc. For the most part, the species under consideration are adaptable and would not be measurably affected by the proposed changes. Changes in upland habitats are primarily associated with selective tree removal (trails, hazard tree removal etc). The proposed increases in flow are closer to, but still well below the historic flow regimes. While there could be some short-term loss of habitat as a result of inudation, over the long-term the riparian and aquatic species should be benefited.

OTHER SPECIES

In 1994, the BLM and FS adopted standards and guidelines for the management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl, commonly known as the Northwest Forest Plan. Standards and guidelines were developed for other species, because of rarity or lack of information about them. The standards and guidelines are known as Survey and Manage and Protection Buffers. Survey and Manage species include terrestrial molluscs. Protection Buffer species include several bat species.

TERRESTRIAL MOLLUSCS

Terrestrial mollusc surveys were done when rainfall/wetness and temperature criteria were met, during the fall of 1999, spring 2000 and fall 2000. Site selection was based on the diversity of terrestrial molluscs identified during habitat mapping surveys and the following criteria: evidence of moisture, including seeps and springs and lush vegetation; decaying wood; deciduous trees; mossy talus/rocks; and shade.

Species composition of terrestrial molluscs in the spring and seep areas was consistent for all river reaches, even though seeps and springs were isolated from one another.

Oregon shoulderband *(Helminthoglypta hertleini*)

Habitat is rocky areas including talus deposits but it is not necessarily restricted to these areas. It is suspected to be found within its range wherever permanent ground cover and/or moisture is available which may include rock fissures or large woody debris. The species is also adapted to somewhat xeric conditions during a portion of the year (Bown, McCaffrey and Madsen, 1998). Known locations include Siskiyou County, California and north up to Douglas County, Oregon (Burke et al, 1999). This species was not found during surveys for this project.

Klamath shoulderband *(Helminthoglypta talmadgei)*

On south-facing slopes this snail is usually associated with rock talus. Proximity to water and partial shading by trees and shrubs may be needed to moderate temperatures and reduce evaporative loss within rock talus. On north-facing slopes, this snail can live on the forest floor away from streams, does not seem to need rock talus, and finds shelter under woody debris, moss and leaf mold. The availability of herbaceous plants that are accepted as food may limit the distribution and abundance of this species (Burke et al, 1999).

This species of snail was found during surveys in the project area and was generally found in talus and drier areas. They were not found in the upper project but were found in the vicinity of the Pit 4 Powerhouse and Pit 5 reach. Five of the 6 locations where this species was found were on the south side of the river. All of the sites are outside of the analysis area, so there are no known sites within the analysis area.

Siskiyou sideband *(Monadenia chaceana)*

The draft Terrestrial mollusk Survey Protocol describes the range of this snail as Siskiyou County, CA. It may be found in rocky areas, talus deposits and associated riparian areas especially in shrubby areas that indicate more moisture. It can be in or near, but is not restricted to, riparian areas. Any areas that contain moist, shaded surfaces are preferred for daily refuges (Madsen, Bown and McCaffrey, 1998). This species was not found during surveys. According to Furnish et al (1997) this species is not expected on the affected administrative units or Shasta County. This species will not be analyzed further.

Shasta sideband (*Monadenia troglodytes troglodytes)*

M. troglodytes is fairly common in a limited area in Shasta County and is strongly associated with limestone terrain. The range of both subspecies lies within the easternmost portion of the Klamath Mountains physiographic province of northwest California. Limestone substrate, which is a calcium source for molluscs, is considered to be the major limiting factor (Roth 1981). According to the Geological Report for the project area (Pfeiffer, 2001), limestone is not found in the project area, and this species won't be discussed further.

Wintu sideband *(Monadenia troglodytes wintu)*

M. troglodytes is fairly common in a limited area in Shasta County and is strongly associated with limestone terrain. The range of both subspecies lies within the easternmost portion of the Klamath Mountains physiographic province of northwest California. Limestone substrate, which is a calcium source for molluscs, is considered to be the major limiting factor (Roth 1981). According to the Geological Report for the project area (Pfeiffer, 2001), limestone is not found in the project area, and this species won't be discussed further.

Shasta chaparral *(Trilobopsis roperi)*

This species has a restricted distribution around Shasta Lake. This species is described as endemic to Shasta County, CA. It is associated with (within 100 meters) lightly to deeply shaded limestone rock slides, draws or caves with a cover of shrubs or oak (Madsen, Brown and McCaffrey, 1998 and Furnish et al, 1997). This species was not found during surveys. According to the Geological Report for the project area (Pfeiffer, 2001), limestone is not found in the project area, and this species won't be discussed further.

Tehama chaparral *(Trilobopsis tehamana)*

This species is described as being endemic to Tehama, Butte and Siskiyou counties. It is usually associated with limestone rock slides and has also been found under leaf litter and woody debris within 100 meters of limestone outcrops (Brown, McCaffrey and Madsen, 1998). This species was not found during surveys. According to the Geological Report

for the project area (Pfeiffer, 2001), limestone is not found in the project area, and this species won't be discussed further.

Pressley hesparian snail *(Vespericola pressleyi)*

The range for this species has been identified as a small area in northern Trinity County, CA, up to 3,000 feet elevation. Habitat is described as forest of conifer and/or hardwood trees in permanently damp areas within 200 meters of seeps, springs, and stable streams (Madsen, Brown and McCaffrey, 1998). This species was not found during project surveys and effects won't be considered further.

Shasta Hesperian snail *(Vestpericola shasta)*

This species inhabits damp ground at the margins of streams where it can find cover under loose rocks, woody debris, or decaying leaves (Burke et al, 1999).

This snail was very common and was found during the habitat mapping surveys and the terrestrial mollusc surveys. It was generally associated with moist habitats around springs, seeps and tributaries, and was often abundant where found. They were found on or under wood, rocks and leaves. *Vespericola* are known to have a high affinity for water, and one live *V. shasta* was found in the main channel of the Pit River attached to substrate under about 6" of water.

Hoko snail (*Vertigo* n. sp.)

This species is known from only 2 sites on the Hoko River in the northwestern part of the Olympic Mountains. The project area is well outside of the range for this species and won't be considered further.

Species Management

Survey and Manage species are put into categories based on species rarity and other characteristics. Category A species are defined as rare species, where pre-disturbance surveys are practical. Management for these species includes 1) management of all known sites; 2) pre-disturbance surveys; and 3) strategic surveys. Category D is to 1) manage high priority sites; and 2) complete strategic sites. Category E species are rare species. Management is to 1) manage all known sites and 2) complete strategic surveys.

Table 4. Species Known or potentially present and Category

SPECIES	CATEGORY
Shasta Hesperian snail **Vespericola shasta**	A
Klamath shoulderband snail **Helminthoglypta talmadgei**	D*
Oregon shoulderband **Helminthoglypta hertleini**	E*

* updated in 2001 Annual Report

For those species with known sites in the project area (Vs), the appropriate action would be protection of the sites. These may be relatively small sites, on the order of tens of acres. Pre-disturbance surveys are also needed. These two criteria will be added to the Wildlife Plan, which is part of the LHMP.

Effects to Terrestrial Molluscs

Vespericola shasta has a high affinity for water. The known sites for this species include moist habitats around seeps or springs, and along perennial tributary channels. They were observed less often along the margins of the Pit River and a few were observed around the margins of Lake Britton. No changes in water levels in Britton Lake or Pit 4 reservoir are expected, and the known sites along reservoir shoreline would not be affected.

There are a few known sites located along the river that could potentially be inudated at higher flows. However, these higher flows would more closely fit the conditions to which these species are adapted. Flow increases could result in a 4-8” change in stage height, although it varies by site. Surveys found one snail in the main channel of the river, so inudation does not preclude use or cause mortality. By increasing the water surface elevation there is a net reduction in the amount of change associated with seasonal fluctuations and would provide a more stable environment over the long-term.

Most of the sites are around seeps and springs and along perennial tributaries. Many of the springs in the Pit 3 reach are associated with fault zones, while the springs in the Pit 4 reach are associated with terraces. Most of these terraces are too high to be inudated even by flood flows that occur in the study reach (R2 Resource Consultants, 2001). These upland sites are not expected to be affected by changes in flows.

There are other license conditions that could affect habitat. A review of sites found during surveys (Vs) shows that three sites could potentially be affected by prescribed burning; replacing the bridge at Rock Creek and a river access trail are adjacent to known Vs sites; there are known Vs sites near Ruling Creek dispersed site; and the trail from Deep Creek to Oak Flat runs adjacent to known sites. These and other projects will need to be reviewed before project implementation, and measures taken to protect these known sites. The Ht sites are outside of the federal lands on Pit 3 and 4 reaches.

Both coarse woody debris and rocky areas provide cool, moist sites for these species. Because most of the project area lies in Late Seral Reserve or riparian reserves, retention of coarse woody debris is emphasized. Rock talus slopes would not be impacted by this project. These habitat components will be retained across the project area.

Direction has been added for the protection of known sites, and the use of pre-disturbance surveys for those species requiring them. PG&E has documented the occurrence of one of the S&M terrestrial molluscs in the project area. Since these sites could be affected by a variety of activities, it is recommended that measures be taken to protect these sites. At a minimum, these sites should be entered into a project GIS data base that would allow

PG&E to map and track the occurrences of these species in order to assist in evaluating plans for project activities.

PROTECTION BUFFER SPECIES

The NW Forest Plan also includes protection buffer species. These include fringed myotis, silver-haired bat, long-eared myotis and long-legged myotis. Information on these species has been provided below. New management recommendations under the NW Forest Plan are intended to provide additional protection for roost sites. The direction is that Agencies will determine if each cave, abandoned mine, abandoned wooden bridge and abandoned building that may be affected by actions warrant management as an occupied bat site.

Surveys were done in the summer and fall of 2000 to determine species of bats present in the project area, compare summer to fall to identify local reproductive populations and those that may be migrating, compare bat activity over water to river margins, activity below dams and to survey man-made facilities for use. Species information and survey results are presented below.

Fringed myotis

Fringed myotis occurs in a wide variety of habitats from desert-scrub to fir-pine associations. Oak and pinyon woodlands appear to be the most commonly used vegetative associations. Roost sites may be in caves, mines and buildings (Harvey et al, 1999). Surveys in the analysis area documented two locations (Pierson et al, 2001). One was the capture of a lactating female at Bush Bar in July. The other was an acoustic record at Pit 4 dam in September. Based on these results, they suggest that this species is rare in the area.

Silver-haired bat

The silver-haired bat is a widespread species and uses a variety of habitats. Day roosts include tree bark, woodpecker cavities, bird nests and buildings. They hibernate in trees, buildings, rock crevices and similar protected shelters (Harvey et al, 1999). This species was caught in nets in a couple of locations during surveys; the river below Pit 4 dam and the river at Bush Bar (Pierson et al, 2001). In addition, there were 118 acoustic detections. These records occurred across all habitat classes.

Long-eared myotis

This species occurs in a variety of habitats over its range in North America, but mostly in forested areas. Where suitable roosting sites are available, this species is also found in semiarid shrublands, sage, chaparral, and agricultural areas. Daytime roosts are known to

include abandoned buildings, hollow trees, loose slabs of bark, timbers of unused railroad trestles, caves and mines, fissures of cliffs, and sink holes (Harvey et al, 1999).

Surveys in the analysis area (Pierson et al, 2001) captured one post-lactating female on the river below Pit 4 Dam. They also had 125 acoustic records from 44 sites. About 42% of the records were from forested areas, and another 36% in riparian areas. Only 14% were along the river and 6% along lakeshores. This is consistent with results from other studies where this species foraged primarily in the forest and around riparian vegetation along the river edge for only a short time early in the evening (in Pierson et al, 2001).

Long-legged myotis

This species primarily inhabits forested mountain regions, where it roosts in trees, rock crevices, cracks and crevices in stream banks, and in buildings. It may also be found in streamside and arid habitats in some areas (Harvey et al, 1999).

The only records for this species in the survey (Pierson et al, 2001) were four individuals observed at two night roost sites, one at the Rock Creek Tunnel crossing and three at Pit 5 Dam. The capture of a lactating and post-lactating female indicates that reproduction is occurring in the drainage. However, because they cannot be reliably distinguished by acoustic surveys, no attempt was made to assess abundance.

Effects analysis

Installation of a gate on Pit 4 tunnel opening will maintain suitability of that structure for Townsends and other species. FERC also recommends enclosing an open stairway to exclude Yuma and long-legged bats from accessing an upper enclosed room at the Pit 5 dam. They also recommend sealing slots in a cabinet to exclude Yuma myotis.

There would be very little modification of forested stands. Because much of the area is in Late Seral Reserve or riparian reserve, the retention of large trees, and snags are emphasized. Bark fissures and tree cavities will continue to provide roosting habitat across the project area. There is no modification of rock outcrops/cliffs proposed and these features will continue to provide roosting habitat. This, in addition to the above mitigation for man-made features in the project area, would reduce the potential for effect to these four species. The project area should continue to provide suitable habitat for each of the species.

LANDBIRDS

Yellow-breasted chat and yellow warbler are both PIF priority breeding bird surveys. In addition, the bank swallow is addressed because of concerns about colonies along the shores of Lake Britton.

Bank swallow

The bank swallow occurs as a breeding species in California in widely distributed nesting colonies in alluvial soils along rivers, streams, lakes, and ocean coasts. The bank swallow is largely found in riparian ecosystems, particularly rivers. Nesting colonies are located in vertical banks or bluffs in friable soils, and these colonies can support dozens to thousands of nesting birds. Some colonies utilize man-made sites such as sand and gravel quarries, road cuts, and construction sites and bank swallows are relatively tolerant of human activity. Nesting habitat is particularly prone to erosion, and is also affected by flood control and bank protection projects. Banks used for nesting should be at least one meter high to deter predators, and some erosion is almost always ongoing (California PIF 2002).

Bank swallows migrate into northern California in late April and early May. Peak activity at nesting colonies occurs from approximately mid-May through mid-June. In northeastern California, bank swallows typically vacate nest colonies by late July.

The major breeding population is confined to the Sacramento and Feather rivers and their major tributaries (PG&E draft April 2001). However, other relatively large breeding populations have been found in other locations, including the Pit River and the Hat Creek and Lake Britton areas. Nesting colonies are ephemeral which affects the distribution as sites become inactive as habitat conditions change (California PIF 2002).

Geomorphology studies found about 6.6 acres of potential bank swallow habitat around Lake Britton (R2 Resource Consultants, 2001). Eight active nesting colony complexes were found along the shore of Lake Britton during surveys in spring 1999-2000 (PG&E report April 2001). The existing bank swallow colonies are associated with weak, unconsolidated layers formed in diatomite and fluvial deposits. The size of these colonies ranged from approximately 30 to over 2,000 nesting burrows. Counts of swallows flying hear these colonies ranged from 3 to over 200 individuals belonging to the largest colony. No attempt was made to determine what proportion of burrows is active.

Yellow warbler (PIF)

Yellow warblers breed in a variety of habitats, but occur primarily on riparian deciduous woodlands and shrub habitats. In northern California, breeding density studies showed that yellow warbler abundance was positively correlated with width of riparian habitats, percent willow cover, shrub height, and Oregon ash cover, while negative correlations were found for slope, tree DBH and big-leaf maple over (Heath 2000). Destruction of

riparian habitats in lowland portions of their range and brown-headed cowbird nest parasitism have been blamed for population declines (PG&E report April 2001).

Point count surveys in the spring of 2000 found this species to be one of the most common species overall. They were detected at all stations (PG&E report April 2001).

Yellow-breasted chat (PIF)

In California, chats require dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground and the borders of small ponds. Some taller trees are required for song perches. Based on expert opinion (Ca PIF 2002), this species was listed as "everywhere" in Shasta County. Flood control and river channelization may eliminate early successional riparian habitat that chats use for breeding.

Point count surveys in the spring of 2000 found they were fairly common, seen at four stations and throughout all three river reaches (PG&E report April 2001). California Partners in Flight did identify this as a bird species of special concern (third priority category).

Effects Analysis

Bank swallows

Management of water levels at Lake Britton will continue as it is currently. Levels fluctuate on a daily and weekly basis, with a drawdown of 3 to 7 feet from Monday through Friday, and refilling on weekends. There is a little variability, especially during hot weather when demand for electricity is high. Reservoir fluctuation, wave action from wind and boats, and naturally soft friable soils may affect the stability of the banks where colonies are located. These same actions could create new nesting habitat. The LHMP includes a requirement for monitoring of bank swallow colonies around Lake Britton at five-year intervals.

Yellow warblers and yellow-breasted chats

Both species are associated with riparian forest and shrub habitats. Increasing minimum flows to levels recommended by agencies could remove small amounts of alder and willow. However, they would be likely to re-establish along the new ordinary high water mark in a relatively short period of time (5-10 years). Information suggests that there could be a 10% decrease at 600 cfs, however the recommended flow change is 400/450 cfs. As a result, the temporary loss of habitat is expected to be less than 10%. There could be a short-term loss of habitat but would be expected to return to existing conditions within a few years. FERC has recommended point count surveys to monitor changes over time. This, in combination with vegetation monitoring will provide information on habitat and population trends after a change in flow.

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