



6.0 VEGETATION AND WILDLIFE

Vegetation

Several natural vegetation communities occur within the Paradise study area, including chaparral, non-native grassland, riparian woodland, Great Valley cottonwood riparian forest, foothill woodland, digger pine - oak woodland, Ponderosa pine forest, and northern hardpan vernal pool, all of which are described below.

- **Chaparral.** The chaparral or sclerophyllous woodland is an association of tall, evergreen, woody shrubs which dominates many sites within the Paradise region that are open and dry or in various stages of a post-burn succession. Although characterized as a brushland, chaparral formations are often interspersed with grasses and scattered trees and thus integrate with the other vegetation communities. The chaparral community is often composed of locally dominant species of shrubs along with an admixture of many other species. The dominant shrubs of typical communities are toyon (*Heteromeles arbutifolia*), several manzanitas (*Arctostaphylos*), California lilac (*Ceanothus* spp.), bitter cherry (*Prunus emarginata*), scrub oak (*Quercus dumosa*), redbud (*Cercis occidentalis*), yerba santa (*Eriodictyon californicum*) and mountain mahogany (*Cercocarpus betuloides*). Chaparral formations occur most prominently on the slopes adjacent to the canyons of Butte Creek and the West Branch of the Feather River, the ridge surfaces and valley sides in south Paradise and in areas which have been cleared, heavily logged or recently burned.
- **Non-native Grassland.** The non-native grassland consists of a dense to sparse cover of annual grasses with flowering culms, often associated with numerous species of showy-flowered, native annual wildflowers, especially in years of favorable rainfall. With few exceptions, the plants are dead through the summer-fall dry season, persisting as seeds. This vegetation type occurs in the valleys and foothills of most of California, on fine-textured, usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.
- **Riparian Woodland.** The riparian woodland occurs as narrow strips of dense brush and trees along the water courses of south Paradise and around the localized drainage basins to the north. The dominant riparian trees are willow (*Salix* sp.), white alder (*Alnus rhombifolia*), western sycamore (*Platanus racemosa*), Fremont cottonwood (*Populus fremontii*), California laurel (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and western dogwood (*Cornus nuttallii*). Prominent as understory and vinelike plants are poison oak (*Toxicodendron diversilobum*), California wild grape (*Vitis californica*), wild blackberry (*Rubus* spp.) and elderberry (*Sambucus mexicana*). This association has been greatly disrupted by development along the various watercourses which drain southwesterly across the ridge surfaces of Paradise.
- **Great Valley Cottonwood Riparian Forest.** The Great Valley cottonwood riparian forest is a dense, broadleaved, winter deciduous riparian forest dominated by Fremont cottonwood (*Populus*



fremontii) and Goodding's willow (*Salix gooddingii variabilis*). Understories are dense, with abundant vegetative reproduction of canopy dominants. Scattered seedlings and saplings of shade-tolerant species such as California box elder (*Acer negundo californica*) or Oregon ash (*Fraxinus latifolia*) may be found, but frequent flooding prevents their reaching into the canopy. These sites are inundated yearly during spring, resulting in annual inputs of nutrients, soil, and new germination sites. This vegetation community was formerly extensive along the major low-gradient (depositional) streams throughout the Central Valley, but is now reduced to scattered, isolated remnants or young stands because of flood control, water diversion, agricultural development, and urban expansion. Approximately 1200 acres of this sensitive vegetation community occurs within the Dry Creek floodplain.

- **Foothill Woodland.** The foothill woodland extends across the extreme southern portions of the town and dominates the ridge surfaces to elevations of 1,300 feet. The primary floral elements of this woodland are blue oak (*Quercus douglasii*), interior live oak (*Quercus wizlizenii*) and digger pine (*Pinus sabiniana*). Above 1,500 feet these species give way to canyon live oak (*Quercus chrysolepis*), tan-bark oak (*Lithocarpus densiflora*) and black oak (*Quercus kelloggii*). Several species of shrubs provide an understory to this open woodland. Prominent in this community are manzanita (*Arctostaphylos* sp.), California lilac (*Ceanothus* sp.), yerba santa (*Eriodictyon californicum*), poison oak (*Toxicodendron diversilobum*) and several members of the rose family (e.g. the genera *Prunus*, *Rubus* and *Rosa*).
- **Digger Pine-Oak Woodland.** This woodland is a mixture of digger pine (*Pinus sabiniana*) and blue oak (*Quercus douglasii*). Pure stands of either tree do occur, but mixed stands are more common. *Pinus sabiniana* usually towers over the oaks in undisturbed stands. Understories usually are dominated by introduced annuals. This vegetation type occurs on well-drained sites with Mediterranean climate, in rocky or exposed sites along ridges or canyons with poor or shallow soils.
- **Westside Ponderosa Pine Forest.** The Ponderosa pine forest occurs as a broad transitional zone between the foothill woodland and higher mixed coniferous associations and is most extensive above 1,500 feet elevation in Paradise. It is generally a closed forest dominated by Ponderosa pine (*Pinus ponderosa*). The closely related Jeffrey pine (*Pinus jeffreyi*) occurs locally on drier sites and serves as a specific indicator of ultrabasic and serpentine rock outcroppings. The Ponderosa pine zone has been the most heavily logged of all the communities in northern California and this practice has allowed the encroachment of other woody species into areas formerly covered by pines. The Ponderosa and Jeffrey pines are found locally intermixed with incense-cedar (*Calocedrus decurrens*), Douglas-fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), black oak and several additional hardwood species including big leaf maple, western dogwood and California laurel. The ponderosa pine forest zone represents the primary habitat type utilized for development in the Paradise area.
- **Northern Hardpan Vernal Pool.** Located within close proximity of the tertiary study area is a documented vernal pool community classified by the California Natural Diversity Data Base (CNDDB) as northern hardpan vernal pool. These pools are ephemeral wetlands that occur when winter and spring rains fill the depressions in hogwallow or mima mound areas. Several sensitive plant species occur in association with the northern hardpan vernal pool community: Hoover's spurge (*Chamaesyce hooverii*, federal-Category 1; state-none), Green's tuctoria (*Tuctoria greenei*,



federal-candidate Category 1; state-rare), and Shippee meadowfoam (*Limnanthes floccosa* ssp. *californica*, federal-Category 1; state-endangered).

Federal Category 2 candidate species for federal listing comprise taxa for which information now in possession of the U.S. Fish and Wildlife Service indicates proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time. Federal Category 1 candidate species comprise taxa for which the service has sufficient biological information to support a proposal to list as endangered or threatened.

Other sensitive species with reported occurrences within or near the study area include California hibiscus (*Hibiscus californicus*, federal-Category 2; state-none), which occurs in moist, freshwater-soaked river banks and low peat islands in sloughs, marshes and swamps; Butte County checkerbloom (*Sidalcea robusta*, federal-Category 2; state-none), which occurs in small draws and rocky crevices in chaparral and cismontane woodland communities; California beaked-rush (*Rhynchospora californica*, federal-Category 2; state-none), occurring in freshwater seeps.

Sensitive plant species with the potential to occur within or near the study area include Ahart's paronychia (*Paronychia ahartii*, federal-Category 2; state-none), which occurs in stony, nearly barren clay of swales and higher ground around vernal pools in valley and foothill grassland communities; and veiny monardella (*Monardella douglasii* var. *venosa*, federal-Category 2; state-none), which also occurs in valley and foothill grasslands; adobe lily (*Fritillaria pluriflora*); Butte County fritillary (*Fritillaria eastwoodias*); Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*); Bidwell's knotweed (*Polygonum bidwelliae*); Butte morning glory (*Calystegia atriplicifolius*); clustered lady slipper orchid (*Cypripedium fasciculatum*); Butte County (Shippee) meadowfoam (*Limnanthes floccosa* sp. *californica*, State-Endangered); and Greene's Orcutt Grass (*Tuctoria greenei*, State-Rare). Appendix B contains a partial listing of common and sensitive plant species found within and in the vicinity of the study area.

Timber

The draft Butte County *Energy, Natural Resources, and Recreation Element* defines timberlands as land available for timber production and capable of growing at least twenty cubic feet of industrial-quality wood per acre per year. Timberlands in Butte County occur at elevations between approximately 2,200 and 6,200 feet. According to the above-referenced document, timberlands in Butte County occupy approximately 341,000 acres, including most of the northern and eastern portions of Butte County. Approximately twenty-seven percent of timberlands in Butte County are on national forest land. Portions of the northerly secondary study area are within the boundaries of the Lassen National Forest.

Butte County recognizes the value of its timber resources by affording protection through the use of Timberland Preserve Zoning (TPZ). The California Forest Taxation Reform Act created timberland preserve zoning as a measure to reduce property taxes and protect timberlands from encroachment. TPZ-zoned lands within the Paradise secondary study area are shown on the *Land Use/Circulation Diagram* in Volume I, *Policy Document*. The timberland preserve zoning ordinance of Butte County also designates other timberland zoning districts in Butte County, including parcels within the secondary study area.



The California Forest Practice Act regulates timber harvesting on nonfederal lands. The act delegates authority for timber harvest plan review and enforcement of forest practice rules to the California Department of Forestry and Fire Protection (CDF). Forest practice rules include guidelines for timber harvest plans. A timber harvest plan is required for harvesting of timber for commercial purposes on parcels larger than three acres.

The Paradise Irrigation District owns timberlands in the secondary study area and has harvested timber on these lands. Local opposition has been expressed to the continuation of this practice due to concerns with soil erosion, sedimentation and deterioration of the watershed, clear-cutting and construction of access roads. As described in the draft *Energy, Natural Resources, and Recreation Element*, timber harvest operations in and adjacent to riparian zones can affect aquatic ecosystems through removal of vegetation and deposition of sediment and debris in stream channels. Another local concern with timber harvesting north of Paradise in general is the impact of the passage of logging trucks through the town.

Wildlife

Wildlife reported for the Town of Paradise and the study areas is typical of the transitional foothill habitat types found on the western flank of the Sierra plateau. Appendix B contains a partial listing of common and sensitive wildlife species which occupy the habitats within Paradise and adjacent Butte County. This list is not meant to represent a comprehensive survey of the resident and migratory wildlife. The urbanized portions of Paradise are inhabited by a wide diversity of wildlife. No threatened, endangered or candidate wildlife species have been documented within the Paradise study area.

- **Sensitive Wildlife Species.** Currently there are twenty-four species of sensitive wildlife found in the general region (Appendix B). None of these species has been recorded by the natural diversity data base within the study area. These species include the western yellow billed cuckoo (*Coccyzus americanus occidentalis*), California red-legged frog (*Rana aurora draytoni*), foothill yellow-legged frog (*Rana boylei*), American badger (*Taxidea taxus*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), black-shouldered kite (*Elanus caeruleus*), prairie falcon (*Falco mexicanus*), burrowing owl (*Athene cunicularia*), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), winter-run chinook salmon (*Oncorhynchus tshawytscha*), giant garter snake (*Thamnophis couchi gigas*), Aleutian Canada goose (*Branta canadensis leucopareia*), bald eagle (*Haliaeetus leucocephalus*), Swainson's hawk (*Buteo swainsoni*), American peregrine falcon (*Falco peregrinus anatum*), California black rail (*Laterallus jamaicensis*), greater sandhill crane (*Grus Canadensis tabida*), great gray owl (*Strix nebulosa*), willow flycatcher (*Empidonax traillii*), bank swallow (*Riparia riparia*), least Bell's vireo (*Vireo bellii pusillus*), Sierra Nevada red fox (*Vulpes vulpes necator*), and wolverine (*Gulo gulo*).
- **Deer Population.** Deer herds throughout most of California exhibited a serious long-term decline during the late 1960s and early 1970s. The California Department of Fish and Game (CDFG) then initiated a herd planning program designed to address this problem. In 1976 a statewide *Plan for California Deer* was approved. In 1977, legislative mandate AB 1521 added emphasis to the program. Subsequently, a new deer management policy was adopted by the California Department of Fish and Game. This policy specifies: (1) planning for deer herd management on a herd basis,



(2) that specific program elements be included in each herd plan, and (3) that herd plans generally conform to the goals of the statewide plan.

One of the deer populations associated with the Paradise study area, the Camp Beale herd, is part of the Mother Lode Deer Management Unit. There are no unique biological or geographical features which define the herd boundary. Rather, the herd is composed of resident deer populations which have similar habitat types in common (oak woodland and chaparral in the foothills and remnant marsh and riparian vegetation in the valley). The eastern boundary of the Mother Lode Deer Management Unit is an area of overlap with neighboring migratory herds. In the Paradise study area these herds are the Bucks Mountain herd, the Mooretown herd and the Eastern Tehama herd. This area of overlap is variable in size and depends on topography, severity and onset of winter, and forage conditions. During winter, migratory deer may descend to low elevations and winter with resident deer. Similarly, Mother Lode deer may occupy home ranges within neighboring migratory herd winter range.

A management plan was prepared for the Bucks Mountain/Mooretown deer herds in 1983. This study identified the generalized herd boundaries (Figures 6-1 and 6-2) and identified transportation corridors in areas designated for "agricultural-residential" use in the Butte County General Plan. Corridors within or partially within the Paradise study area include Pentz Road, Clark Road, Neal Road, Skyway (to Inskip), Honey Run Road and Highway 70. The plan sets goals for deer herd management and includes recommendations regarding minimum parcel sizes and densities of development within critical summer and winter ranges, major migration corridors, holding areas, and noncritical summer and winter ranges. A similar management plan was also developed for the Eastern Tehama deer herd in 1983 (Figure 6-3). Figure 6-4 depicts DFG-designated development zones within migratory deer winter ranges, as well as critical and noncritical summer and winter ranges, herd boundaries, and major migration corridors within the Study Area.

- **Fisheries.** The lower reaches of Butte Creek support a varied fish population dominated by suckers (*Catostomus occidentalis*) and squawfish (*Ptychocheilus grandis*). Smallmouth bass (*Micropterus bolomieu*) and catfish (*Ictalurus* spp.) are also found on lower Butte Creek. Appendix B contains a listing of the fish of Butte Creek. The most important fishery is provided by runs of anadromous (sea going) fish including chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Salmo gairdneri gairdneri*), which make their way up Butte Creek to the reach of stream below Centerville powerhouse.

As late as the 1960s, Butte Creek supported a spring run of chinook salmon of over 4,000 adults (a maximum of 20,000 in 1960), a lesser number of fall run chinook salmon and a small number of steelhead trout. Currently, the spring-run numbers fewer than 200 adults. These numbers represent more than a ninety-five percent decline in the past thirty years. CDFG population estimates and Pacific Gas and Electric (PG&E) fish surveys indicate that few adult spring-run salmon reach upper Butte Creek, where excellent flow, temperature, and habitat conditions are available. The fall-run population varies between a few to as many as 1,000 (1985) and the number of steelhead trout is unknown (Hinton, 1989).

Project dams and diversions in Butte Creek have had an adverse impact on salmon and steelhead. The decline of Butte Creek's once numerous chinook and steelhead fisheries is attributed to inadequate flows, poor water quality and inadequate fish ladders at several diversion dams.

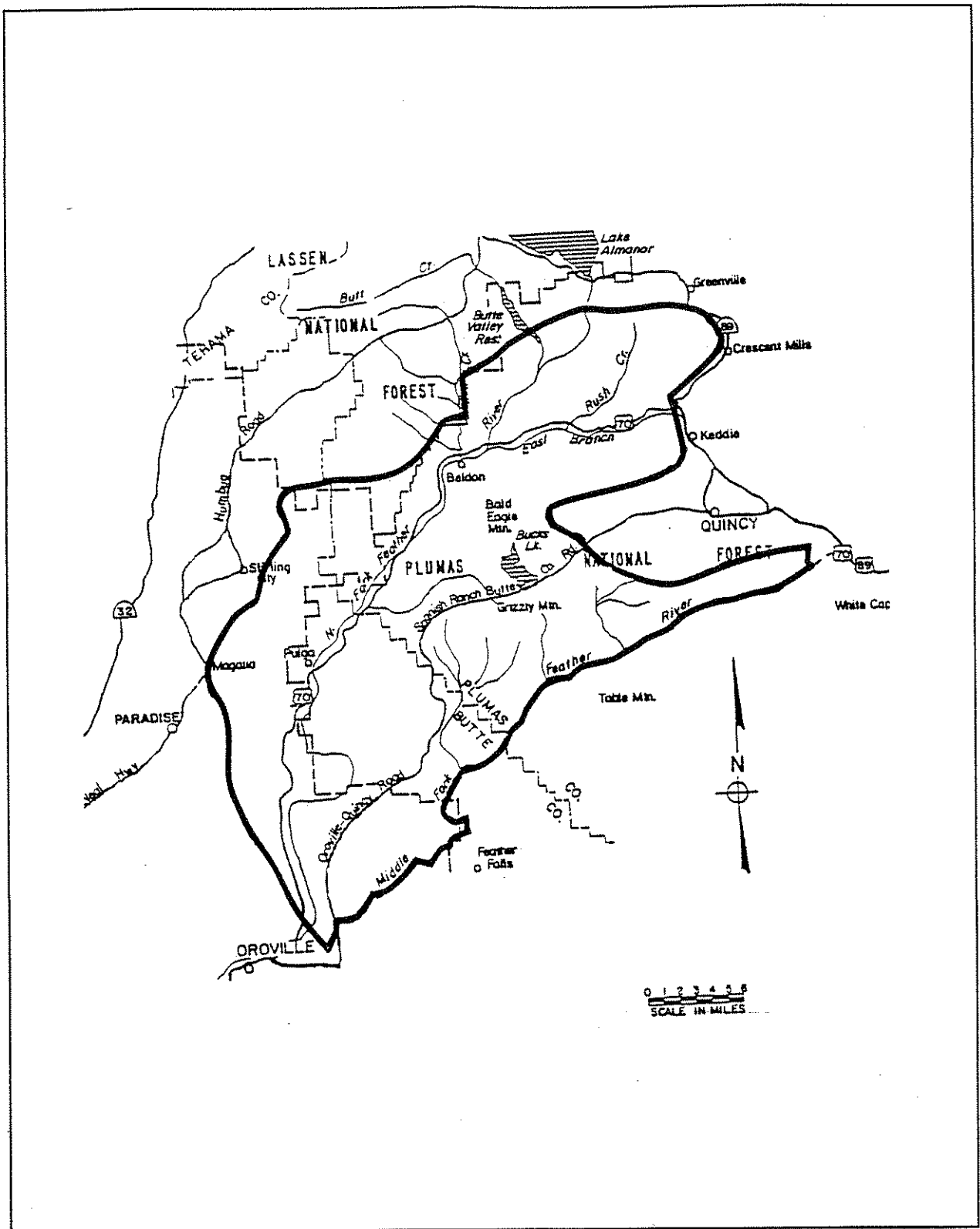


Reduced flows of water in the creek resulting from the various barriers and diversions increase water temperature and decrease oxygen supply. This combination is lethal to both salmon and steelhead.

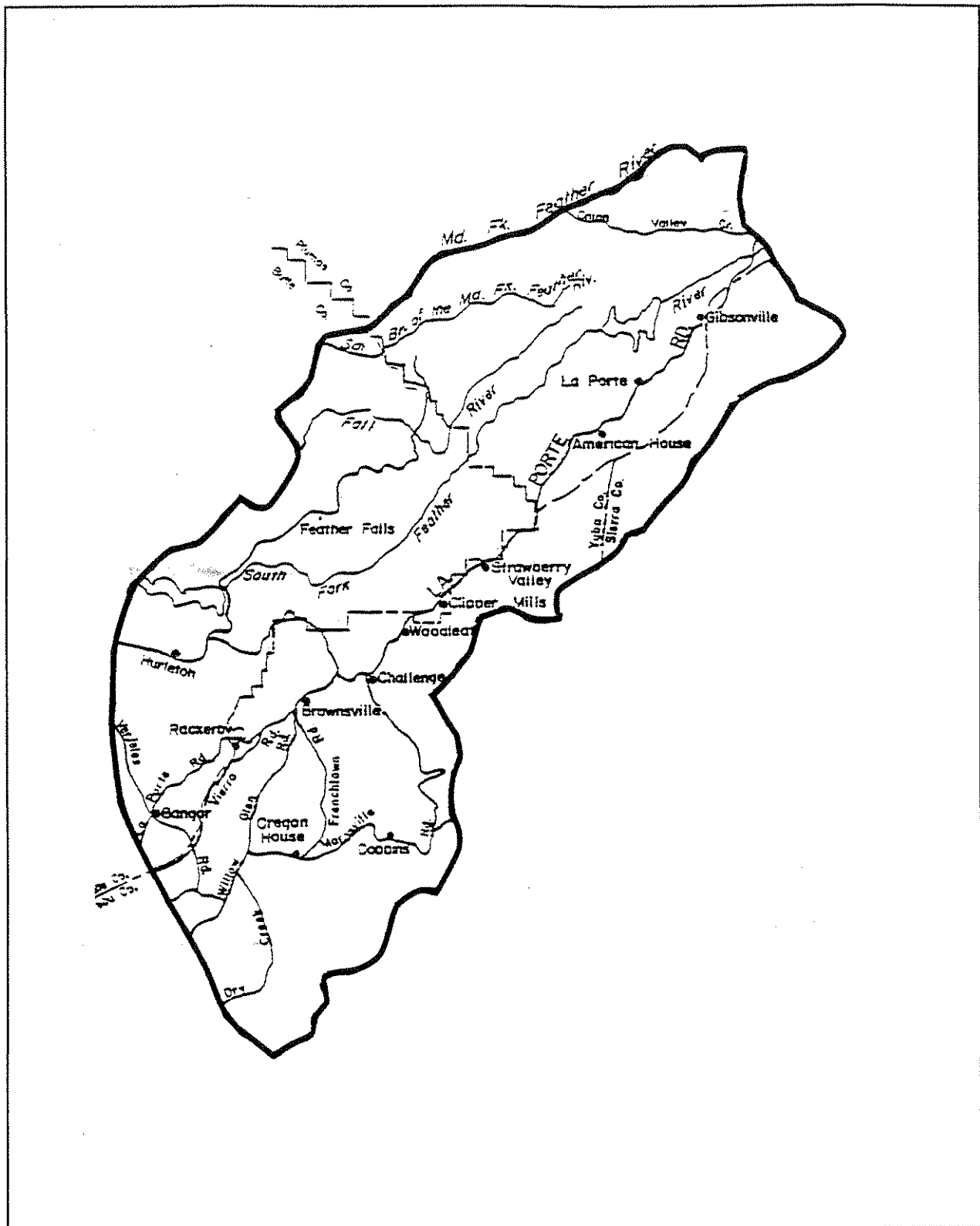
Anadromous fish are precluded from spawning in the West Branch Feather River due to the barrier imposed by Oroville Dam. The Feather River Hatchery below Oroville Dam supports a run of steelhead and salmon. Lake Oroville supports a healthy warm-water fishery including largemouth, smallmouth, spotted, and redeye bass (*Micropterus* spp.); bluegill, green and redear sunfish, (*Lepomis* spp.); catfish (*Ictalurus* spp.); and DFG-stocked chinook salmon (*Oncorhynchus tshawytscha*) and brown trout (*Salmo trutta*). Development in the canyons of the West Branch Feather River watershed may lead to erosion and pollution which could detrimentally affect the Lake Oroville Fishery, according to DFG (Flint, 1991).

The West Branch Feather River represents the western arm of Lake Oroville reservoir. Releases from Hendricks Dam near Stirling City downstream to a diversion structure northeast of Magalia provide for perennial streamflows. A well-established brown and rainbow trout (*salmo gairdneri*) population depends on these flows which Pacific Gas and Electric Company maintains under contractual agreement with DFG.

The dam structure northeast of Magalia diverts streamflows to the Upper Miocene Canal (which runs parallel to the West Branch Feather River before feeding Kunkle Reservoir south of the town). Dewatering in the stretch of the West Branch Feather River between Magalia and Lake Oroville renders the section unsuitable to support viable game-fish populations.

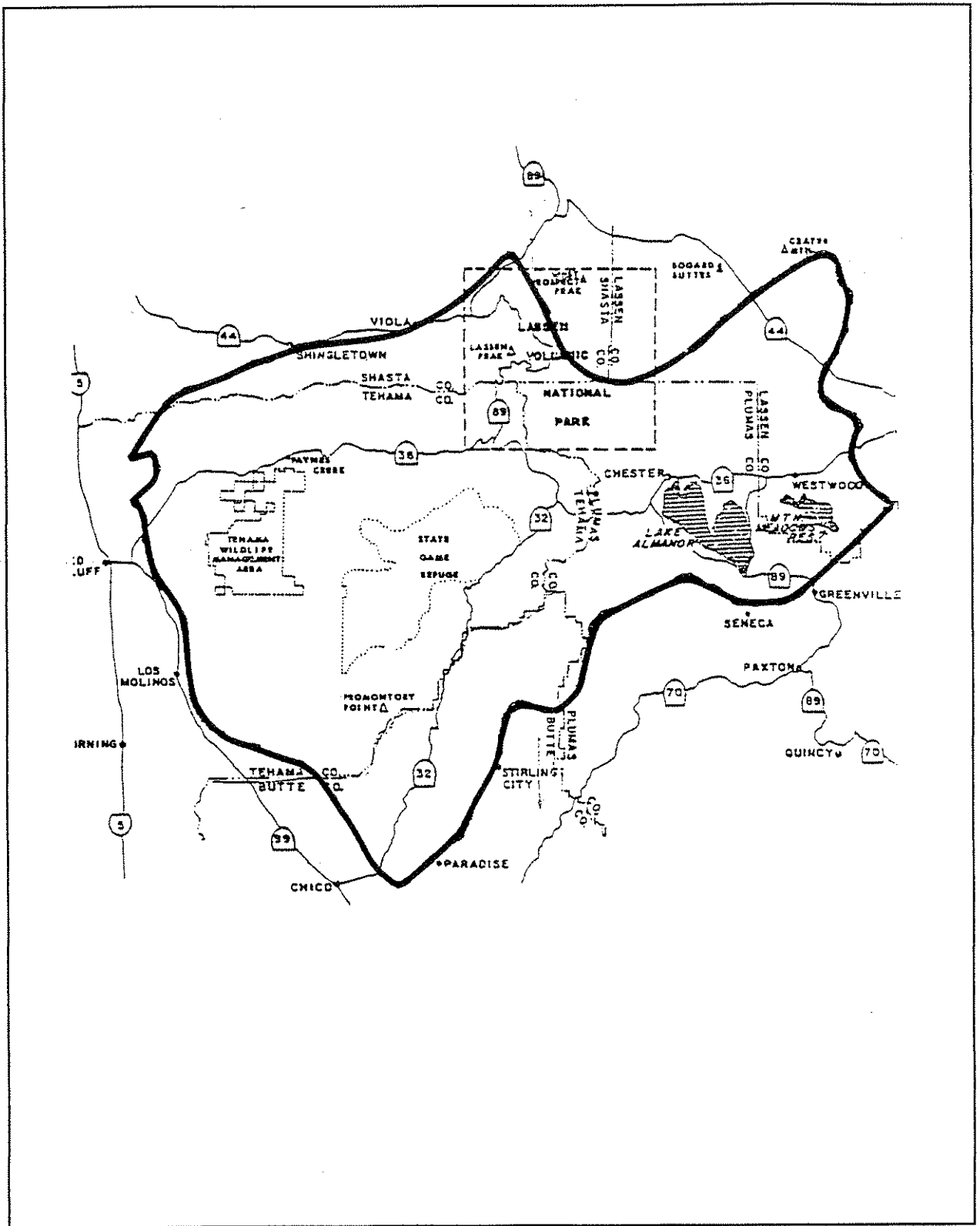


BUCKS MOUNTAIN DEER HERD BOUNDARY (GENERALIZED) FIGURE 6-1



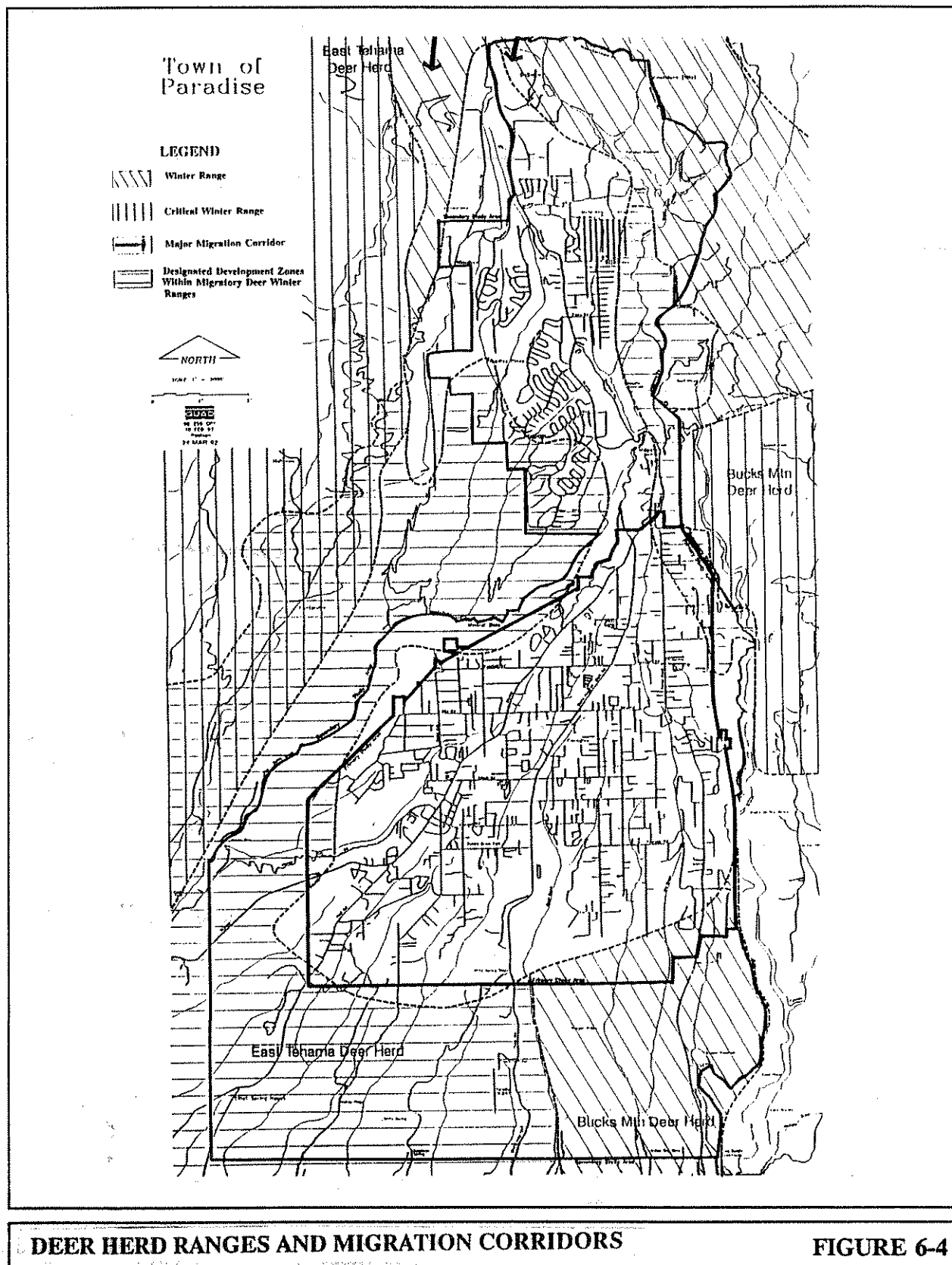
MOORETOWN DEER HERD BOUNDARY (GENERALIZED)

FIGURE 6-2



EASTERN TEHAMA DEER HERD BOUNDARY

FIGURE 6-3



DEER HERD RANGES AND MIGRATION CORRIDORS

FIGURE 6-4