A Cultural Resource Overview
for the
Mendocino National Forest
and the
East Lake Planning Unit, BLM, California

VOLUME II: HISTORY

by

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D. MANUFACTURES CENSUS TABLES (Bound Separately)
The essential direction of this volume of the two volume series comprising the North Coast Range Overview has been to apply the understandings of historians in the research and writing of a tool to be used by cultural resource managers. Specifically the study area has been the Mendocino National Forest and the East Lake Planning Unit of the Bureau of Land Management, Ukiah District Office, but the techniques we have used can be applied to advantage elsewhere.

As historians we were concerned with the problems associated with the management of physical resources remaining from non-native land use beginning in about 1840. We have created a prototype study designed to meld the concerns of both historians and archeologists. The following report is itself divided into two parts: a traditional history overview; and a site-specific "predictive model."

The concept of a predictive model is very poorly defined, and so the application of the idea to the available historic records has been an adventure. It was necessary, for example, to experiment with the historic record groups in order to determine their use as "data bases." Filing systems were created to record immense amounts of land entry information from the files of the General Land Office, the precursor agency to the present Bureau of Land Management. The result is a card file with nearly 4,000 5"x8" cards recording information from the Tract Books of the General Land Office. The agencies now have available to them information on historic land use and entry, arranged by township, which was heretofore unused for predictive purposes. Moreover, the federal census records have been used to further flesh out the social structures in selected areas within the given project area.

The proposed unifying strategy or hypothesis is the frontier "type" introduced by Frederick Jackson Turner in the late nineteenth century. The resulting study, we hope, will create a forum for effective management of the physical remains of historic activities.
The endless possibilities for using remaining historic records as "data bases" are staggering, but this cannot be accomplished in a direct fashion. The amount of material directly relevant to specific sites must always be set in proper relation to the great gaps in many historic record groups. For example, the 1890 census schedules were lost in a fire, which increases the research value of other less specific materials. Moreover, specific historic records were originally created for purposes not in accord with the requirements of cultural resource managers. The idiosyncracies of a particular record group must always be taken into close consideration when any type of quantitative use is being planned.

The results contained in this report are one group of general hypotheses regarding the project area. It is obvious that the conclusions must be modified as further work is done. Perhaps even a change in format will render the information more compatible with other kinds of data management. Whatever the shortcomings of this present volume, however, it addresses many new questions and suggests several new approaches to the problems faced daily by cultural resource managers. The proper use of the information and perspective offered here will greatly enhance historic resource management for the Mendocino National Forest and the East Lake Planning Unit of the Bureau of Land Management.
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CHAPTER 7

BEGINNINGS OF HISTORIC LAND USE

Exploration

The part of the North Coast Range contained in the project is typically valleys interspersed with precipitous minor ranges. The summit of the range, which runs neatly through the middle of the project area, allows for possible passage only at two points: the Mendocino Pass on the current Forest Highway 7, and in the southern mountains along the drainage of Cache Creek. Apparently, no explorers in the early period ever found the Mendocino Pass, but it was utilized by the 1880s as a road. Neither of these routes are easily traversed. Moreover, since there are river systems north, west, south, and east of this area, it was quite often that the project area, including the Mendocino National Forest and the East Lake Planning Unit, was simply circumvented.

The first explorers of the unknown areas of California naturally followed these large rivers and their tributaries. Since their various tasks at hand involved either passage through the area or the trapping of fur animals, which lived in areas near water, there was little reason to venture far from these easier routes.

The Spanish expeditions in the early 19th century were part of a continuing attempt to find new sites for missions and to gather Native Americans for the mission labor force. In 1808, Gabriel Moraga explored the Sacramento Valley along the Sacramento River northward nearly to its confluence with Stony Creek. He then returned southward. In 1810 and 1812-14, Moraga explored from the present San Pablo Bay north and then west to Ross and Bodega, where he established the first trade relations with the Russians (Hart 1978:283).

In 1821, Luis Antonio Arguello led an expedition from San Francisco to check reports of encroachment by foreigners on lands the Spanish claimed for their own. The party left
Map 1
First Spanish Expeditions, 1810-1823
the Presidio on October 18, 1821, and they first sailed to the Carquinez Straits. Passing overland through Solano and Yolo counties, they came upon the Sacramento River after a six day journey. Arugello's party camped briefly near the present town of Grimes before reports from the local Indians again mentioned other white men (Brienes 1980:8). The expedition then traveled up the Sacramento River and turned to the southwest through the Stony Creek Valley. Arugello states in his journal that he passed two Indian rancherias in the area of Indian and Cache Creeks, east of Clear Lake, the latter on November 6. Although he is reported to have sighted the Pacific Coast on November 7, whence he returned to San Francisco through San Rafael, it is unlikely that such could be the case (Morrison 1963:passim). His route continued through the area of the Lake Miwok Villages, and he returned to San Francisco on November 15, 1821 (Orlins 1971:103).

The operations of the Hudson's Bay Company ranged all over the Pacific Northwest, extended down to French Camp (Stockton), and, for a time, they were headquartered in Yerba Buena (Anonymous 1879:28). Peter Skene Ogden was the first known member of the company to explore northern California for the company in 1826-27. This initial visit did not go any farther south than the Pit River, in the vicinity of Mount Shasta (Nunis 1968:5; Work 1945:v).

Alexander McLeod, also of the Hudson's Bay Company, led a party into the Sacramento Valley by way of the Klamath River in April of 1829. Continuing southward, McLeod came to the Mokelumne River in August, in the vicinity of Stockton, before heading northwest. It is possible, although not confirmed, that McLeod was in the southern part of the project area near either Cache or Putah Creek. The group did come within 70 miles of the Mission San Francisco Solano, which is about ten miles north of San Pablo Bay. McLeod then returned to Fort Vancouver via the Sacramento Valley (Nunis 1968:31-39).

The route of John Work's expedition to California in 1832-33 (Map 2) passed in part along Cache Creek, south of Clear Lake, and further north along the Russian River to the South Fork of the Eel River.
Map 2
John Work's Expedition to California, 1832-33 (Work 1945:Frontispiece).
The Hudson's Bay Company sent many expeditions to California, most entering the Sacramento Valley via the Klamath River and the Siskiyou Mountains. For a time, they had a station east of Yolo, also called French Camp, on the north bank of Cache Creek. The name "cache" is attributed to their custom of hiding furs in the area nearby their camp (Gudde 1974:45). From 1834 until the early 1840s, several expeditions were led by one or more agents of the Hudson's Bay Company into California. They sometimes followed the policy, as did Work and Ogden, of "trapping clean" the areas they explored. Often they went far afield in order to ensure their efforts would be profitable. In so doing, "they built up their own knowledge of the Pacific Slope, down to San Francisco and inland to Idaho..." (Rich 1967:272 [quote]; Work 1945:v; Anonymous 1879:28; Work 1945:Frontispiece).

In 1812, the Russian colony at Fort Ross was established to engage in fur trading and also to provide a secure supply of grain and other foodstuffs for the Russian operations further north. The Russian efforts persisted until 1841, but they never met with great success beyond survival. In 1841, before selling their interest in Fort Ross to John Sutter, the Russians mounted an expedition to Mount St. Helena. A plaque was placed on the mountain, named in honor of Commandant Rotchef's wife, the Princess Helena (Essig 1933:passim).

American fur trading operations and explorations were active in the 19th century throughout the West. Jedediah Strong Smith, the great pathfinder, is known to have traveled widely in California and the Southwest. In 1828, Smith, as part of a larger exploration, journeyed up the Sacramento Valley, passed into the Yolla Bolly wilderness area, and he reached the Trinity River in late April (Sullivan 1934:84, 176). Smith had crossed the Sacramento River just south of modern Red Bluff, so it is possible that his route followed Cottonwood Creek, as Arguello had done several years before.

Ewing Young, another famous American fur trapper, journeyed from southern California to the Sacramento River in 1832. After he encountered a party of Hudson's Bay Company trappers on the Sacramento River, he continued north and
west into Yolo County, following Cache Creek into the Capay Valley, near the "old Adobe Ranch," where he camped (Anonymous 1879:28). Young went on to the coast, apparently crossed the project area, and then he turned northward toward Oregon. His journey was a great loop, through the Umpqua Valley, Klamath Lake, south to the Rogue and Pit rivers, and back again to the Sacramento Valley. By 1834 he was back in Los Angeles (Beck & Haase 1974:43; Caughey 1970:132).

Fur trappers, or mountain men, were instrumental in finding many passes through the rugged mountains that separate California and the midwestern states. Aside from the few passages through the project area, however, there was little exploration that resulted in trails similar to those that crossed the Sierra Nevada. It remained for those who intended to settle in the area to blaze the trails that crossed the Coast Range Mountains.

Exploration for the purpose of settlement began in the 1840s with individuals such as John Fremont, Josiah Gregg, and John Bidwell. These men were essentially linked to the developing pattern and manifest destiny typical of the settlement of the United States east of the Rocky Mountains. They publicized their findings widely, were very popular in their own times, and, like Fremont, occasionally went far afield of their original intentions.

Josiah Gregg began his career as an explorer when his physicians advised him to go west for the climate. Gregg was one of the first health seekers in the West. The cure worked well, and he made quite a reputation for himself with the publication of Commerce of the Prairies in 1844 (Gregg 1954:xix-xxi). Gregg eventually found his way to the Trinity County mines near Rich Bar, where he discovered not gold, but that his reputation and fame had preceded him. Entreated by local miners to establish a good route to the Pacific Coast, Gregg set out with a small party in late 1849. With great difficulty they reached the coast near Humboldt Bay, where they rested for several weeks. Beginning the trek south again along the coast, they soon encountered more problems, and the party split, each taking their own route.
Gregg's division eventually turned back into the Hinterland, and when they reached Clear Lake, the errant naturalist met with his last adventure. Exhausted from travel, exposure and starvation, Gregg suffered a bad fall from his horse which ended his pain completely. He died on February 25, 1850, and was buried on the Spot (Gregg 1954:xxix).

His grave, along with his copious notes of northern California exploration, are sadly lost (Gregg 1954:xxviii-xxix).

John C. Fremont explored the upper Sacramento Valley in some detail during 1848. Part of the map of his explorations in the West is included here as Map 3. This map distinctly shows Cottonwood Creek, along with a river somewhat further south near the 40th parallel. In his journal for the expedition, he records exploring "Red Bank Creek ... to the head of one of its forks" (Fremont 1964:22). Red Bank Creek flows into the Sacramento River just south of Red Bluff, and its headwaters are located near the northeastern boundary of the Mendocino National Forest. It is unclear which branch of the Red Bank Creek that his party explored, but his description of the area is interesting and worth repeating. His journal for April 7, 1848, states:

Leaving the Sacramento, at a stream called Red Bank creek, and continuing to the head of one of its forks, we entered on a high and somewhat broken upland, timbered with at least four varieties of oaks, with mansanita...and other shrubbery interspersed. A remarkable species of pine, having leaves in threes, sometimes six to nine inches long, with bluish foliage, and a spreading, oak-shaped top, was scattered through the timber. I have remarked that this tree grows lower down the mountain than the other pines, being found familiarly among the oaks, the first met after leaving the open valleys, and seeming to like a warm climate (Fremont 1964:22).

From his description it seems unlikely that his party penetrated too far beyond the foothill region.

Earlier explorations by John Bidwell were important to
Map 3
Fremont's Map of California, 1848
[excerpt] (Fremont 1964).
the settlement of the areas near the prime agricultural land on the plains of the Sacramento Valley. Bidwell first came to California in the fall of 1841. He was employed by John Sutter for the next several years as "property manager, bookkeeper, and sometime aide-de-camp" (Egan 1971:9). His first assignment was to supervise the removal of equipment and other movable property from Fort Ross, which Sutter had then just recently purchased. Thereafter, Bidwell made several trips up and down the Sacramento Valley, including one in 1843 in the area of Tehama County. In 1844, he was exploring the west side of the Sacramento Valley for Thomas Larkin, the United States Consul at Monterey, in order to locate a grant for Larkin's children. He headed westward across the valley from a point beginning just west of Colusa, eventually entered the Stony Creek Valley, and followed the stream until its confluence with the Sacramento River (McComish & Lambert 1918:25). His choice for the Larkin Children's Rancho, however, was the flatlands of the valley proper, on the river near the present border of Glenn and Colusa counties (Beck & Haase 1974:26). The map that Bidwell prepared from memory of this 1844 journey was cited by one author as having sparked considerable interest in the settlement of the foothills that Bidwell had pass through and discounted (Anonymous 1891a:266).

Other explorers included Peter Lassen, who, along with two partners, spent a summer quarrying grindstones on a branch of Stony Creek now bearing that name. The men finished a canoe load of the stones, which they took down the river for sale at Sutter's Fort and San Francisco. Like many of Lassen's exploits, however, it was a marginal success at best (McComish & Lambert 1918:26).

The period of exploration merged into the beginnings of settlement. In that sense, the project area is not unique. The types of settlement patterns were linked closely with the hardships that pioneers found in the valleys that surround the project area. The tales of settlement, failure, movement, and succession of enterprise are typical and should be kept in mind when attempting to unravel the endless details associated with these first efforts at historical habitation.
Settlement in the Foothills

Agricultural settlement of the foothills around the project area was not a significant activity until after the beginning of the Gold Rush. By the mid-1850s, much of the prime agricultural land had been claimed by land grant or other previous occupancy. Extensive tracts along the Sacramento River, Cache and Putah creeks, and the Russian River were closed to settlement. The migration spread to the hinterland where land could be less fertile, but still available.

The first settlers who explored the foothills for suitable ranches and farms found abundant natural resources in the many small valleys. They repeated the pattern practiced in the lowlands, and, in some cases, claimed entire valleys. It was more common, though, to choose smaller tracts of land that secured control of much larger ranges. In the Stony Creek Valley, the breaking up of the estates of these pioneers in the late 19th century allowed for an increase in the number of small, equally prosperous, farms (McComish & Lambert 1918:206).

Establishing a living on the land was not a smooth process, and quite often early settlers moved on to better opportunity elsewhere. The lure of the mining fields was powerful. Many tried their luck in the mines or worked at jobs generated by the boom. Even those who were determined to settle down faced a variety of problems. The cycle of settlement, experimentation with crops and practices, and, finally, stabilized production of both local and export commodities, is an important overall pattern of agricultural development in the early days. In Lake County, the first agriculturalists grew grains and potatoes, and cultivated orchards, but they also tested cash crops such as cotton, opium poppies, mulberries, tobacco and sugar cane. As time passed, the established pattern became subsistence farming and ranching, along with the production of items for export or for local consumption by health resorts or the mines (Simoons 1942:67-74).

The project area was isolated from many mainstream developments, but mining and health resorts, developed in the 1870s, were direct and financially beneficial connec-
ations with the outside world. Resorts and mines created communities where otherwise very little activity would have occurred. Quite often the mining or resort centers were reached only by substandard transportation routes, impassable during winter rains, so these communities were heavily dependent upon local economies for agricultural products and labor. This was especially true of the seasonal resort industries.

The influence of the Sacramento Valley on the settlement and subsequent development of the western foothills of Tehama, Glenn and Colusa counties was substantial. Access to the foothills was never easy, but in no way as difficult as in eastern Mendocino County. Moreover, the displacement of sheep farmers into the foothills as more advanced monocultural practices were developed in the valley created a constant pressure on the resources and communities of the western foothill area. Settlers leaving the Sacramento Valley followed streams at first, so the settlement of the Stony Creek Valley and drainages tributary to Stony Creek is a good example of the effect that topography had on incoming homesteaders exploring unfamiliar ground. The experience of Rufus Burrows, who settled in the Newville area in 1857, was probably shared by many who came to California.

Rufus Gustavus Burrows was only 14 years old when, with his mother, stepfather Rufus Hitchcock, and uncle, Street Rice, he began the overland trek to California. The party joined a large train at Fort Laramie, bound for New Helvetia, where they arrived in September of 1848. While his parents ran a local hotel, Rufus was first a teamster, then a cowboy, and, in the spring of 1849, he tried his hand at prospecting. Despite the fables of riches, Burrows found himself a teamster again in the spring of 1850. Tiring of this occupation, he went East to begin schooling, but was forced to return home when he heard of his stepfather's illness. This time he traveled to California by sea. Reaching Green Springs after his stepfather's death, he again took up stock herding until he was stricken by smallpox in 1852. His mother and two nieces died of the disease, but Burrows recovered and decided to travel to Oregon to buy cattle.

Reaching the Willamette Valley in the beginning of
1854, he was able to purchase enough cattle to start a small operation in the Umpqua Valley. In 1854, he was married to Charlotte Hull, daughter of Cyrus B. Hull. When Indian troubles began in his area, he drove his cattle out of the mountains and took part in some brief Indian fighting. After the end of hostilities, Burrows and his partners succeeded in gathering up their stock and herding them through the winter of 1856.

In the spring of 1857, they began the drive to California with 250 head of cattle. There were more skirmishes with Indians on the way, but, eventually, they reached Stony Creek. Here they decided to explore the foothill country for suitable grazing land.

Yet Burrows was not the first to arrive in the Stony Creek area, as he himself noted:

On the way up Stony Creek, we passed by old Doby, Orland, Laban Searce, Old Man Hally, Simpson and Jake Updegraff on the Brownell ranch, then up the creek. Just below the mill site on the north side, we camped under a big oak tree opposite the Cotton cabin. We stopped here awhile to look around and see what we could find (Dillon 1971:49-50).

Burrows chose a place near the present town of Chrome, below what is now called Burrows Gap. He settled there, with his wife and child, and they became long-standing residents of Colusa County (Dillon 1971:passim).

Burrows' story of travel, a brief sojourn, and then eventually settling down is typical of the accounts of this era. The full story involved hardship, uncertainty, and doubtless many failures, but the pattern of success in many ways determined the uses to which the land was put during these first years of white ascendancy.

The Stony Creek area had been first settled in the mid-1850s, although the Lett brothers may have been there some time before (Green 1950:40). Land claims were staked out by new arrivals by posting notices of location on a convenient large tree. Later arrivals to the area were sometimes greeted as friends, occasionally as interlopers.
In the late 1850s, when Rufus Burrows arrived in the Stony Creek area, very little of the land had been completely surveyed by the General Land Office. One acquired land by locating a claim and defining the boundaries accordingly. Burrows had been befriended by a man named Turner, co-owner of a ranch later known as the Julian ranch. Turner claimed to have control of a certain area, but Burrows discovered more than one notice of location on the oak tree Turner had spoken of, "one by a man named Evans, the other by James Kilgore." Turner insisted on his prior rights, but Burrows rode to Kilgore's cabin site, where "200 shakes [were] piled near the spring," to investigate the situation. Kilgore, as it turned out, welcomed Burrows as soon as he found out that Burrows was a family man, since he "would like to see this country settled up with families" (Dillon 1971:51).

By the late 1860s, however, the situation was different. Most of the good land in the Stony Creek area has been claimed, but the migration of whites continued into the valleys surrounding this good water supply. Trouble was inevitable, and sometimes latecomers were faced with deadly opposition:

W.S. Webb, an early settler, had taken up a large claim of unsurveyed land, and, as was the habit in those days, threw a sort of brush fence across the valleys and claimed to the tops of the hills...(Rogers 1891:117).

B.D. Pond, a new arrival, was shot while herding hogs near Webb's place, and Webb and his son, William, were arrested for the murder in 1869. One other incident, much more famous, involved the shooting of Jack and Dave Lett in 1877. Attempting to drive off some settlers from land they claimed as their own, they were themselves killed. The valley where their ranch was located is presently named after them, and the local tradition was so strong that the Letts Valley was declared a State Historical Landmark (Rogers 1891:117; California Department of Parks and Recreation 1979:18).

South of Stony Creek Valley are Bear, Spring and Antelope valleys. Spring Valley was first settled in 1852, Antelope Valley in 1853, and Bear Valley in 1854. Godfrey Ingrim first explored Bear Valley in 1853, when along with
"old man Beers" and J.M. Blanchard, he journeyed from the
great valley into Spring Valley, up Salt Canyon to Antelope
Valley, then:

across the mountains to Bear Valley, entering the
valley on what is known as the Turner ranch now [1876].
I found clover in the valley that was seven feet long
by measurement. There were plenty of deer, antelope,
bear and some elk at the time. I explored the valley
and picked out my present place. I then thought this
is a beautiful and healthy place, and after twenty-two
years residence I am of the same opinion (McComish &
Lambert 1918:57).

No other settlers were in the area when he first
arrived. He returned in 1854 to locate his claim, but
within six months John Royce and A.T. Noyes "settled in the
lower end of the valley" (McComish & Lambert 1918:57).

The Cache Creek area up through the Capay Valley was
pre-empted from entry by settlers by two land grants, the
Canada de Capay (1846) and the Quesesosi (1843) further
downstream (Gudde 1974:52, 260; Beck & Haase 1974:26).

William Gordon, who held title to the Quesesosi grant,
had been a long-time resident of Santa Fe before moving to
Los Angeles in 1841 and on to Yolo County in 1842. His
first house was on the north bank of Cache Creek, and was
"built by setting poles on end, filling the cracks between
with mud and covering the structure with oak shakes" (Anony­
mous 1879:30). He is reputed to have grown the first wheat
in Yolo County in 1845, and he was also involved in the
first irrigation attempts in the area in the mid-1850s when
James Moore settled in the area (Anonymous 1879:30).

Land grants were associated with river systems or
valleys, and there are none directly within the project area
except the very northern tip of the Canada de Capay above
Rumsey. Their impact on the area's settlement is obvious,
however, since they granted title to large tracts of agri­
cultural land which forced the later, larger migration of
settlers into the more remote areas where there was avail­
able land. Other land grants south of the project area were
the Locallomi (1842), Las Putas (1842), Guenoc (1844), and

After 1851, "many persons visited the [Clear Lake] country, some on hunting trips, some prospecting, and some hunting homes" (Menefee 1873:230). The first house in Lake County was built at Lower Lake in 1853, however, the first large numbers of permanent settlers did not begin to reach the Clear Lake area until 1854. The area, especially the northern valleys and mountains, was essentially unsettled by whites until the 1860s (Simoons 1952:63; Menefee 1873:230).

The rough terrain of the mountains north of Clear Lake discouraged settlement. Those few who did establish themselves in the area trapped, hunted, and occasionally built cabins, but there were no permanent residents until Gravelly Valley was occupied in 1867 and Rice Valley in the late 1870s. One attempt was made to establish ranches during the dry years of 1863-64, but the winter weather was too cold for stock. The project was abandoned when the drought passed a few years later.

Settlers came in from Potter Valley and Upper Lake because the route over Cache Creek Ridge on the eastern edge of Lake County was impassable. The population of Gravelly Valley was 83 in 1880, and "a string of dwellings paralleled the gorge of the South Fork of the Eel River between Gravelly Valley and Potter Valley" (Simoons 1952:124-25).

Settlement of the region south and west of Clear Lake came after a period of use by ranchers living in Sonoma County to the west and south. After the presidio was established at Sonoma in 1834, attempts were made to extend settlement into the regions to the north. Salvador Vallejo and Ramon Carrillo led an expedition into Big Valley in 1836, and a few years later, the Vallejos returned to herd cattle in the area.

Vallejo sold the ranch to a group of Americans in 1847, and two of them, Charles Stone and Andrew Kelsey, settled in to work the land. Because of their abuse of the local Indians, who provided the labor force, Kelsey and Stone provoked their own murders in 1849. The retribution for the act was not swift, but was cruel and quite likely misdi-
rected. A detachment of soldiers caught up with the group of suspect Indians at Bloody Island in 1850, where the Indians were summarily murdered (Simoons 1952:60-62; California Department of parks and Recreation 1979:42; Anonymous 1891b:144-45).

The settlement of eastern Mendocino County began with the Sanel and Yokaya land grants, awarded in 1844 and 1845 (Gudde 1974:283, 349; Beck and Haase 1974:27). Thomas and William Potter first located in Potter Valley in 1852, along with M.C. Briggs, and by 1859 "the valley was virtually full of settlers" (Carpenter & Millberry 1914:84). The pattern was somewhat different from that of the valleys that bordered the Sacramento Valley because there was no great central route that allowed access to interior valleys in the northern reaches of the project area. The topography consisted of valley after valley, each reached only by difficult travel. One observer, commenting on settlement in northern Mendocino County, noted that in the late 1860s:

The entire region ... remains an almost uninhabited wilderness, though its agricultural and grazing resources are known to be immense..." (Cronise 1868:192-93).

Two reasons were given to account for the lack of settlement: no roads and hostile Indians.

The chronicle of the vicious takeover of Round Valley by whites is discussed elsewhere in this report, but the settlement pattern is reflected in reports of other valleys. Because of the difficult topography, valleys in the area were largely ignored until their discovery, and then an avalanche of settlers came into the area. In Round Valley, "so quickly did white men pour in to the valley" that settlement lost even the pretense of peaceful encroachment (Anonymous n.d.:2). In Little Lake Valley, north of Ukiah, described as a typical valley by Cronise in 1868, there were nearly fifty families in the area within four years (Cronise 1868:193).

Settlement in the interior regions of the eight counties that comprise the project area was not altogether by choice or completely uniform. The topography of the area
varies considerably, and it formed the routes and locations of the first arrivals. Most of the prime areas in the Stony Creek Valley, Clear Lake uplands, and eastern Mendocino County were taken up in the 1850s. Settlers who came later were faced with difficult terrain, bad weather, and less fertile farmland found in the remaining areas. In some instances, settlement resulted from an important local industry, but these were usually later developments that followed the main agricultural settlements.

The topography of the lands adjacent to the project area also had an effect on the settlement patterns. The Sacramento Valley allowed for easy northern access, whereas in eastern Mendocino County, transportation problems delayed the settlement of some areas until the late 1860s. The lay of the land may have kept the whites out, but it was not always the determining factor. On occasion, the available resources of an area simply would not sustain homesteading. The result was the seasonal use of these less habitable areas.

There is no clear evidence of ethnic or religious influence significantly affecting settlement patterns in the project area, especially since the project area itself was ultimately used primarily as a seasonal resource base. Some of the more populated lands surrounding the project area had settlements dominated by one ethnic group. For example, Artois (originally Germantown) was settled by Germans, but the name was changed during World War I. Some areas in Lake County, south of Clear Lake, were settled by English "lords," whose aim was not only to duplicate their native land but to include fine vineyards and fruit orchards. Nevertheless, the effects of religious or ethnic influences were not as apparent in the settlement of the interior portions of the project area. The ethnic or religious patterns appear to be mixed among immigrants who were free to settle where they could. However, in the case of mining there is clear evidence that imported labor resulted in significant concentrations of ethnic groups, particularly Chinese, Irish, and Italians.
Ranching and Farming

Throughout the project area, the vast grazing lands were the most important agricultural resource. Farming tended to be in scattered areas along the periphery of the Mendocino National Forest, such as the Stony Creek Valley, Round Valley, and Potter Valley. There was more farming in the Clear Lake area. The northern uplands tended to follow the lead of the substantial agricultural valleys south and west of Clear Lake.

The farming communities that eventually were settled in a few interior areas, such as Gravelly and Rice valleys, were small. They primarily grew grain and hay for winter feed, and, for themselves, garden crops. With the cash derived from the sale of their livestock, mountain residents bought their staples in lowland towns. Gravelly Valley folk traded to the west in Potter Valley, while those in, and to the south of, Rice Valley, went to Upper Lake for supplies to supplement their gardens and orchards. The pattern in this area, as well as in other places within the project area, was ranching for cash, and any farming was a supplemental effort.

Permanent settlement for farming and ranching in the northern mountains of Lake County did not endure beyond the turn of the century. The available farm lands in these rugged mountains were unable to furnish enough hay for feed during the cold winters. The winter of 1889-90 was especially severe. Hundreds of sheep and cattle were killed by the mountain snows. The result was that mountain ranges were used for summer grazing and stock was wintered in the valleys or lowlands surrounding the project area (Simoons 1952:124-130).

Farming in southeastern Lake County prospered because of better weather and soils, but the proximity to the mining and resort areas was the most crucial factor in maintaining the agricultural economy of this area. The resources were sufficient to provide for these local markets, but the Morgan and Jerusalem valleys, among others, lacked the resources necessary for substantial export of agricultural products (Simoons 1952:90-91).
The areas immediately around Clear Lake had enjoyed agricultural prosperity from first settlement. In 1867, dairies in the valleys immediately northeast of Clear Lake produced 200,000 pounds of cheeses. Important cash crops were first introduced and marketed beginning in the 1880s. Hops, prunes, grapes, pears and string beans were produced for export.

The prosperity of this region persisted into the 1940s, when "considerable farming, dairying, truck gardening and fruit growing" was reported (Forest Service 1943:43). The prime agricultural areas were Scott, Big and Ukiah valleys, but some valleys within the project area (Long, High and Burns valleys) experimented with many of the same crops and enjoyed the same markets as did the major producers (Simoons 1952:131-138).

The valleys in the western foothills of the Sacramento Valley had substantial farming enterprises, especially where irrigation was possible. In the late 1870s, farms in the Bear and Antelope valleys were growing grains, vegetables, and experimenting with grapes and other fruits. The main crops were grains, which were suited to dry farming techniques, while vegetables and fruit orchards were planted in areas where water was available. Some dairy farming was also attempted, and for a few years a ready market was found over the hill at the Sulphur Creek quicksilver mines (Green 1950:18; Rogers 1891:448).

The valley of the Big Stony Creek was first settled by people interested in stockraising, but was later developed into a farming community of some size. The irrigation ditches watered crops along the Stony Creek from Fouts Springs to its confluence with Grindstone Creek (Mead 1901:152). "Considerable produce" was shipped from Fruto, east of Elk Creek, which in 1890 was described as doing "a thrifty business with the farming community around it, and of which it is the supply center" (Rogers 1891:290, 293).

John Smith, the founder of Stonyford, ran a grist mill in that town from 1878 until 1890. Smith sold his interest in the mill to the Stony Creek Improvement Company, who rebuilt it at another location nearby. But, by the mid-1890s, wheat production was in decline and the mill was
closed. Stonyford continued to be an important farming community. In 1918 the town was "surrounded by beautiful alfalfa fields" (McComish & Lambert 1918:130).

The pattern of settlement, subsequent subsistence farming and ranching was generally evident throughout the project area on both sides of the Coast Range mountains. For the less habitable, rugged mountain areas, little acreage was available for farming. The communities that were established in the high valleys used the flat lands for gardens, orchards, and to grow hay for winter feed. The attempt to ranch year-round was not successful because the areas simply could not support such activities. Difficult terrain, inclement weather, and the nature of available resources produced a seasonal grazing economy which used the majority of the project area as a vast summer range.

Cattle and sheep first entered California with Spanish expeditions to establish missions (Towne & Wentworth 1946:44). Ewing Young is credited with introducing the first cattle into the Sacramento Valley in 1837 when he drove a herd through the valley to Oregon. During the Gold Rush many ranchers drove herds of cattle and sheep from the Midwest with hopes of good profits from the high prices that the stock would bring in the gold fields (McGowan I 1961:157). Livestock flourished in the Sacramento Valley, and "at first nothing was dreamed of but cattle and stock-growing" (Anonymous 1891a:279).

Beginning in 1855, however, a series of disasters killed plans for the continued, rapid expansion of the livestock industry. Invasions of grasshoppers and severe droughts did considerable damage to the available range lands, and floods killed cattle and sheep in great numbers. The ranchers were forced to take their stock to mountain pastures for the dry summer months.

Wheat farming, which had been part of a balanced ranching/farming economy, slowly took over the acreage that had been pasture the year round. The practice then became to graze stock returning from summer mountain ranges on the stubble remaining in wheat fields. The wheat craze, which began about 1870, lasted nearly 25 years, with the larger producers continuing on until the turn of the century. By
then, summer ranging of valley stock in the mountains had long been established (McGowan I, 1961:158-62).

When the Stony Creek Forest Reserve was first being investigated in the early part of this century, the forest examiner found that the range lands were being used extensively by locals who lived on the edges of the proposed reserve. Most of the users of the grazing lands owned property in the ranges, but there were few who actually inhabited their summer ranges the year through. The permanent residences of the ranchers were just outside of the project area, and they were heavily dependent upon the government land for successful ranching. One estimate was that 3,000 acres of free range was necessary to support one family (Ayres 1906:17).

Claims were usually patented in the prime grazing areas of the project area and included any significant springs. This assured control of much larger areas. Grazing allotments were well-defined soon after settlement, and one observer reported that "these patented claims, with the surrounding government land, have descended as established ranges from father to son, with very little change in the number of stock pastured, to the present day [1906]." There were variations in the pattern, usually brought about by a new arrival in the area, but problems were quickly resolved, and grazing conditions were generally described as "harmonious" (Ayres 1906:12, 17).

The classification of ranges, aside from control, was into two large categories, summer and winter ranges. Winter ranges were those areas where little snow fell, and hence were available most of the year. Summer ranges were only useable from about May through August and were along the high ridge tops and mountains from Bartlett Springs to the north. Winter ranges were below the snow line, along streams, and in the lower foothills on the edge of the project area. Gravelly Valley, South Fork of Eel River, Rice Fork, Bartlett Creek, Elk Creek, and Eden Valley were usually available for grazing throughout the year.

The range was also divided between those areas where sheep and goats grazed, and those places for cattle and horses. Since many of the more mountainous areas could only
be scaled with safety by the more footsure sheep, rugged terrain defined the range to a degree. There was often a problem running cattle in the areas where forage could be limited to pine needles. Although sheep could nibble the needles with little ill effect, some cattle perished from eating pine needles when other forage was unavailable (Mackie 1902:22-24).

Cattle, in small bands of about 25 head, were allowed to run without tending (except for occasional salting) in open woodlands, in timbered areas where bunch grasses grew, in glades, along stream banks, or in any flat area. Sheep and goats were pastured in groups of from 500 to 2,000 on the summits in oak brush and velvet clover, near where timber and chaparral met. As a rule, sheep and goats had to be tended by herders who moved the stock about from place to place as the forage was consumed, and they also protected the flocks from predators (Ayres 1906:12-14).

The basic unit for handling sheep on the range was the camp. On the great open ranges of the West, a two-man team usually attended each flock, the shepherd and the camp tender. The camp tender took care of everything except the sheep (Barnes 1913:156-57). Camps were usually moved about every two weeks, depending upon the available forage and the number of sheep in the flock (Towne & Wentworth 1946:275). Quite often the shepherds followed the same paths repeatedly, until, in some cases, the paths between camps were eroded by run-off, which resulted in considerable damage (Barnes 1913:228-229).

Current maps of the Mendocino National Forest, as well as maps issued in 1912, 1917, 1929, and 1940, list many place-names of camps: Toms Camp, Miserable Camp, Brownell Hills Camp, Wilson Camp (1917); Cedar Camp, Howell Camp (1929); and Lone Star Camp (1912). All of these are areas that were seasonally used as grazing camps, or for other reasons, such as hunting. No doubt many of these camps that were used for grazing had some form of permanent development, such as a watering site for stock.

The development of watering sites for stock was an important goal to ensure the proper use of the range throughout the grazing season. Springs and creeks were
spread throughout the project area, but the natural flow was usually insufficient to water enough stock to realize the full potential of the surrounding forage. The solution adopted in the Mendocino National Forest was the construction of cribbed log dams for creeks or log troughs for springs.

Cribbed log dams were common, and they consisted of alternate layers of logs laid directly in the stream, interlocking in order to provide a framework for stones or other debris to hold water sufficient to form a pool.

Log troughs were more specialized, and they were being used by the Forest Service as late as the 1920s for stock watering sites. Logs were hollowed out to form troughs, and then from one to eight of them were arranged in a tiered fashion to gather water from the spring. The Forest Service was promoting the construction of these log troughs because they were less expensive than either cement or galvanized iron. A good axeman could hollow out about ten cubic feet of trough in an eight hour day. The recommended tool was a modified mattock, "properly ground" (Forest Service 1920:Part 2:9; Forest Service 1920:Appendix, p. 3; Forest Service 1918:passim).

Damage to the range lands as a function of grazing practices was a very heated issue between farmers, cattlemen, and sheepmen or "woolgrowers." In the early 1900s, some lands in the Mendocino National Forest had been damaged, but it was proposed that limited grazing would restore the areas. More significant damage was done to the watersheds of Stony and Cache creeks, apparently due to fire practices of the herders, in conjunction with overgrazing. The brush areas were hardest hit. In order to promote new growth of forage, the herders would burn the ranges as they left the mountains in about August in order to increase the amount of new growth for the upcoming season. Quite often the sheep were unable to reach the higher parts of the brush, so the foraging was uneven. Sheep also trampled any newly sprouted herbs underfoot, thus preventing reproduction. In 1902, overgrazing was evident on Sanhedrin, Hull, Snow Sheet Iron, and St. John's mountains, and the effect was to reduce summer flow in Stony and Cache creeks (Mackie 1902:24-25).
By the end of World War I, extended overgrazing because of the war effort had depleted the range lands. In 1922, the northern part of the Mendocino National Forest had been badly overgrazed by sheep, with the result that both sheep and range land were in bad condition (Cronemiller 1946:1). The cause for these damaged range lands is smothered in the accusations that were common between farmers, ranchers, and foresters in this period. Overstocking was certainly one main cause, but it seems more likely that "improper handling on poor pasture caused this damage" (Ayres 1906:13). The ranching industry had operated in the project area for nearly 50 years, and, although some damage on summits was noted, "old sheep camps, which have been used for 30 years, are [1906] surrounded by a dense growth of young pines and spruces from six inches to ten feet high" (Ayres 1906:1).

The depletion of the range land was gradual, but apparently relentless, for the damage was easily observed in the 1920s when some areas within the forest had sustained sufficient soil loss to prevent any recovery at all (Cronemiller 1946:1-2). The question of the use and control of fires and grazing in order to protect the remaining watershed was to be the center of considerable controversy for over 30 years after the Stony Creek Forest Reserve was first proposed in 1900. The battle abated only with the decline of the ranching industry to a level compatible with the remaining grazing resources, along with other changes in the local economies of the regions on the periphery of the project area.

The statistics available for the study of the project area are not complete until the establishment of grazing districts in 1934. By then, however, the pattern had already been established. Beginning with the first investigations of the Stony Creek Forest Reserve, some figures are available on the Mendocino National Forest, and those are displayed in Table 1. Countywide figures, which are much less reliable for the project area, are shown in Table 2. The trends in the livestock industry are obvious, with boom periods in the sheep industry in the census years 1880, 1900, and 1930. After the disaster of the 1850s and 1860s, the cattle industry was much more stable, at least in numbers, than sheep raising. This reflects the dominance of
Table 1

Sheep and Cattle in the Mendocino National Forest

<table>
<thead>
<tr>
<th>Year</th>
<th>Sheep</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906</td>
<td>35,000</td>
<td>2,000</td>
</tr>
<tr>
<td>(Ayres 1906:12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1912</td>
<td>46,942</td>
<td>2,692</td>
</tr>
<tr>
<td>1913</td>
<td>52,680</td>
<td>4,721</td>
</tr>
<tr>
<td>1914</td>
<td>44,228</td>
<td>5,703</td>
</tr>
<tr>
<td>1915</td>
<td>46,392</td>
<td>5,837</td>
</tr>
<tr>
<td>1916</td>
<td>41,202</td>
<td>7,019</td>
</tr>
<tr>
<td>1917</td>
<td>40,458</td>
<td>6,830</td>
</tr>
<tr>
<td>(Forest Service 1912-17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1924</td>
<td>26,123*</td>
<td>3,473**</td>
</tr>
<tr>
<td>(Miller 1925:13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1926</td>
<td>28,000*</td>
<td>8,600</td>
</tr>
<tr>
<td>1929</td>
<td>18,000</td>
<td>5,500</td>
</tr>
<tr>
<td>1936</td>
<td>15,000*</td>
<td>5,000</td>
</tr>
<tr>
<td>(Forest Service 1926, 1929, 1936)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1941</td>
<td>7,683*</td>
<td>8,883**</td>
</tr>
<tr>
<td>(Forest Service 1943)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Sheep and Goats
** Cattle and Horses
<table>
<thead>
<tr>
<th>Census Year</th>
<th>Mendocino</th>
<th>Lake</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td>9,382</td>
<td></td>
<td>21,880</td>
</tr>
<tr>
<td>1870</td>
<td>49,839</td>
<td>16,307</td>
<td>175,963</td>
</tr>
<tr>
<td>1880</td>
<td>295,869</td>
<td>49,534</td>
<td>168,528</td>
</tr>
<tr>
<td>1890</td>
<td>174,973</td>
<td>21,001</td>
<td>93,017</td>
</tr>
<tr>
<td>1900</td>
<td>193,654</td>
<td>7,800</td>
<td>23,600</td>
</tr>
<tr>
<td>1910</td>
<td>129,770</td>
<td>10,974</td>
<td>64,592</td>
</tr>
<tr>
<td>1920</td>
<td>99,918</td>
<td>14,880</td>
<td>51,948</td>
</tr>
<tr>
<td>1930</td>
<td>192,978</td>
<td>36,188</td>
<td>182,200</td>
</tr>
<tr>
<td>1940</td>
<td>126,681</td>
<td>16,404</td>
<td>80,291</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Mendocino</th>
<th>Lake</th>
<th>Beef Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td>38,444</td>
<td>44,724</td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>11,774</td>
<td>2,336</td>
<td>19,354</td>
</tr>
<tr>
<td>1880</td>
<td>17,631</td>
<td>3,441</td>
<td>3,840</td>
</tr>
<tr>
<td>1890</td>
<td>29,353</td>
<td>6,447</td>
<td>13,471</td>
</tr>
<tr>
<td>1900</td>
<td>39,975</td>
<td>7,400</td>
<td>8,900</td>
</tr>
<tr>
<td>1910</td>
<td>32,183</td>
<td>5,927</td>
<td>15,622</td>
</tr>
<tr>
<td>1920</td>
<td>29,818</td>
<td>7,524</td>
<td>10,484</td>
</tr>
<tr>
<td>1930</td>
<td>50,242</td>
<td>6,300</td>
<td>12,100</td>
</tr>
<tr>
<td>1940</td>
<td>49,805</td>
<td>6,238</td>
<td>10,773</td>
</tr>
</tbody>
</table>

(Bureau of the Census 1860-1940)
wool growing in the livestock industry. In the Sacramento Valley, after 1860, wool was an important export, and, in 1875, Red Bluff was the center of that trade (McGowan I, 1961:270). As an important cash crop, the price of wool controlled the number of sheep, which inevitably had an effect on the communities of the project area periphery who were tied to this important source of income.

The figures for the forest reserve are much more revealing of actual grazing practices in the project area, especially if there had been "very little change in the number of stock pastured" since first settlement of the area (Ayres 1906:12). Sheep, of course, dominated the grazing scene in numbers. The figures from 1906 until 1941 show that the most severe limitations were put on allotments for sheep, from a 1913 high of over 50,000, to half of that figure 11 years later. The reduction in numbers of sheep grazed by the mid-1930s was nearly a quarter of the 1913 number, and, by 1941, the sheep population was only about 14% of the peak year before World War I. To a family ranching business, established over at least one and maybe two generations, dependent upon the income from wool, this reduction must have caused marked hardships.
Logging and Tanbarking

The key to the use of timber is good transportation. Other areas of California had better timber resources, so the investment required for a workable road system was not forthcoming in the project area during the nineteenth century. Logging activities were in general small and local.

The first mills were built after the arrival of settlers in the foothill regions during the 1850s. Mills were water and steam powered, or, on occasion, horse or ox powered. Information concerning these early mills is sketchy in most cases. An early, horse-powered mill was located on Mary Ann Ridge (Kinloch 1973:4). Pole Gardens, perhaps the same mill, was located in the same area as the Boardman Saw Mill off the Pacific Ridge Road, once called the "Old Pacific Road Trail" (Mike Boynton, Personal Communication, 1982; Holly Rogers, Personal Communication, 1982; Forest Service 1912:11).

Numbers of mills, as well as locations and names are confused in the available records (Yatsko 1977:9). One source is a map and list of sawmills in and near the Mendocino National. Saw mills are shown concentrated around the Ivory Mill area and near Alder Springs (Anderson ca. 1973). In one case, an oral history transcript mentions the numbers 44 and 78 when attempting to estimate the numbers of mills that operated in the Mendocino National Forest (Kinloch 1973:3). The uncertainty surrounding the numbers, locations, names, and dates of operations of saw mills is worthy of future consideration.

The prime timber zones were in the drainages of Thomes and Stony Creeks, and in the areas north and east of Clear Lake on Bartlett, Pine, and Elk mountains. One timber survey, conducted in the early 1910s, listed several zones of good timber, including Fern Point (T.25,26N.R.11W.), Little Doe Ridge into the Beaver Creek Basin(T.24N.R.10W.), Fly Creek (T.23N.R.10W.) and the basin of Alder and Maple creeks (T.24,25N.R.10W) (Evans 1913:15).

The project area was never a substantial producer of lumber or lumber products throughout most of its history. Many of the reserves of timber went untouched until well
into the 20th century. Some of the counties that are known to have had at least some logging ongoing were included in a 1914 survey of county taxes paid by timber interests, shown below:

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>TOTAL COUNTY TAXES</th>
<th>TOTAL TAXES PAID BY TIMBER</th>
<th>% OF TOTAL CO. TAXES PAID BY TIMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glenn</td>
<td>$266,168.69</td>
<td>2,806.92</td>
<td>1.1</td>
</tr>
<tr>
<td>Lake</td>
<td>100,386.79</td>
<td>2,340.98</td>
<td>2.3</td>
</tr>
<tr>
<td>Mendocino</td>
<td>315,804.40</td>
<td>128,004.70</td>
<td>40.5</td>
</tr>
<tr>
<td>Tehama</td>
<td>235,195.09</td>
<td>21,706.19</td>
<td>9.2</td>
</tr>
<tr>
<td>Trinity</td>
<td>75,982.31</td>
<td>40,297.53</td>
<td>53.0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>12,600,676.98</strong></td>
<td><strong>1,139,776.67</strong></td>
<td><strong>9.0</strong></td>
</tr>
</tbody>
</table>

(STATE)

It is possible that this table reflects the taxes paid by timber interests before the turn of the century, but much further research in county tax rolls would be necessary to draw more than general inferences.

Land speculation was rampant in some of the more valuable timber zones in California. In some cases the result was individual acquisition and subsequent destruction of important watersheds. There is some evidence for land speculation in the Corning and Bartlett Mountain areas (Anderson 1961), but the large scale land-grabbers seem to have avoided the project area. When the Sacramento Valley Development Association sent a resolution to the President of the United States in 1902, they stated that "...at the present time there are no speculators or others striving to secure the timber lands..." associated with the watersheds from Putah Creek northward to Cottonwood Creek (Anonymous 1902:9). Eleven years later, the Corning area forests were headlined as a "Vast Timber Belt Ready For Mill," and prospects were good for the local economy. It was estimated that 15 years would be needed to harvest the 425,000,000 board feet of lumber (Anonymous 1913:17).
The demand for timber and shake came from farmers and ranchers, especially on the east side of the Coast Range (Mackie 1902:26-27). The operations were small, portable mills, which ran from May to October, sawing about 200,000 board feet per season (Ayres 1906:9).

First operation of saw mills on the Mendocino National Forest dates to the late 1850s, when John Williams began operation of his mill near where Stony and Elk creeks meet (Baker & Ewing 1968:108). By 1867, Williams' mill ran two saws and cut about six thousand board feet per day. The mill was steam powered and had cost about $3,000 to erect. He employed four men.

Another mill, the "Mountain," owned and operated by Mssrs. Gillman and Patten, was in Tehama County, in the Coast Range. It was a little smaller, with only one saw, and was powered by a large water wheel placed in Mill Creek (Whitlock n.d.:1). The mill operated until the mid1870s (Hulse 1951). Although it cost more to built ($5,000), its capacity was one-third of the Williams' mill which was in less rugged country (Bureau of the Census 1870; Langley 1867:287,398). Such operations were common into the 20th century (Mackie 1902:27-28).

The Manson Sawmill was built near the site of the Williams mill mentioned above. It operated from 1870-1900, and is today one of the more important historic resources on the Mendocino National Forest (Yatsko 1977:8-11).

Others included now abandoned mills on Elk Mountain, Bartlett Mountain, and the large Sanhedrin mill on Salt Creek, a tributary of Stony Creek (Mackie 1902:27). This mill, built at an estimated cost of $100,000 in 1891, was near Brushy Mountain. The Sanhedrin Lumber Company had also built a road into the area, but they ceased operations after cutting only a part of the season. The expense of the long haul to market made the operation unprofitable (Ayres 1906:9).

Lake County was another area where saw mills operated on a local basis, from the first occupation by whites. In the area around Upper Lake, the Pine Mountain mill was built
by Bateman and Young in 1864. Another was on Little Horse Mountain, later moved to Pine Mountain (now Garrett Mountain) in 1872. Still another mill was built by J.F. Hanson at the head of Long Valley in 1875 (Carpenter & Millberry 1914:145).

Andrew Gray, in 1862, built the first saw mill in Round Valley. To accommodate local need, it was adapted to include flour milling stones in 1864. It was a small mill, water powered, and he eventually sold it to the government (Langley 1867:291; Carpenter & Millberry 1914:94).

With a number of small operations on private lands, it was inevitable that someone would venture to cut on lands owned by the government. Sometimes such trespass would go on for a number of years before discovery. One such example was the saw mill built by John and Wesley Morris, along with A.T. Welton of Stonyford, on a parcel near Fouts Springs. It took the government 13 years to discover this error, and the company by then had been long out of existence (Anonymous 1907:8).

In 1902, there were 11 standing mills within the proposed forest reserve, six on Sanhedrin Mountain, Frazier's mill on Mill Creek, T.J. Wray's mill on Pine Mountain, Ivory's mill on Elk Creek, and mills on Salt and Thomas [Thomes] creeks. Two more were planned to be erected on Pine Ridge on Sanhedrin Mountain, and at the head of Little Stony Creek (Mackie 1902:27).

These mills were usually portable, built on skids so that they could be moved. But not all of them were moved, and, when they were moved, they weren't moved very far. Some, in fact, remained in their original positions, while others were moved along timbered ridges or moved to another ridge entirely (Ayres 1906:10).

Logging was largely confined to the eastern side of the forest because of the difficult terrain west of the summit. The demand for lumber was not especially consistent in the local communities that these mills served, and there was a general decline in demand from 1891–1906 (Ayres 1906:11).

The logging methods used in 1900 were similar to those
of other pine regions, but much reduced in capacity, since virtually no lumber was produced for export (Mackie 1902:26). Logs were usually 16 feet in length and from two to four feet in diameter. They were hauled on "low-wheeled trucks" to the mill, unless the distance was short enough to allow for skidding, which was done with horses.

In Lake County, oxen were used as draft animals by Madison B. Elliott at his mill on lower Buck's Ridge (Griner 1978:8). The timber was rough cut, cured, and then hauled to the valleys in the area by wagon (Mackie 1902:28).

Methods were wasteful and dangerous, especially for those who cut timber for shake. One area, popular for shake making, was in the mountains west of Chrome. Camps were established in the woods for shake making, with as many as thirty people in one location. The shakes were brought down out of the mountains, and sold, "thousands of them," for five dollars a thousand (Moore 1980:67-68). The practice was to take only the most ideal portion of the log, "never under 18 inches in diameter and usually not less than 24 inches," and the remaining wood was left to rot or burn in the next fire that swept the area.

Logging methods that wasted a good deal of useable lumber were rampant in California and elsewhere. However, since difficulties in transportation prevented large scale logging, the project area was not extensively cut over, and the quality of reproduction of timber stands was generally good throughout the forested sections at the beginning of this century (Mackie 1902:29).

The manufacture of shake and rails may have predominated on the eastern side of the Coast Range summit, but an important forest industry in Mendocino County was tanning, or the gathering of tanoak bark for use in leather preservation. The Sacramento Union reported in 1858 that eastern leather had been forced out of the Pacific Coast market by local production (Anonymous 1858:3)

The wood of the evergreen tanoak was discarded as waste after the bark was stripped off the tree in sections. The bark was dried, then hauled or packed to a local transfer point, where it was shipped to the tanneries. The closest
tanneries were located in Sonoma County at Ross, Bodega, and inland at Petaluma and Santa Rosa. At one time Napa County also had two tanneries. The tanbark industry was an important cash income for ranchers, and it persisted with some vigor until after World War II when plastics displaced leather and local economies were deprived of an important market (Ormsby 1972:passim; Herbert 1980:92; Theodoratus 1979:112-113).

When the Forest Service took over the areas originally withdrawn in 1902 as a reserve, there was little effect on the logging industry. The timber stands on private inholdings were sufficient to "keep up the present rate of milling for many years to come..." (Mackie 1902:36).

The rate of milling, however, did not stay the same. Again, the key was transportation, which was rapidly improved in the beginning of this century. After the First World War, the Prather Lumber Company began operations on Elk Mountain. The mill, first powered by steam, later supplemented at least in part by electricity, was built on lands purchased in 1919 from the Farmers Savings Bank, which had held the lands since 1892. The mill had a capacity of 30,000-40,000 board feet per day. The first big orders filled were to supply lumber for construction of Scott Dam in Gravelly Valley during 1920-21.

The area directly around the mill was soon exhausted, and horses were used to skid logs to the mill as far away as was practical. By the mid-1920s, Prather had installed and was operating a logging railroad, built from salvage obtained from the Colusa and Lake Railroad that had connected the quarries at Sites with the main Southern Pacific line down in the Sacramento Valley. The route of the railroad changed, as areas were logged off, but it began with a section head east. By 1929, tracks were laid also to the west for about two miles. Where necessary, trestles were erected, and the final appearance must have been like a loose spider's web radiating from the central location of the mill. The lumber was hauled by truck to the Lakeport lumber yard Prather had first established in 1924. By 1934, the box factory was moved into a location near the yard. The hope was that the longer working season would increase profits, and it must have, for the operation continued
throughout 1936 and 1937 until a strike closed the mill in May. The strike was suppressed. Business went on, apparently fairly well, because in July of 1938, Prather bought a new steam locomotive for his four-mile operation. Despite his investment in better equipment, Prather had to end operations in early 1938 because of moneys owed to him. The Diamond Match Company purchased the yard in Lakeport, and the box factory was removed to the mill on Elk Mountain. By the beginning of 1939, Prather had leased his mill operation to the Lake County Lumber and Box Company, but they too were unable to operate the business profitably. Throughout the 1940s, the mill operation was leased to various concerns until Prather sold the mill in 1946 to the Golden Gate Lumber Company (Clark 1977:1-4).

Other logging on the Mendocino continued in the same era as the Prather Mill, but, comparatively, timber operations remained small concerns. In 1943, the Mendocino National Forest Transportation Plan reported that "utilization of timber on this Forest is only in its infancy" (Forest Service 1943:14).

By 1943, the timber operations had been more defined, with two "working circles" and "blocks" within each circle. The active timber areas remained the same, since the blocks were roughly those in the western foothills of the Sacramento Valley and the upland areas north of Clear Lake. The quantities were substantially larger, however. The new Thomas Creek block was expected to cut about 25,000,000 board feet annually, and the largest existing operation on the Forest, the Sanhedrin mill near the Van Arsdale Reservoir, was producing about 10,000,000 board feet annually. There were six other mills annually producing in excess of 1,000,000 board feet. Two other smaller mills were operating in the Little Soda Creek and Elk Creek Mountain area (Forest Service 1943:14, 72-73). In 1952, during the height of the postwar boom, the Mendocino National Forest was producing nearly three times as much lumber as it had in the early 1940s (Simoons 1953:298).
CHAPTER VIII
TRANSPORTATION

Transportation in the project area was very poor in the period before the 1920s when the state undertook its massive highway construction program. Before then roads existed, of course, but their use was severely limited by weather. Dirt roads were built and maintained by a number of toll road companies in Lake County, but the quality of transportation, even to the resort and mining centers, was always minimal. The operation of steamer lines on Clear Lake must have been a great relief to travelers enroute to Bartlett Springs, even though it meant only a brief detour from the wagon and stage roads.

The development and maintenance of roads was private or left to county governments. Local governments were financially unable to make more than token gestures at maintenance, even if they managed to appropriate the revenue to cover construction costs. To add confusion to the problems faced by county governments in the 19th century, a series of boundary changes, sometimes ill-defined, compounded the problems of administration, especially in the mountainous regions where most of the present project area is located.

The Mendocino National Forest and the East Lake Planning Unit are composed of parts of eight separate counties at present. Originally, in 1850, there were seven counties in or near the project area. Map 4 shows the counties as they were first delineated, and Map 5 shows the boundaries as of 1922, with some rough indication of the chronology associated with 19th century boundary modifications. The discussion of county boundary changes is important for understanding the administration of the area in the 19th century. Attention here is directed toward only those changes that affected the project area.

The first counties created included Shasta, Trinity, Colusa, Mendocino, Sonoma, Napa, and Yolo counties. The boundary outlines of these first counties were tentative. Some counties were administered by others, e.g., Mendocino was administered by Sonoma until 1859, and Trinity was
Map 4

Original California Counties
(Coy 1923:3)
Map 5

County Boundary Changes, 1850-1907
(Coy 1923:54)
administered by Shasta. Many of these first boundaries also ignored the obvious lay of the land, had not forseen developmental trends, and so forth. In the case of the Coast Range Mountains, the boundaries were projected almost blindly.

The main dividing line between east and west counties was the summit of the Coast Range Mountains. In the case of the northern counties, the summit line worked well enough since it was easily located, however difficult it was to survey. In the southern reaches of the Coast Range, the summit becomes less discernible, and many subsequent boundary changes were necessary to clarify the territories of the several counties.

The northern counties of the project area in 1850 were Trinity, Shasta, Colusa and Mendocino. The substantial boundary changes occurred with the creation of Tehama in 1856 and Glenn in 1891. Both Tehama and Glenn counties received portions of Colusa County, but the larger portion was allocated to Glenn County. Although Trinity County was reduced in size three times to create Humboldt, Siskiyou, and Del Note counties, the lines involved in the project area remained about the same as at present.

As stated above, the summit of the Coast Range Mountains, which is not well-defined in the southern part of the project area, was used to delineate boundaries anyway. This created considerable confusion, but was eventually resolved by the late 1860s. Mendocino County originally included Clear Lake. In 1852, Clear Lake was divided southeast to northwest between Mendocino and Napa counties. This boundary remained until Lake County was formed in 1861 from portions of Napa, Yolo, and Mendocino counties. Long Valley was added to Lake County from Colusa County in 1868, and the boundaries have remained approximately the same since then.

Yolo County, which was an original county dubbed Yola, contained part of Colusa and Lake counties, but was modified in 1851 to its present shape. Napa County went through two boundary changes from its original size and location in 1850. The original Napa County line included some area northwest of Mount St. Helena up to Putah Creek and along Cache Creek beginning just east of Clear Lake. The county
Map 7
Lake County
(Paulson 1874:53)
Map 8

Colusa County
(Rogers 1891)

[Note the extent of the Colusa and Lake RR west from Sites which was never constructed.]
Map 9

Napa County
(Paulson 1874:1)
was increased substantially in 1852 and 1855 to include the southwestern half of Clear Lake. When Lake County was formed in 1861, Napa was reduced to about its present size and shape (Coy 1923:passim).
Towns, Toll Roads, Trails and Stage Lines

Settlement and development of the project area eventually led to the formation of towns at important points that offered access to main trails and wagon roads. The scattered rural population needed locations where they could market their products and purchase staples they could not produce themselves. Quite often these towns were located at the confluence of two streams as were Stonyford, Elk Creek, and Newville. They could be on the natural trails that developed in conjunction with mountain passes through the project area, e.g., Covelo. Newville was described by one author as "a natural consequence from the early settlement" (Rogers 1891:290).

The first transportation routes in the project area were trails and crude roads:

"...[T]here's an old steep trail comes down of Elk Creek right straight down the point. That's the way they used to make the roads up there. They went straight up and straight down. They didn't make any grades (Moore 1980:67).

Location of these first roads and trails is difficult to determine with any precision. A limited idea of routes is provided by the General Land Office Survey Plats for the 19th century. Pieces of trails, and some roads that crossed sections lines, are shown on Map 10, which is a compilation from the GLO Survey Plats covering the Mendocino National Forest.

Transportation on the western edge of the project area was difficult, and communities in the valleys were established before good roads were built connecting them with major trade centers. Ukiah and Lakeport were first connected in 1867 by a 24 mile wagon road that was predicted to be a great help to developing the resources of the Ukiah Valley. The Round Valley to Ukiah road was constructed in 1869, making way for regular mail service beginning in 1870. The road was extended to Covelo in 1873. Unlike Lake County where toll roads were the rule, many roads in Mendocino
Map 10

Roads and Trails in the Mendocino National Forest, ca. 1880
(General Land Office Survey Plats)
County were built by private subscription and labor (Carpenter & Millberry 1914:93, 196; Cronise 1968:194; Menefee 1873:336-337).

Clear Lake was the center of an early trail system that led northwest to the Russian River valley, northeast to the Stony Creek Valley, and another that led south via Putah Creek and Berryessa Valley. The Stony Creek route was described as follows:

> From the outlet of Clear Lake, the northerly trail led into Long Valley; thence it proceeded through a pass into Indian Valley, up the north fork of Cache Creek to Spanish Creek, past Spanish Camp, and thence over a low divide into Stoney Creek; thence down this creek to a point near Stoney Ford; thence, northerly, along the foothills of the Yollo Bolla Mountains [sic] to Thoms Creek [sic], to Red Bluff... (Jones 1953:376).

Another important early route was through the Mendocino Pass, at a place once known as Low Gap. Shown on a General Land Office Survey Plat, the "Road from Paskenta to Round Valley" was in service in the late 1870s, and it was one of the routes that later became a stage route over the mountains to Red Bluff (Beck & Haase 1974:51). Map 11 shows this route along with other stage routes near the project area.

In 1880, stages connected Ukiah with Potter Valley and Covelo on the west. The "northerly trail" described above became a main wagon route. The towns along the way, including Fouts Springs, Stony Ford, Elk Creek, and Newville, were later described as having stage connections among each other and into the Sacramento Valley (Rogers 1892:290; Green 1950:147, 153; Judge 1914).

One major goal of the Forest Service, during its first few decades of managing the reserve, was to increase access to the mountains. But development was slow because of limited funding. Effective fire fighting depended upon quick access to burning areas. Moreover, the management and use of resources were by a transportation system properly designed and maintained. By 1937, even though there were "no cross-forest roads of high standard," five improved
Map 11
Main Stagecoach Roads, 1860-1880
(Beck & Haase 1974:51)
roads comprised the primary road system of the forest, with other, rougher roads allowing better access to the forest at large (Forest Service 1943:8).

In the southern part of the project area, roads connected all of the quicksilver mines and resorts with larger communities on the outside. In 1880, Leesville, a small town west of Williams, had stages passing through on the way to Allen's, Cook's, and Fouts springs from major depots in the valley (Green 1950:118). Further west, in Lake County, there was an extensive transportation system developed to accommodate the resort and mining traffic, as shown on Map 12 (Simoons 1953:367).

One of the first roads into Lake County was built in 1854 by settlers seeking access to farmland in the Clear Lake country. The route was over the mountains from Napa City to Clear Lake, a treacherous passage that was followed by subsequent stage lines (see Map 13). The road helped with settlement of the Clear Lake area and allowed for transportation of cash crops to market, but Lake County remained virtually isolated until the beginning of the mining and resort boom in the 1870s. Borax was discovered in Lake County in 1864, and, for a time, was the only domestic source of the chemical. Mining of borax helped boost the economy of the area, and roads were needed, but the quicksilver and resort development in the 1870s required roads through the middle and southern regions of the county (Simoons 1953:363).

These early main roads in Lake County were all toll roads. By 1872, four toll roads were operating. Two were south of Clear Lake and two were north. One of these northern routes was from Upper Lake to Ukiah, and another from Upper Lake to Bartlett Springs, originally in two pieces. The Upper Lake and Clover Valley Toll Road was built by James Madison Denison in 1870-71. Its route was due east ten miles from the upper end of Clover Valley over Bartlett Mountain to Bartlett Springs. It was built, using Indian labor, as directly and steeply as the wagons and teams could manage, remaining in service until the Bartlett Springs and Clear Lake Toll Road was built about 1890.

From Bartlett Springs the journey to Williams in the
Reproduced from map in undated publicity-booklet,
Lakeport, the Geneva of America
Courtesy of the Bancroft Library

Map 12

Transportation, Clear Lake
(Simoons 1953:367)
Map 13

Transportation, Lake County, 1910
(Simoons 1954:314)
Sacramento Valley was over the Epperson Toll Road, which ran through Bear and Indian valleys to Bartlett Springs. This road was built in 1873, using Chinese labor, and it was successfully operated until it was taken over by the Bear Valley and Bartlett Springs Toll Road Company. In June of 1873, this company started a stage line from Colusa to Bartlett Springs. During that one summer, over 600 passengers and 400 wagons traveled the road. In 1874, postal service was established between Colusa and Upper Lake, and two more stage lines were added to the transportation system, including one between Colusa and Wilbur Springs. During that season, more than 2,000 people patronized these lines (Green 1950:122; Griner 1978:6, 9; Simoons 1953:364-365; McComish & Lambert 1918:89-90). Map 14 shows part of the intended route originally surveyed by the Bartlett Springs and Bear Valley Toll Road Company in 1873 (California State Archives, Articles of Incorporation, File #11040).

Toll roads were not popular with the local people, and some effort was devoted to avoiding the toll houses on any of these roads. Eventually, in the late 1890s, the supervisors of Lake County began to buy sections of the toll roads and allow free passage. These toll roads, however, had accomplished an important function in maintaining access to areas in Lake and Colusa counties which needed transportation routes to develop the local resources. These roads also functioned to allow farmers along their routes easier access to markets and sometimes an increase in the worth of real property. In the case of Bear Valley in the 1870s, the roads contributed to a 40% increase in land value (Carpenter & Millberry 1914:146; Green 1950:122).

The toll road system persisted in Lake County well into the 20th century. The county supervisors had been purchasing and opening roads for free travel since the early 1890s, but the Clear Lake and Bartlett Springs road, and important east-west route, was a toll road until 1924 (Simoons 1952:167).

Clear Lake was used by steam and sailing vessels to carry passengers, supplies and products from the quicksilver mines, and other freight. In 1877, the City of Lakeport and the freighter Emma began to supplant the earlier sailing
ships that had been used for lake transport beginning about 1860. Ultimately, passenger traffic proved to be unprofitable, even at the height of the resort boom. The City of Lakeport, however, was purchased and operated by the Bartlett Springs Company between Lower Lake, Lakeport, and Bartlett Landing on the northeast shore. Most of the steamboats were built at the lake, but the Hallie was hauled there by wagon. In 1890, several ships were busy hauling freight, especially wood, to the Sulphur Bank Mine near Lower Lake (Simoons 1952:163-66).

Towns ringed the periphery of the project area and provided valuable goods and services to the residents. Most of the towns that were originally established are no longer the trading centers they once were. The beginning of the highway system and automobile travel meant the end of rural town life. Goods and services, once too expensive to import, were easily and more cheaply obtained in larger cities.

In 1863, the town of Smithville was located near the junction of Big and Little Stony creeks by John L. Smith. Fifteen years later, Smith built and operated a flour mill, near the town, powered by water from Big Stony. He sold the mill to the Stony Creek Improvement Company in 1890. The company abandoned the original town and mill sites. They laid out a new town nearby, which they named Stony Ford. The company sought to make the town a stop-over for health and pleasure seekers. In 1891, Stony Ford boasted

a first-class hotel, a [new] flouring-mill, ... a general merchandise store, a livery stable, a blacksmith shop, and post-office (Rogers 1891:284).

The town was also a stage connection to the railhead at Sites.

Declining wheat production caused the close of the mill within a few years, and it was finally torn down during World War I (Moore 1980:26). The expectations of the Stony Creek Improvement Company to establish "a great metropolis in the little mountain valley" never came to pass, but neither did the town decline into total obscurity. In 1918, Stonyford was described as having:
a population of about 90, and does a considerable business in the summer with campers, hunters, fishermen, and other pleasure seekers. It is surrounded by beautiful alfalfa fields watered from Big Stony Creek, and is an ideal spot in summer. It has a town hall, two churches, a Masonic hall, a hotel, and telephone communication. D.J. Westapher and A.R. Bickford and Company keep general stores, and the latter firm handles fresh meat. There is a restaurant, a candy and soft drink establishment, a creamery, a blacksmith shop and a feed stable (McComish & Lambert 1918:130, 176; Rogers 1891:284).

Stony Ford had benefited greatly from the development of the foothills.

Other towns further north in the Stony Creek Valley included Elk Creek, Newville, Paskenta, and Fruto, slightly east of Big Stony Creek.

Elk Creek, located at the confluence of Stony and Elk creeks, had "been known as a trading point for a number of years" in 1880. The first store was started there in 1869, and, by 1880, there was also a saloon, blacksmith shop, hotel, livery stable, and a post office offering delivery three times a week from Colusa and Willows (Green 1950:147).

Fruto was the only town in the area which had been favored with a railroad for a time. In the late 1880s, "considerable produce" was shipped from there (Rogers 1891:293), perhaps grown in the gardens along Stony Creek that were maintained by Chinese (Green 1950:153).

Newville was at one time an important trading town, but, like others, it is now only a reminder of past activity. Newville once contained a hotel, general store, blacksmith and wagon-making shop, Masonic hall, schoolhouse with 60 students, and a physician in residence. Situated on the main foothill stage line, there were connections for Chico or Tehama, and recreation, such as hunting and fishing, was promoted as an important sideline. "The town," wrote Justus Rogers in 1890, "was a natural consequence from the early settlement, and, while it has not increased materially in size, it is a point where considerable
business is done" (Rogers 1891:290-91).

The decline of towns in the western foothills of the Sacramento Valley was brought about by better transportation, since goods and services could be obtained more cheaply elsewhere. It was a common pattern.

The development of Stony Creek into a major irrigation project (1908-29) flooded farmland in the area, which further displaced the original local economy. The gradual deterioration of the one outstanding resource of the area, grazing lands, was the final, killing blow to the small farm or ranch economy. The "wild oats nearly up by my horse's back" that Rufus Burrows described were long gone by the end of the First World War, when grazing lands throughout northern California were first beginning to show the signs of destructive grazing practices.
Railroads for Commerce & Industry

The development of railroad transportation in the western Sacramento Valley changed entirely the economies of the areas the railroad served. Quite often, towns were created along the route, especially at railheads. Tremendous promotional campaigns by townspeople were aimed at attracting railroads to their communities. In some cases, farmers in the Sacramento Valley would donate lands they held for depots in order to secure their connection with the wheat market. In outlying areas, the effects were similar. When the West Side and Mendocino Railroad was first surveying its line to Elk Creek, it provoked a small land rush. "[M]uch government land was entered...And many new residences built" (Rogers 1891:239, 260).

Track was eventually laid along the west side of the Sacramento Valley, somewhat further west than many had originally proposed. The original river route was dispensed with in favor of higher ground to the west. The railroad thus avoided floods and the expense of bridges across the many sloughs near the Sacramento River.

Construction of the railroad began at Woodland in 1876, reached Arbuckle in May, and Williams in June. A delay kept the railroad from Willows until July of 1878. It was not until four years later, in September of 1882, that the track was completed to Corning. The final connection, at Gerber, of the Northern California Railroad with the California and Oregon Railroad allowed rail transport from Redding, through Red Bluff, and south to Benicia (McGowan I, 1961:231-233).

The building of the railroad through the Sacramento Valley connected the great wheat farms of the valley with the world market, promoting the creation and prosperity of many towns along the route. Germantown, Arbuckle, and Williams were among the many towns where wheat was loaded onto trains. Populations of these railroad towns were rarely above 200. The exception was Willows which had been settled before the railroad was planned. Ten thousand to 30,000 tons of wheat was shipped annually from these towns (McGowan I, 1961:234-35).

With the building of the main line, many companies
attempted to promote the construction of smaller lines westward through the Coast Range Mountains to Mendocino or Lake counties. Eventually three railroads, all narrow gauges, were constructed to the eastern boundary of the project area. Usually failing enterprises even from the beginning, these transportation lines depended upon local resources for their sporadic operation.

The Colusa & Lake Railroad was the first to be finished. Chartered in 1882, the railroad was finished to Sites by 1885. It began in Colusa on the Sacramento River, went through a junction with the Southern Pacific at Colusa Junction, and then on to Sites, a distance of 22 miles (Anonymous 1891a:125; McGowan I, 1961:236; Railroad Commission 1892:114).

The type of business carried on by the Colusa & Lake Railroad is worthy of note, even though the information is sketchy. In 1893, the total tonnage was 12,217, which is very small. The railroad was unable to report specifics to the State of California because "[a]s we run mixed trains it is impossible for us to state how much of each commodity was hauled; but about 10,000 tons was grain (Railroad Commission 1894:310). Presumably they also engaged in passenger traffic. By the mid-1890s, the reports were more specific, including grain (5,000 tons), livestock, grain, hay-wagons, merchandise-wagons, and agricultural implements (Railroad Commission 1896:318).

By the beginning of the 20th century, even more specific data is available on railroad operation, summarized below:
Colusa & Lake Railroad, Freight Traffic Movement

1900-1901

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Total Freight (Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain, about</td>
<td>7,000</td>
</tr>
<tr>
<td>Fruit and vegetables</td>
<td>100</td>
</tr>
<tr>
<td>Livestock</td>
<td>100</td>
</tr>
<tr>
<td>Stone, sand, and other</td>
<td>7,000</td>
</tr>
<tr>
<td>like articles, about</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1,520</td>
</tr>
</tbody>
</table>

Total 15,720
(Railroad Commission 1900-01:278)

Profits were never good on this line. Several times during the last 20 years of operation the showed only a net loss for their efforts (Railroad Commission 1913:784-787). The original plans to extend the Colusa & Lake road into Lake County never materialized, and the last freight run for this narrow gauge was on May 21, 1915 (Vivian 1891:140; Anonymous 1891a:279-80; McGowan I, 1961:236).

The West Side & Mendocino Railroad Company (also known as the West Coast and Mendocino; and the Mendocino Lakeside Railroad) was incorporated in 1886. The backers planned to put a line westward through Fruto and over the mountains, probably to Covelo or Ukiah. The line was completed to Fruto by 1890. This route served to stimulate the economy of the Stony Creek area, but it was never extended over the mountains as originally intended. In 1901 the 17 mile line was being operated by the Southern Pacific Company, as were many lines throughout California (Anonymous 1891a:125; McGowan I, 1961:236; Railroad Commission 1901:249-250).

By 1887, Southern Pacific had constructed a branch line up through the Capay Valley to Rumsey, with the intent of extending the line over the mountains into Lake County, but
this was never accomplished (Anonymous 1891a:279-280). Altogether, at various times, more than 50 railroads had proposed routes into Lake County, but none ever came into being (Mauldin n.d.:8602-8603).

On the western side of the project area, railroads were slow to develop. Ukiah was not connected to the main rail transportation system until 1899. There were never any railroads built from the main line that ran into the project area to the east. Political, financial, and construction difficulties stopped completion of the main line from Ukiah to Eureka until 1914 (Anonymous 1891a:159; Herbert [1980]:112-114).
Highways for Auto-mobiles

Government interest in financing the construction of roads began with the organization of the State Bureau of Highways in 1895 (Bureau of Public Roads 1920:13). This new bureau conducted a survey of county roads throughout the state but because of the crude and disjointed shape in which the Bureau has found many of the records of highways, it has been impossible to gather accurate statistics (Irvine 1896:14).

The Bureau found that many roads did not have clearly assigned right-of-way. Moreover, many county roads had been constructed over routes, chosen not for ease of travel, but at the whim of landowners.

..."The road from Lakeport to Upper Lake, for example, was originally well laid out; it was located on a nearly direct alignment upon gently sloping and easily drained land lying along...hills west of Clear Lake. First one and then another of the landowners shifted the road westerly over the uneven and difficult land, until the additional length of road is about two miles, and the road lies along the edge and over the miry slopes of the adjacent hills in a faulty and difficult location (Irvine 1896:15).

Ultimately, despite the efforts of local individuals, the state highway system was laid out, with a route for an east-west road following the southern shore of Clear Lake (California Highway Commission 1920:15). The extended quotation is important, for the confusion that accompanied the building of roads was intense, especially for minor roads in hinterland areas. Quite often, several groups of people were involved: Forest Service, Bureau of Public Roads (USDA), County Supervisors, the State Engineer, and private individuals.

The reports concerning road building activity on Forest Highway 7, for example, consistently proposed new routes. To complicate the incomplete records, roads were usually built in sections, i.e., from the county line to a Forest border. By the 1930s, at last, there was an "improved" highway that ran between Willows and Covelo (Historical
In 1896, none of the eight counties of the project area had more than 650 miles of road, and only Tehama had one mile of macadamized road (Irvine 1896:passim). Within the next three decades, the situation changed dramatically, but the roadways through the project area were the last to be improved.

The Ukiah-Tahoe highway was originally proposed by the state to run south of Clear Lake. The plan was later changed to the northern shore, but the Bartlett Springs Company, in the late 1920s, organized a local effort to have the route pass by the failing resort community in the high northern mountains of Lake County. Their efforts were unsuccessful, and it meant the eclipse of the mineral springs resort industry. Another state highway from Rumsey west to Lower Lake was built in 1929 and joined the Ukiah-Tahoe highway. A route was proposed through Morgan Valley, but was rejected for the present route, which left the south-eastern portion of Lake County without good transportation (Simoons 1952:167-69).
CHAPTER IX

MINING

Gold and silver occupied the attention of those who migrated to California to get rich quick. But the gold fields were not as available or as extensive as many rumors reported. By the early 1850s, although the migration continued, most of the easily available placer claims were worked out or under the control of individuals or corporations. Many of the men who came to the Mother Lode found only jobs, but living expenses were much higher than in their home states. They began to explore the higher Sierra Nevada in search of the source of the wealth found in the downstream reaches of the Feather, Yuba, and American rivers. Eventually, other minerals were discovered. Gold fever subsided, supplanted in part by an awareness of California's other mineral riches.

Once attention was directed to mineral wealth in general, mining activities began to diversify. Borax, sulphur, and mercury were important minerals mined in the southern part of the project area during the 19th century. In the 20th century, the quicksilver mines were largely worked out, as well as the few gold strikes that had been made. Attention turned to chromite and manganese, especially during the two world wars. These minerals were important to the manufacture of hard steels.

Various minerals were located in many deposits around and throughout the project area, but only in a few instances did mining actually begin. Mendocino County was the only significant producer of manganese and coal, but most of those mines were outside the project area. Glenn County had the highest production of chromite. The Rustless Mining Corporation had an extensive operation between 1942 and 1946 at the Grey Eagle Mine (see Photos 1, 2, 3, 4). Lake County was a big quicksilver producer, but Napa County could claim the largest output for a single mine, the Oat Hill Mine. In Colusa and Yolo counties, quicksilver also dominated the mining scene, but oil and copper rushes also mark the industrial history of these areas with much prospecting, some development, but ultimate failure.
The communities that grew up around mining operations were sometimes extensive, but usually no longer lived than the ore deposits they mined. They were company towns in many ways, but influenced by the isolation of the areas in which they were located and the local economies they stimulated. In the mining regions, a pattern of multiple land use is especially apparent, but it appears throughout the area as a backdrop to the dominant resource exploitation particular to any given area.
Borax, Quicksilver, Gold, and Strategic Minerals

Mendocino County is one of the least mineralized areas in California. Surprisingly, it is also the lead producer of manganese. But the area is not entirely bereft of other mineral wealth. In 1864, gold valued at several thousand dollars was mined near Ukiah City. To the north, copper deposits were located in the late 1860s in the hills above Coyote Valley and in Potter Valley. The largest mineral deposit in the county was the coal formation discovered between Round and Eden valleys on the South Fork of the Eel River. This deposit was mined briefly in the 1880s, when several tunnels were driven into the coal bed and about two tons were removed (Carpenter & Millberry 1914:96-97; Cronise 1868:195-96; Menefee 1874:341).

The development of mineral resources in the southern portion of the project area, where Lake, Colusa, Napa and Yolo counties share boundaries, occupied the energy and attention of local residents and the mining community for half a century before the original lodes were worked out. Quicksilver attracted the most attention because of its potential value and quantity, although it was not always the leading commodity. Colusa County, for instance, sold more dollars worth of their famous sandstone than gold or quicksilver from the mines of the Sulphur Creek mining District (14 Report of the State Mineralogist 1919:175).

The story of mineral production begins with the discovery of borax east of Clear Lake, at Borax Lake. John Veatch noted in 1856 that the mud shore left behind in summer by the receding of this small lake contained marketable quantities of borax. This was the first domestic borax available in the United States. The California Borax Company produced 12 tons during their first year of operation on the deposit.

Simple placering or washing techniques were used to separate the large borax crystals from the lakeside mud. The crystals were then shipped to San Francisco for final treatment. After two years, such techniques were not profitable. The company attempted other types of extraction methods, including distillation, but the operation was never again profitable. The discovery of the San Bernardino
County borax deposits in 1863 closed down the operation permanently (Simoons 1953:300-303; Cronise 1868:186-88).

Undaunted, the California Borax Company began to produce sulphur on the banks of Clear Lake, about a mile north of Borax Lake, in 1865. Large, open cuts were dug into the deposits to remove the sulphurous ores, which were crudely refined by melting in furnaces nearby. As the cuts went deeper, the presence of cinnabar became an impediment to the operation of the mine, but apparently little thought was given to refining the quicksilver ore. The total production of sulphur was about 2,000,000 pounds when the operation was terminated in the early 1870s (Simoons 1954:304-305; Cronise 1868:188-89).

Quicksilver and Gold.

Quicksilver mining in California was dominated by the New Almaden and New Idria mines in Santa Clara and Fresno counties. However, Map 15 shows the distribution of quicksilver deposits in California, and there are a number of smaller deposits in and near the project area. The period of greatest production for these smaller quicksilver mines was from 1870-1890. Statewide production figures, juxtaposed with the contemporary prices, are shown in Figure 1. The tremendous fluctuations in price and production were due to the vicissitudes of the business community, the demand by the gold mining industry (which was the foremost consumer), and also to the mercurial nature of quicksilver mining itself. The deposits of Lake, Colusa, Napa, and Yolo counties were especially irregular and undependable. Even during periods of peak production, ore stopes would be worked out, and production of a particular mine would be sharply reduced until development work opened new deposits. Mining in general is characterized by boom and bust, but, in the quicksilver industry, operations were rarely steady. It was more common for mines to be worked, then closed, and then re-opened when prospects improved.

Within and near the project area are four mining districts: Knoxville Mining District in the northern part of Napa County; Sulphur Creek Mining District which surrounds Wilbur Springs; Clear Lake Mining District, including only the Sulphur Bank Mine; and the Mayacmas
Map 15

Quicksilver Deposits in California, 1917
(Bradley 1918:17)
Figure 1

Production and Price of Quicksilver in California, 1850-1917 (Bradley 1918:10)
Mining District in the Middletown area. Map 16 shows all of the mining districts except the Clear Lake district (Sulphur Bank Mine is included, however).

The principal mine in the Knoxville District was the Redington Quicksilver Mine, owned by the Redington Quicksilver Mining Company. Other companies operating in the area included the Lake Mining Company (which had a number of claims) and the Porphyry Quicksilver Mine. The Red Elephant Mine, first located in 1898, was never a large producer (Ransome & Kellogg 1939:395, 409).

The discovery of the Redington Quicksilver Mine, the fourth largest producer of mercury in California, was entirely accidental. In 1862, a team of two prospectors, sent out by a local combine to inspect Napa County, happened across a newly constructed road from Berryessa Valley to Lower Lake. Near the head of "Sulphur Canon," they discovered an outcropping of liver-colored material, which turned out to be cinnabar of high quality. "The ignorant workmen who had constructed the road, had rolled down into the canon below many tons of cinnabar, which would have yielded fifty or sixty per cent. of metal [this is very rich ore, ed.]" (Menefee 1873:95-97).

The operation first began as the X.L.C.R. [Excelsior] Company. During these first years of operation, the production was 1,800 flasks (75 pounds of mercury per flask on the average) per year. When the company was reorganized as the Redington Quicksilver Company in 1867, production increased nearly twofold. The company entered into at least two contracts with other mines in attempts to stabilize their market. In April, 1868, the Redington Quicksilver Company agreed to sell to Barron and Mills (of the New Idria and New Almaden mines) all of their production at $40 per flask, which had been thought to be a shrewd deal. It turned out, however, that the price per flask rose well above the contracted amount, and the agreement was terminated by 1870 (Redington Quicksilver Company 1870, 1871). The mine did very well through the 1870s, contracting with the Comstock mines for their quicksilver supply, but, the 1882, the mains workings had been exhausted, and the mine was abandoned. Some exploratory work was done on an outcrop in the 1890s, but production didn't resume again until 1911-
Map 16

Quicksilver Mines and Districts, Lake, Napa, and Colusa Counties
(Simoons 1952:102)
12, 1915-16, 1922, and 1927-36. Most of the later production was obtained by working ore dumped during the original operation (Ransome & Kellogg 1939:409-410; Forstner 1980:76-78).

The reduction works of the Redington Quicksilver Company were of moderate size, capable of reducing about 500-600 tons of the low-grade ore per week. Extensive sorting was at first necessary to separate out the best of the ore so that the reduction process would pay at all (Paulson 1874:33; Redington Quicksilver Company 1876). This was probably the source of the valuable dumps mentioned above. Reworking old dumps is a practice common to all mining operations.

The Manhattan Mine, north of Knoxville, was another early producer in the Knoxville Mining District. Originally begun in 1863 by the Lake Mining Company, the mine sent its ore to the Redington works to be reduced during its peak productivity, 1868-1877. Subsequently, a furnace was installed, but the production was neither regular nor of great quantity (Forstner 1980:81-82; Ransome & Kellogg 1939:411).

In the northeastern tip of Yolo County are the Reed and Harrison mines. The Reed Mine was originally the California Quicksilver Mine, which produced almost 10,000 flasks in the period 1873-1880, but very little afterwards. The property was surveyed for a mineral patent in 1875, and, at that time, the works consisted of tunnels, houses, and a furnace. Thus there was reduction of cinnabar on the property at one time (General Land Office, Mineral Survey Plat #309). The Harrison Mine went through a series of name changes, beginning with Harrison, New England, Ruby, January, and finally, again, Harrison. The pre-1900 production was very small, but the mine did produce limited quantities of mercury in 1917 and again from 1937-39 (Ransome & Kellogg 1939:475).

The Sulphur Creek Mining District is located along the line separating Colusa and Lake counties, around the well known Wilbur Hot Springs. Workings in the area included the Abbott, Wide Awake (Buckeye), Manzanita, and Empire quicksilver mines. Despite the number of mining claims, patents, and later consolidations, the district was a minor producer.
(Ransome & Kellogg 1939:367). All of these mines were first located in the 1860s, and they produced small amounts of quicksilver during the peak period for the area.

The Manzanita Mine (Colusa County) was also worked as a gold mine beginning in 1885 when the Manzanita Gold Mining Company built a mill. The ore assayed as much as $32 per ton. From 1902-09, cinnabar was again being mined on the claim, but the lode was essentially worked out and operations were discontinued (Ransome & Kellogg 1939:372-373; Watts 1892:184-186).

The Abbott Mine, in Lake County, was the best known in the Sulphur Creek Mining District. It was first discovered in 1862, but the two main periods of production were 1870-79 and 1889-1906. The works and diggings are shown on Map 17. The underground tunnels were quite extensive, but shallow (Bradley 1918:53). In 1870, the reduction works consisted of a furnace with a daily capacity of 10 tons, which is small. Another larger furnace was installed and operated, beginning in 1899, by the Empire Consolidated Quicksilver Mining Company. The company worked the claim thoroughly. Total production for the second period was about 30,000 flasks. Subsequently, the mine was worked in 1916-17, 1927, and again in 1937-38, but the output was minimal (Ransome & Kellogg 1939:384; Forstner 1908:46, 49).

The California Borax Company was slow to realize their fortunes lay not in borax or sulphur, but in the quicksilver that had been hindering their first operations on the shore of Clear Lake. Finally, in 1873, they began in earnest to develop the Sulphur Bank Quicksilver Mine, and, until 1883, the mine produced steadily. Production was resumed again from 1887-97, 1899-1905, 1915-18, and 1927-39.

Because of problems with poisonous gases, the ore was primarily removed by digging open pits or cuts, but there were a few underground shafts of limited size. The mined area is shown on Map 18. These workings were one of the few in the area that were still producing in the late 1930s (Ransome & Kellogg 1939:395-400; Bradley 1918:63-68).

The largest production of quicksilver was from the Mayacmas Mining District in southern Lake and northern Napa.
Map 17

Abbott Mine, ca. 1903
(Forstner 1908:49)
Map 18

Sulphur Bank Mine, ca. 1903
(Forstner 1908:63)
counties, outside of the project area. The Oat Hill Mine (Napa County) was the third largest producer in California, and the Great Western and Mirabel (Bradford) mines both significantly contributed to the production of Lake County. The Great Western was an unusually consistent producer, setting a record of almost 40 years of continuous production, from 1873 until 1912. Other mines in this district included the Helen Mine (Lake County) and the Aetna Mine (Napa County) (Simoons 1954:309-310; Ransome & Kellogg 1939:388-395).

Stone and Building Materials.

The best paying mineral activity in Colusa County was the quarrying of stone in the Sites area, not far from the Stone Corral that Granville Swift built with his partner Frank Sears in 1847 (California Department of Parks and Recreation 1979:18).

Two quarries were opened on opposite sides of Stone Corral Creek in 1891. Both used the nearby Colusa and Lake Railroad, a narrow gauge, to transport their sandstone to construction sites, principally in San Francisco. The O'Neill and Abbott Quarry first opened in November of 1891. They leased the quarry property from J. Sites and expended about $20,000 in their cutting and excavation facilities. By 1894, the name had been changed to the Sites Quarry (Sites Sandstone Company), and again to the Colusa Sandstone Quarry some time in the early 1900s. the other quarry was called the McGilvray Quarry. It is not clear when this company started, although it was a going concern in 1906. Both quarries discontinued operation by 1915, and the narrow gauge railroad was removed by the 1920s (Aubury 1906:119, 122, 124, 316; 11th Report of the State Mineralogist 1892: 188; 25th Report of the State Mineralogist 1929:299-300).

Strategic Minerals.

The northern slopes of the Coast Range Mountains were extensively prospected for valuable minerals beginning in the 19th century. Some copper, gold, manganese, chrome and magnesite locations were made, but, largely, actual mining operations have been sporadic.
The locations of mineral deposits were well known in California by the beginning of World War I, so it is not surprising that the disruption of shipping would stimulate operations because of the temporarily increased value of a particular mineral. The operation were usually terminated when normal importation of the mineral was resumed.

The concept of strategic minerals was formalized by the Strategic Minerals Act of June 7, 1939, years after its de facto existence. Briefly, the act authorized the Secretaries of War, Navy, and Interior to define which important minerals were in short supply and to survey appropriate deposits for possible production in the event of a national emergency. The United States Geological Survey and the United States Bureau of Mines conducted most of the actual investigations, in cooperation with various state agencies (35th Report of the State Mineralogist 1939:331-333). The result was the location of many claims that were not worked to any extent, although there were many exploratory operations.

Chrome and manganese are the two elements that were deposited in and around the project area in any quantity, as Map 19 shows. They were equally strategic, and both were vigorously prospected during both world wars. The largest production in the project area was of chrome. The Grey Eagle Mine was one of the first commercially successful operations in the United States (Down & Thayer 1946:3, 9).

Mining in general was benefited by the two world wars in the first half of this century. Many mines, including old workings, were developed during the critical periods of 1916-18 and 1942-46. The predominant mining activity on the east slope of the Mendocino National Forest was due to these operations for strategic minerals. Chrome and manganese are two of this group that occur in some quantity.

Chromite mining activity has been concentrated on the east slope of the Coast Ranges, near the North Fork of Elder Creek in Tehama County (Tucker 1919:259), and the region west of Chrome in Glenn County (Bradley 1918:146-47). The Grau Mine, Kelinsorge Mine, and the holdings of the Basler Mining and Development Company are all in this latter area.
Map 19

Chromium and Manganese Deposits, California, 1917
(Bradley 1918)
Photo 1

Open Pit Chromite Mine,
Rustless Mining Company, Glenn County, ca. 1943
(California State Library)
Photo 2

Men and Machinery, Rustless Mining Company, ca. 1943
(California State Library)
Photo 4

Mill Interior, Rustless Mining Company, ca. 1943
(California State Library)
The Black Diamond Group was a series of 14 mineral claims, all near the summit of Red Hill, originally mined by J.R. Whitlock and F. Oakes for chrome during the early 1890s. Three thousand tons of ore were shipped out of this area before work was halted in 1894. When the California Chrome Company took over and began work in 1916, they found that transportation difficulties prevented extensive operations.

Chromite was first mined in Tehama County in 1886, and, by 1890, there were reports of a "mine of some value" being operated near the town of Lowrey (Anonymous 1891a:273). Production was erratic, however, totaling only 500 tons when operations were discontinued in 1899. In later years the development work for chrome was in the area of the North Fork of Elder Creek. In the early 1900s, the Basler Mining and Development Company consolidated several claims (including the Son Louis Quartz Claim) in this area. Difficulty with transportation again prevented any shipment of ore and only cursory development took place (Tucker 1919:259-60; General Land Office Mineral Survey Plat #4686, #4687A, #4687B).

The Kleinsorge Chrome Mine was located in 916 on the Middle Fork of Elder Creek. Improvements constructed by 1918 included an aerial tramway down the mountainside and a good four mile road to the main county road at Lowrey (Bradley 1918:206-07).

The Noble Electric Steel Company was also mining chrome on the North Fork of Elder Creek. The company did not erect a mill, since the ore production (five tons per day) was not large enough. In 1919, a wagon road up to the workings (T.25N.R.7W.,Sec.16) was under construction in order to transport the ore to the company smelter at Heroult in Shasta County (Bradley 1918:206-08; Tucker 1919:259-60).

As Map 20 shows, there are many chrome deposits within the project area (excluding Tehama County), but only a few were important producers. The two significant producers were the Grey Eagle Mine in Glenn County and the Lucky Strike Mine in southern Lake County.

The Lucky Strike Mine (T.12N.R.6W.,Secs.13,24) was the most productive chrome mine in Lake County. A maximum of
Map 20

Chrome Deposits in Glenn, Colusa, Lake, Mendocino, and Napa Counties, 1946
(Down & Thayer 1946:2)
2,000 tons of ore was shipped in the period 1917-18. The diggings were open pits and cuts, grouped in an area about 1,000 feet long by 100 feet wide. Apparently, the mine was worked out because no production was reported after 1918, and an inspection in 1942 revealed little exposed ore remaining (Down & Thayer 1946:15-16).

The Rustless Mining Corporation leased the Black Diamond or Grey Eagle Group of claims from 1942 until 1946. In that time, they constructed a large concentrating mill (200 tons per day), which paid well when they worked the Grey Eagle Mine and the Black Diamond No. 11 claim (Down & Thayer 1946:4, 9; Averill 1943:74). This entire area consisted of about 15 claims, among them the Black Diamond Group that was first worked by J.R. Whitlock and F. Oakes during the early 1890s (Bradley 1918:146-47). The operation was a huge open pit mine, which is shown in some detail in Photos 1, 2, 3, and 4.

The manganese production of the project area was very limited, and quote often the activity was associated with other mining in the same areas, e.g., the Black Diamond Group in Glenn County. Table 3 shows a summary of numbers of deposits and production figures for each county. Mendocino County has the most deposits, and was a significant producer of manganese in California (Jenkins 1943:80). The substantial producers in Mendocino County were, however, not located within the project area (25th Report of the State Mineralogist 1929:463). In Lake County the only producer of manganese during the 1942-46 period was the Gravelly Valley Mine (T.18N.R.10W.,Sec. 3). This mine was an open pit operation, and all ore was shipped to Ukiah for working (Parker 1950:91).

Production of strategic minerals was an extremely transient activity. It primarily involved prospecting. There were some mines that were substantial producers, and their operations are easily located and identified. The significant amount of prospecting that occurred throughout the project area should not be discounted, since there were many mineral claims filed on lands within the forest (Brooks n.d.). Ultimately, the production from all mines (except quicksilver) was dwarfed by more common materials like sandstone or mineral water, and the strategic minerals faded in
### Table 3

**Manganese: Deposits and Production**

<table>
<thead>
<tr>
<th>County</th>
<th>No. of known deposits</th>
<th>Production in Short Tons 1867-1941</th>
<th>Production in Short Tons 1942-46</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colusa</td>
<td>3</td>
<td>0</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Glenn</td>
<td>10</td>
<td>237</td>
<td>17</td>
<td>254</td>
</tr>
<tr>
<td>Lake</td>
<td>33</td>
<td>462</td>
<td>159</td>
<td>621</td>
</tr>
<tr>
<td>Mendocino</td>
<td>61</td>
<td>2,837</td>
<td>3,250</td>
<td>6,087</td>
</tr>
<tr>
<td>Napa</td>
<td>14</td>
<td>302</td>
<td>0</td>
<td>302</td>
</tr>
<tr>
<td>Tehama</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Trinity</td>
<td>105</td>
<td>138</td>
<td>16,496</td>
<td>16,634</td>
</tr>
<tr>
<td>Yolo</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

(Parker 1950:10)

The Copper Rush to Indian Valley.

Copper was discovered just south of Little Stony Creek (T.17N.R.6W.) in late 1863 by F.M. Rice and J.B. Turner. They located their claim with a few friends called it the Mary Union. "Within a few days," one participant recalled, the discovery attracted "many of the people from Colusa and the county at large, and also people from other parts of the State, to the locality" (Rogers 1891:320).

Since administration of mining areas was based largely on local authority, the community formed the Commonwealth Mining District on November 4, 1863. Fourteen other claims besides the Mary Union were registered in due course. At the peak of excitement, 500 claims were recorded in one week (Rogers 1891:97, 320-21).

The townsite of Ashton was located and surveyed in section 28 of T.17N.R.6W. Ashton boasted "two hotels, two stores, livery stable, blacksmith shop, and mining offices..." (Rogers 1891:320).

Discoveries continued to be made in the surrounding country, and several more mining districts were quickly formed. Their names and dates of organization are:

<table>
<thead>
<tr>
<th>District</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stony Creek District</td>
<td>December 24, 1863</td>
</tr>
<tr>
<td>St. John District</td>
<td>January 2, 1864</td>
</tr>
<tr>
<td>Snow Mountain District</td>
<td>January 5, 1864</td>
</tr>
<tr>
<td>Pacific Mining District</td>
<td>February 6, 1864</td>
</tr>
<tr>
<td>Mountain District</td>
<td>March 14, 1864</td>
</tr>
<tr>
<td>Lane District</td>
<td>March, 1864</td>
</tr>
</tbody>
</table>

(Rogers 1891:321).
Along with the formation of districts and location of claims, corporations were registered, and capital stock was issued to being development work. Hopes must have been very high, but the copper boom died as quickly as it started. By late 1864, it had been shown that there was insufficient ore to warrant further development. Operations were suspended at most of the works.

The development work that had been done included several shafts of about 50-100 feet in depth, along with the erection of some experimental furnaces to attempt to smelt the ore. The Mary Union shaft was worked with a simple windlass and bucket (Moore 1980:60). The only survivor of the copper rush to Ashton was the Lion Copper Mining Company, which continued to experiment with various types of furnaces and smelting processes, but ultimately all efforts failed (Rogers 1891:320-323).

The operation of the mines during the boom involved primarily excavation and removal of the ore. High-grade ores were then packed out to a smelter in the San Francisco area (Rogers 1891:96). Two furnaces and a crushing plant were later built by the Lion Copper Mining Company. The furnaces were a simple "fire-clay cupola," and a slightly more elaborate "water-lined Haskett cupola" (Anonymous 1878a:48-49). The crushing plant was located on the mill site that the company patented in 1882, in the southeast quarter of section 17, T.17N.R.6W. The reduction furnaces may have been one the State Mineralogist mentioned being located "at the mouth of Hylphes Creek." All attempts to reduce the ore on site proved ineffective (14th Report of the State Mineralogist 1919:178; General Land Office Mineral Survey Plat #997).

As the list of mining districts shows, there was exploration for valuable ore deposits well into the interior of the Mendocino National Forest. One discovery was not copper, but gold. On Trout Creek (east side of Snow Mountain), in 1864, J.W. Brim and J.K. Weast located and worked a quartz gold mine with an arrastra for a few months. The operation did not pay and was abandoned. On the same creek, a tunnel was driven in 1907 on a claim located by Barnett and Drew in the early 1900s. This also failed to
prove out, and in 1914 had been idle for some time (Rogers 1891:323-324; 14th Report of the State Mineralogist 1919:179). Southwest of Stonyford, Miner Ridge was the location of a series of prospects for copper and some silver (Moore 1980:66). It is likely that these areas were active at the same time as the Ashton rush.

Copper was not the only mineral to spark a rush, nor was the Ashton rush to be the end of copper mining prospects. Oil had been known to exist in Colusa County, on Sulphur and Bear creeks, since the 1850s (Green 1950:109; Rogers 1891:324). Around the turn of the century, oil excitement spread through Colusa and Glenn counties, and "many who claimed to be experts in detecting oil bearing strata examined the territory lying in the foothill belt and gave out the most encouraging reports" (McComish & Lambert 1918:223). Nineteen companies were formed, based on these favorable opinions, and experimental drilling commenced forthwith. A theory held that the oil found boiling up from the two creeks was from a tremendous underground deposit. Most drilling went on for five years before prospectors were discouraged, but the Williams Oil Company kept on for a decade before finally giving up (McComish & Lambert 1918:127).

Perhaps memories of the copper rush at Ashton in the 1860s inspired John Bedford and Frank Freeman to mount an exploratory venture to the interior hills of the Mendocino National Forest during the period 1900-06. Bedford was an Elk Creek resident, and Freeman practices law in Willows. The mine itself was eventually dubbed Copper City by locals. The extent of the operation was a single shaft on the ridge above Forest Highway 7, southeast of Plaskett Meadows. Ultimately, very little (or no) copper was produced by the mine, but Freeman managed to obtain deeds to about 300 acres from the summer efforts of Bedford and his family (Isle 1977:1). Since no mineral patents were issued in the area, it remains a mystery exactly how Freeman secured the parcel.

One of the last copper mining companies to operate in the area of Ashton was the Ruby King Copper Mining and Townsite Improvement Company. This concern held an agricultural patent to 40 acres, in addition to six unpatented mining claims which were located in the 1863 rush. They
reorganized as the Ruby Mineral Paint Company in 1898. A mill was constructed with a jaw crusher, roller mill, and some other equipment, but no significant production was every reported. By 1918, the property had been idle for some time (14th Report of the State Mineralogist 1918:180-181; McComish & Lambert 1918:127).

The development of mineral deposits within the project area was characterized by speculation. Boom and bust was the typical cycle in most cases. Several quicksilver, gold, and chromite mines were successful, but their success was at best sporadic. Prospecting for all minerals of value was widespread throughout the project area. On occasion some development work was undertaken, but by far the majority of mining activity was in the southern reaches of the project area in Yolo, Colusa, and Napa counties.
Hinterland Communities

The development of quicksilver mines created communities of people who worked in the mines or provided goods and services to the mine employees. It is a repetition of the familiar phenomenon of the company town, which is closely associated with many other types of industrial development. For the southern part of the project area, the development not only of mines, but of mineral spring resorts, stimulated local agricultural economies, as well as creating unique, isolated environments.

Labor was sometimes local, especially seasonal help at the health resorts. In the mines, labor was likely to be imported. Chinese were an important part of the mine labor force beginning in the 1870s and ending about the turn of the century, when, for example, Italians were brought into Lake County by the mining companies (Goss 1958:86). The Cornish, Austrians, and Irish were other ethnic groups brought in by mine owners, but "...the Chinese provided the cheapest, most flexible labor supply, often undertaking work refused by whites..." (Simoons 1954:310).

In his series of outstanding studies of the historical geography of Lake County, Simoons makes the point repeatedly concerning the isolation of this fertile, diverse area (Simoons 1952; 1953; 1954:310-18). The point regarding isolation resulting from rough terrain is well taken, and it can easily be applied to the project area as a whole. But the influence of mining and resort development and the creation of hinterland communities was primarily seen from Bartlett Springs south to the Knoxville Mining District.

The hinterland communities that had the least population turnover were mining towns, even though the operations may have been brief. The mines were usually developed away from regional transportation or supply centers, even if they were, as in the case of Knoxville, on a road before mining was important. Roads in Colusa, Napa and the southern part of Lake County were serviceable, but hardly allowed for recreational jaunts by mine workers into towns. Moreover, what the mining company could produce on its own to reduce expenses, contributed to the chance of surviving the next failing ore deposit or falling quicksilver market. The
manifestation of this effort was the established industrial community, in the outlands, which survived as long as good ore was forthcoming.

During the year 1869, the Redington Quicksilver Company acquired 1,360 acres of land surrounding their works. The superintendent of the mine reported to the stockholders that the company intended to raise wheat, oats, and hay — enough hay, in fact, to have some left over for sale to private teamsters. Large, fenced pastures were constructed in order to better manage their agricultural holdings, thus avoiding the necessity of using pasturage in nearby Jerusalem Valley (Redington Quicksilver Company 1870:20).

By 1870, the Redington Mine employed, on the average, 157 men. Sixty-nine worked underground. The average wage for a miner was $40 per month. Board cost each man $16.50 per month. The company holdings increased to nearly 3,000 acres of land. Their stock supply was meeting their needs, although there were plans proposed for a larger kitchen and dining room (Redington Quicksilver Company 1871:passim).

The operation steadily increased both production and community size. In late 1873, a dining hall and kitchen were finished, offering facilities large enough to feed 250 men. Accomodations were also expanded for single men, and fifty cottages were built for rent by the miners who had families. A multiple purpose "Union Hall" was the final touch, and this served as a school and also as a place for church services. All together, "the whole thus forms a large community in itself, notable for its sobriety, good order and prosperity, and affording a striking example of what good capital and good management may accomplish in mining enterprises (Paulson 1874:33). the company really did own the town, as one observer remarked:

Knoxville is but another name for the Redington Mining Company's works. To them the whole town belongs, and the country around for nine miles up and down the canon, and four miles across. The only business in the place, besides their own, is the hotel, post and express office, and a little knick-knack store that a disabled employee has been set up with to help him make a living (Anonymous 1878b:19).
Beginning in the 1870s, during the height of the quicksilver boom, Chinese became a part of the labor force in the mercury mines. The Chinese usually lived apart from the white employees in shabbily constructed shantytowns, where conditions were considerably worse than those provided for whites. Chinese were also given the more dangerous and difficult tasks in the mines (Simoons 1954:310). Despite their treatment, Chinese were a valuable asset to the mine owners. When exclusion of the Chinese became law in California in 1879, mine superintendents bemoaned their loss of an excellent labor force, causing the shutdown of many mines. The present of the Sulphur Bank Mine actually defied the law, was arrested, tried, and acquitted (Goss 1958:75).

Throughout the quicksilver belt, towns similar to Knox-ville were constructed. In Lake County, the population of Sulphur Bank grew to 1,000, which included 600 Chinese (Carpenter & Millberry 1918:143). At the Oat Hill Mine in Napa County, "[t]he little town which is created by the workings of this mine numbers about 350 people..." Employees in this mine included 150 Chinese and 115 whites in 1900 (Kanaga & Wallace 1901:118).

The Chinese faced considerable opposition from whites in nearly all facets of their lives in 19th century California. Racism was an unfortunate problem that sometimes resulted in exclusion from certain areas, regardless of the cheap labor supply the Chinese provided. In 1881, for example, the superintendent of the Redington Quicksilver Mine stated that "there never has been a Chinaman employed about the premises by the present superintendent" (Palmer 1881:164). It does not follow that Chinese were never used at the Redington Quicksilver Mine, but it does point to the tenuous nature of white tolerance of Chinese in California. The quick disappearance of Chinese communities in many parts of California around the turn of the century testifies to the sad condition of race relations between whites and Chinese at that time.

Close descriptions of the workings of the mines are available in the Report(s) of the State Mineralogist, annually or biennially issued by the California State Mining Bureau (or a descendant agency) since 1880. The function of the towns as communities is more obscure, but an excellent
description of life at the Great Western Quicksilver Mine in Lake county has been published by a daughter of the mine superintendent (Goss 1958).

The Great Western Quicksilver Mine was somewhat atypical because it produced continuously for nearly 50 years. Most mercury mines went through cycles of production and stagnation, and they were largely worked out by the 1890s. At this mine there was considerable development of the community, which involved division of labor, housing, and services between the white and Chinese populations.

The Chinese usually worked in jobs that were debilitating, especially those in the reduction works where mercury vapors worked considerable nerve damage. They were also used underground, as miners, and performed other tasks topside, including ore sorting (Goss 1958:16, 18, 65, 73, 75). The wages received by the Chinese were markedly less than the whites. On the average, the Chinese were paid $1.15 per day, while white labor received $3 per day (Anonymous 1891:148). The Chinese lived apart from the whites in two separate shantytowns at the Great Western. One of these is shown in Photo 5.

The division among the Chinese is not clear, but one of the camps contained men from the Canton area in China (Goss 1958:65). The Chinese were separated into two groups by the whites, also. Those Chinese who were educated and could speak some English received the choice employ underground, aboveground in the company store or as servants in the superintendent's home. The other class of Chinese were the bulk of the labor force, and, usually, they could not speak English.

The Chinese were provided with a temple and a cemetery, somewhat removed from the general location of their camps (Goss 1958:80-81).

The camps themselves were a mere jumble of huts of the rudest construction, completely lacking in sanitation and surrounded by so much filth and debris that the odors were almost overpowering even to a passerby. A few of the structures were barracks-like buildings made of rough lumber, but the bulk of the houses were a
rambling hodge-podge of shacks built by the men themselves of anything they could lay their hands on -- scraps of lumber, old shingles, broken-up packing boxes, and flattened-out kerosene cans. Pigs wallowed in the muddy ditch in front of the No. 1 Camp, and a few ducks generally quacked among them. There was no central eating place in either camp, and each man made his own small fire to cook his rice and heat the water for his tea. If one chanced to pass either camp at meal time, he could look through the open doorways and see the squatting men eating their bowls of rice with chopsticks. The men generally wore what a member of the [superintendent's] family describes as "a kind of dungaree costume similar to the work clothes of sailors," plus the characteristic large woven straw hat which identified them even at a distance (Goss 1958:66).

Camp life was not without periodic violence among the Chinese, but the actual causes are not clear. In one case, trouble was said to have been over a hat. There was also gambling, opium smoking, and some prostitution in the camps, but mine officials made serious efforts to stop all such activity (Goss 1958:77-80).

In sharp contrast, the facilities for whites at the Great Western Mine included structures similar to those described above at the Redington Quicksilver Mine in Knoxville. They were large enough to accommodate only 40 men, however, at the Great Western Mine. A large boarding house was maintained for the single men, and those with families lived in houses "scattered over the hills, several being located on a flat about half a mile down the road in Middletown." The boarding house had bedrooms, kitchen, dining room, a private dining room for the superintendent and other mine officials, and a hall for social occasions. There was also a school house, butcher shop, dry goods store, and barns for horses and oxen, all in addition to the mining works (Goss 1958:16-17).

Quicksilver mining companies in and near the project area formed these communities as a means to work the deposits of ore. In some cases, elaborate towns were con-
Chinese Camp
Scene in one of the "China Camps" at the Great Western Mine, sometime in the late 1890's.

Photo 5
Chinese Camp, Great Western Mine, ca. 1890
(Goss 1958:67).
constructed which were later left behind because of failing operations. Such ghost towns were common throughout the West because of the heavy emphasis on mining in historic times. Their existence in Lake, Napa, Colusa, and Yolo counties was brief, but they made a significant contribution to local economies and to the development or exploitation of the resources of the area.
CHAPTER X

HEALTH AND PLEASURE SEEKERS IN NORTHERN CALIFORNIA

Mineral springs have been discovered, developed and promoted worldwide. California has had a prominent role in this phenomenon. Promoters of California's mineral spas claimed miraculous curative powers for their mineral waters. Invalids who journeyed to mountain retreats were to be relieved of symptoms affecting the soul as well as the body. In addition, the promoters lauded the benefits of outdoor recreation. Advertisements summoning those who could afford luxury promised not only relief from disease, but described in glowing language the delightful social atmosphere, the abundance of game animals, excellent fishing, and wondrous repasts set in spacious dining rooms of truly magnificent hotels. For the less affluent, camping grounds or modest cabins were to be provided.

The impact of the health rush on southern California was significant. Los Angeles, Santa Barbara, and San Diego are typical examples of coastal cities that had previously languished while most immigrants sought their fortunes in the gold county up north. Some gold had been discovered in the southern mines, but these deposits were largely in the eastern mountains, away from the coastal cities that were to blossom in the resort era. The effects on northern California were less pronounced, but were still important to local economies that had been likewise isolated from the gold fields.

Transportation routes to California, both overland and by sea, had been established to accommodate the gold seekers. By 1866, the Panama route, after completion of the isthmus railroad, took only 21 days to arrive in California from the East. This was the favored route, but not the only one. The same year the overland stage journey began on the midwestern lines of the Holladay Overland Mail and Express Company, with connections at Salt Lake City for the Wells Fargo line to Folsom. Nevertheless, before the completion of the transcontinental railroad in 1869, the journey by either land or sea was arduous. Only a few invalids dared attempt the trip, which was often fatal (Caughey 1970:295,
Invalids went to California seeking relief from the symptoms of rheumatism or arthritis, but tuberculosis, or pulmonary consumption, was the big killer in the 19th century. The cause of the disease was poorly understood, but its course was long, painful, and pitiful.

Physicians often advised their patients to seek a better climate, in the belief that an improved environment would stimulate the healing process. Combined with the virtually unknown effects of "sulphurous," "carbonated," or "chalybeate" [iron containing] springs, invalids sought relief from their sufferings.

Some did actually recover. They enthusiastically spread the word by writing books and by writing letters to relations still in the East. There was one singular truth to all the claims: the climate of California was better than that of the East. Mild winters combined with the hot days and cool nights of the summer season had at least a strong placebo effect on ailing easterners.

By 1880, the rush was in full stride. It was to create a boom in southern California which eventually led to a bust about 1890. Similar effects were felt in northern California, but not as extreme. The mountainous terrain surrounding minerals springs in the project area thwarted efforts to subdivide large tracts of flat land as was done in the south. Roads and railroads, such as the Bartlett Springs and Bear Valley Toll Road, were promoted by some resort business as early as the 1870s, but transportation routes in the prime mineral spring zones were difficult to establish and maintain. Even when State Highway 20 was built, the route was south of Bartlett Springs, down out of the higher mountain range, near the north side of Clear Lake. These factors buffered the project area's fragile mineral spa economy, for better and for worse. The outcome was a network of health spas, but usually smaller and local in character (Baur 1959:280-29, 46; Simoons 1954:passim).

Hucksterism set the tone for the practices of many promoters in that era. Quite often claims of cures, of plentiful housing, food, jobs and a new life were in reality
only harbingers of eventual death for many invalids and
disorder for the families they brought with them. There
were some who complained of the "conscienceless propa­
gandists," but once the health resort fad had become a
business, the call for common sense was not heard among the
shouting promoters of miracle cures.

Some of those who spread the word sincerely believed in
the miracles performed by specific waters at this or that
spring. Some were in fact themselves former consumptives
who became famous writing books describing their own exper­
iences and those of others. Eastern newspapers published
letters from travelers depicting California and emphasizing
the profound effects of climate and mineral spas. The
general population believed in such remedies. Power conven­
tional wisdom, together with credible reports of the sick
becoming well, set the stage for the promotion of a second
significant migration to California (Baur 1959:27-29, 149).

The character of this migration was altogether differ­
ten from previous movements from the East. the health rush
was not composed of individuals, predominantly men, seeking
their fortunes, only to return to their homes. This rush
included entire families, usually established and success­
ful, who were forced by incurable disease to pursue the only
known remedy. One contemporary described the rush as
"...not a movement of money-seekers, but one gigantic effort
of prisoners to escape their life environments" (Baur
1959:44).

Historians who have written about the health rush to
California and the Southwest have emphasized the effects
upon southern California, while at the same time beginning
their studies with the completion of the transcontinental
railroad in 1869. It is important to note that the first
terminus of the transcontinental railroad was Sacramento,
where health seekers made connections for the resort of
their choice. No doubt some of those destinations were
northerly as well as southerly. The health rush was by no
means a southern phenomenon only. For some parts of the
project area, it made significant contributions to the lives
of local residents by providing jobs, markets for their
agricultural products, and communication and transportation
routes. In fact, one invalid, Robert Louis Stevenson, pre-
ferred northern California's climate and resorts. He stayed in Monterey and southern Napa counties during his sojourn in California (Baur 1959:126; Simoons 1954:passim).

There are numerous mineral springs within the project area, and many of them have been developed. Improvements ranged from crude log troughs, much more common in grazing regions, to concrete or masonry drinking fountains, to elaborate bath houses, drinking cisterns and pipelines to bottling plants. The bigger resorts had a variety of accommodations, as well as many ways to take the waters.

At the beginning of discovery and use of the mineral springs in this area, the properties of mineral waters and the reasons for their apparent therapeutic effects were not understood. Many theories were advanced by scientists who were sincerely interested in understanding the mechanisms by which these mineral waters exercised their salutary effects. When mineral waters were finally tested by standardized techniques, it was discovered that some of the waters claimed to be beneficial were actually somewhat toxic.

The early classification of mineral springs was based upon the gross characteristics of a particular spring. Thus "hot," "cold," "carbonated," "sulphur," "magnesic," "chalybeate," "saline," etc. are common descriptive words found in many late 19th century books purporting to present a scientific analysis of mineral springs. Analyses of mineral waters were being published in an effort to systematize the whole approach to the study of the actual beneficial effects of health resorts (Anderson 1892; Crook 1899). As late as 1916, however, one reporter insisted upon mystifying the properties of mineral waters, calling them "essentially [a] living medium," and hoping that "radioactivity" will explain some of their mysteries (Sanders 1916:199, 200).

The majority of resort development took place in Colusa and Lake counties, and it was almost always associated with quicksilver ore deposits, usually of low grade. If the grade had been higher, the sites would have been dominated by mining activity. The area immediately surrounding Wilbur
Map 22

Locations of Mineral Springs, ca. 1910
(Waring 1915:Sheet 3)

Legend:
- Hot Spring
- Carbonated Spring
- Sulphur Spring

Map of locations of mineral springs in the region, with key locations labeled.
Hot Springs is a good example of adjacent mining and resort activity. The resort business at Wilbur Hot Springs never reached the proportions of either Witter or Bartlett Springs, but Wilbur Hot Springs Health Sanctuary remains the only truly functioning hotsprings health spa in the project area.

By the early 1880s, resorts were found in three distinct clusters, named by one geographer the "Volcanic Cluster," the "Bartlett Cluster," and the "Witter Cluster" (Simoons 1954:311-12, 313, 315). Map 21 shows the locations of the main resorts within each cluster. Simoons concludes:

It was in the volcanic upland, including the Cobb, Boggs, and Harbin Mountain sections, which possessed all of the hot springs, that the earliest and most important resort development took place. Two other concentrations of resorts were established, one east of Clear Lake comprising Bartlett, New Man, Allen, and Hough Springs, and another west of Upper Lake, including Witter and Saratoga Springs. The only successful resort developed outside of these three cluster was Highland Springs in the hills southwest of Big Valley. Despite the great popularity of individual resorts in other sections, no area of Lake County was able to rival the volcanic upland in variety of mineral waters and numbers of resorts (Simoons 1954:318).

Bartlett Springs is within the Mendocino National Forest, and was an important resort, as is seen in Photo 6, in the early 20th century. Bartlett Springs was one of the first large resort developments. The facilities are shown in ca. 1875 in Photo 7. Witter Springs boasted a hotel of some size, and both of these impressive mountain retreats survived into the 20th century in the grand style of the health spa movement. The bypassing of Bartlett Springs by State Highway 20 was a blow, but not a fatal one. The real decline came with the automobile, which allowed extended, cheap travel. In turn, this generated its own style of accommodations in the form of weekend and overnight resorts, known now as motels. By the end of World War I, the older resort communities were in decline due to the passing of a cultural and recreational lifestyle (Simoons 1954:318).
Mineral Springs

Bartlett Springs.

Bartlett Springs was first located by Green, or Greene, Bartlett, a resident of Cobb Valley at the time of discovery in 1867 or 1868. Bartlett was originally from Louisville, Kentucky, and he had apparently suffered from inflammatory rheumatism from an early age. He came to the Pacific Coast in 1856, but moved to Lake County because he "found the climate of the mountains less provocative of his disease than the coast breezes" (Menefee 1873:239; Vinson 1880:13).

Apparently he first discovered and used the mineral springs while on a hunting trip, when his malady had left his "right arm and leg...withered and perfectly useless" (Vinson 1880:13). Camping under an oak tree and crawling to and from the main spring to drink the water at regular intervals, Bartlett regained his health. Once health, his business sense emerged. He preempted a quarter section surrounding the springs and began to establish his resort.

The first buildings were rudimentary. One reporter described the livery stable as the finest building in the new development, which looked much like a contemporary mining camp. It consisted of cabins which were:

built with posts set in the ground three feet apart and sided up with shakes or driven rods, and are 14 to 16 feet square, most of them having nature for their floors. Of these there are about 40 and can be rented for $2 per week where they have no floors. A few have rough floors laid in them and they rent for $2.50 per week.

The course of the cure was to drink as much of the spring water as one could, since the same reporter observed that "there is a continual rum of persons from early morning till late at night carrying the water away in buckets, jugs, demijohns and other vessels..." (Menefee 1873:240). Photo 7 is a picture of Bartlett Springs taken ca. 1875.

By 1874, Bartlett had built up his resort accommodations to nearly 75 cabins, including a hotel. The cabins were
Photo 7, Bartlett Springs, ca. 1875
(California State Library)
still cramped and small, but they were more expensive. Costing only $2 per week in 1872, in 1874 the weekly charge was $10 per head, including board (Churchill 1884:33).

In July, 1874:

about two hundred and fifty persons were upon the ground, mostly persons in moderate circumstances who had come to be benefitted by the healing waters. The spring is covered by a small rough building, with two or three rude benches on the outside. Here twenty or thirty men may be seen sitting at all times of the day; poor, forlorn, miserable looking creatures; many of them victims of bad whiskey, and its general train of results; tottering and feeble in health, tattered raiment, and shattered in hopes and fortunes... (Churchill 1884:36).

Bartlett apparently lacked the desire to turn his camp into a fashionable resort. Although possessed of great common sense, he refused to allow his "property to pass into the hands of capitalists who could make it one of the most desirable places of resort upon this coast" (Churchill 1884:32). Perhaps a bit shortsighted, Bartlett had managed by 1874 to establish the colony with hotel, stage transportation, developed springs, a post office, and he was planning construction of a recreation hall. Bartlett Springs, however, lacked sufficient amusements and luxuries to hold the interest of the pampered pleasure seekers (Churchill 1884:38). Yet Bartlett seems to have had more business acumen than he is credited with by some, since, by 1877, the resort was so popular that it was visited by 700 people in one day (Simoons 1954:316).

In March of 1877, Bartlett sold half interest in the springs to Samuel Green McMahan and his brother-in-law, Calvin Rutter Clarke. The McMahan family was primarily responsible for transforming Bartlett Springs into the famed resort it became (Mauldin n.d. 6396; Wood 1944:296). Within a year Green McMahan had secured title to 320 acres immediately west of Bartlett's original tract. the "New Town Flat" was not the only acquisition by McMahan. In Spring, 1878, he purchased 46 acres west of the New Town Flat, and, in 1879, McMahan bought 320 acres northwest of the springs.
from Perry Connor (Wood 1944:297). That brought the total acreage controlled by Bartlett and McMahan to 846 acres.

In 1880, a promotional pamphlet described the facilities in detail:

The settlement proper consists of a fine hotel, accommodating from eight to one hundred boarders, with large and well ventilated sleeping rooms, and a table furnished with everything to tempt the palate of the most fastidious invalid [emphasis added] Adjoining the hotel are two lodging houses containing fifty rooms, while in the immediate vicinity and in close proximity to the Springs are one hundred cottages and cabins furnished to the wants of families or single parties who can rent their cottages and board at the hotel, or furnish their own table, as they may prefer. A well stocked variety store comprising post-office, Wells Fargo, telegraph and telephone, thus placing the visitor in immediate connection with the business world; a fine large saloon and billiard rooms; a well furnished bath house with cold, hot or steam baths; barber, butcher and blacksmith's shops; a stable accommodating eighty horses; and a commodious country school-house, which is open eight months in the year, thus affording parents the opportunity of continuing the education of their children, while improving their bodily health by the use of the waters.

So, in 1880, Bartlett Springs had come into full bloom. the only problem was getting health seekers to the springs. Both of the routes from San Francisco involved roundabout courses, with at least one transfer. Ten dollars would buy passage by boat, then rail, through the Petaluma and Russian River valleys, then by stage to the springs. The distance was 150 miles by this western path. going through Sacramento, for $11, a traveler could catch a train to Williams, then a stage to the Springs, a distance of 160 miles (Vinson 1880:15). As described above in the section on towns, hotels were located along the stage lines to the springs from the main connections with railroad lines. Smaller towns depended upon the traffic to the health resorts as an important cash income. Providing overnight facilities for health seekers enroute to the many resorts
MEAT MARKET AND ICE PLANT. A number of businesses provided supplies to visitors at Bartlett Springs. Somehow, the hanging meat and dead deer are not very appetizing.

BARTLETT FOUNTAIN. This fountain covering the spring originally discovered by Bartlett and his associates was the central focus of activity at Bartlett Springs.
throughout the southern portions of the was a common prac­
tice.

Samuel Green McMahan had a stroke and died in the
latter part of 1887. His heirs consolidated their interests
in Bartlett Springs, eventually buying out Bartlett in June
of 1887. They formed the Bartlett Springs Company on
October 18, 1892 (Mauldin n.d.:6397).

The Bartlett Springs Company operated steamers on Clear
Lake, as well as stage lines between Williams or Bartlett
Landing on Clear Lake and the resort. The journey from
Williams to the springs took four hours. By 1890 there was
a new hotel. Ultimately, the resort had three hotels,
although, by 1910, only one hotel was mentioned in a United
States Geological Survey study (Simoons 1954:316-17; Waring
1915:200).

Other Resort Life.

Resort development in Lake and Colusa counties was
substantial in the late 19th century. In Lake County, for
example, Bartlett Springs wass the principal development in
one of three well-defined clusters of resorts. Map 21 shows
the mineral spring resorts in the Clear Lake area of
southern Lake County. Each of these regions developed about
the same time, with peak activity bout the turn of the
century. Witter Springs, founded in 1870, put in their
impressive hotel in 1906 (Waring 1915:177; Chittenden
1884:195). For many years, the waters of Witter Springs
were reputed to be a "powerful" cure for social diseases
(Simoons 1954:315).

Colusa County also had their resorts; many of the east-
west roads constructed during the 19th century served a
number of pleasure spots both in Colusa and Lake counties
(Green 1950:8). Wilbur Springs (Photo 9) were first "taken
up" by Joshua Cantrall in 1855. They were purchased by
Gilman Roberts when Cantrall died, and he subsequently sold
to N.C. Simmons, whose hotel appears on an 1865 General Land
Office Survey Plat (Anonymous 1878a:45; Green 1950:40;
General Land Office Survey Plat #42-421, 1865). Wilbur,
from Sutter County, had been occupying a spring about four
miles from the Simmons' Hotel, but he moved to the present
Photo 9

Wilbur Hot Springs, ca. 1910
(Waring 1915)
site of Wilbur Hot Springs when Simmons died. About 1870, Wilbur himself died, and his widow married J.S. Brame. She, with her daughter, continued the operation of the hotel (Anonymous 1878a:45; Chittenden 1884:191).

Wilbur Hot Springs is located in the Sulphur Creek Mining District, the scene of some gold and quicksilver mining during the mining boom, about 1865-1880 (see Chapter IX). By 1890, the springs had declined, however. A visitor described the facilities as "an old ramshackle building which was one an average hostelry, but its fame has departed." There were excellent facilities up the road at Jones Springs in the village of Sulphur Creek (Rogers 1891:328).

In 1908, the old buildings were removed, and new facilities were constructed by J.W. Cuthbert who had also purchased nearby Jones Springs and consolidated both of the resorts (Waring 1915:99-103; McComish & Lambert 1918:165). By 1910, Cuthbert was issued promotional pamphlets, advertising "In All the World No Waters Like These" (Cuthbert n.d.:1). Wilbur Hot Springs Health Sanctuary is currently an operating resort, the sole survivor of an important national, regional and local phenomenon.

Situated near the South Fork of Stony Creek, Fouts Springs was another important resort community in the project area. The springs were first developed and opened for health and pleasure seekers in 1874 by John F. Fouts. The hotel was completed in June of that year. Regular stage service began in 1876, attesting to the popularity of the resort (Rogers 1891:138, 423). In addition to the hotel, there were a number of small cottages for accommodating guests. As at other resorts, several springs were available, the "Champagne, New Life, Red Eye, White Sulphur and the Arsenic..." (Rogers 1891:326). Bottling of water for sale began in 1913 at the Red Eye Spring (14th Report of the State Mineralogist 1916:184). Fouts Springs were purchased by Charles H. Glenn, son of the what magnate, who, by 1918, had owned the grounds for many years (McComish & Lambert 1918:165).

There were many resort developments promoted throughout the mountain ranges of Lake and Colusa counties in the late
Photo 10

Cooks Springs, ca. 1910
(Waring 1915)
Photo 11

Hough Springs, ca. 1910
(Waring 1915)
19th century. The recreational lifestyle of the era permitted travel to a vacation spot where leisure facilities were provided. The travellog descriptions of the springs include Hough, Allen, Cooks, Jones, and many others, all part of a band of resort development that attracted many visitors. Photos 9 and 10 show Hough and Cooks springs in about 1910.

All respectable developments included hotels, developed springs, promises of extraordinary curative powers, and the wonderful mountain scenery that lifted the soul. The decline of the resort industry was the result of the end of the health seeking migration, the development of roads and accessible individual transportation, and the eclipse of group recreation as a principal activity for enjoyment. One by one, the resorts declined, and they were not rebuilt after fires as they had been in the past. The hotel at Witter Springs was torn down just after the First World War. Bartlett Springs, the largest development, was one of the last to go. After the new state highway bypassed the resort by a southerly route in the 1920s, there was no hope of recovery. The resort burned to the ground in 1934, leaving the remnants of the resort business to those few survivors in southern Lake and Colusa counties (Simoons 1954:318).
Local Economies

The nature of the terrain in the project area structured the patterns of initial settlement, and the resources at hand determined the development of subsistence farming and ranching systems throughout the project area. In the southern part of the project area, the communities created by mining and resort activity had a pronounced influence on the choices that residents of these hinterland areas were able to make. The cash crops, grown by local people to provide themselves with trade items from the outside world, were in large measure determined by the distance from market. Mining centers and resorts were local markets for these crops that could not be transported to areas further away. The specific needs of the resort commissaries were matched by current local crops, and any additional commodities, e.g., fruits, were within range of local agricultural resources.

There is a distinct difference between the mining centers and the resort developments throughout Lake and Colusa counties where these activities were concentrated. Mining communities were very unstable, subject to failure, and, ultimately, the significant mining activity was confined to the 1870s, when the resort business was just beginning. The resorts brought a large, transient population into the area that had no time or inclination to establish its own agricultural production schemes the way that many mining centers did. The resorts were primarily consumers of local commodities, whereas the mining centers both produced and consumed items from the immediate area.

The resorts also could not sustain a permanent work force, and, in that sense, became the center for seasonal cash employment for many who were permanent residents of the project area. Moreover, the types of employment available were much more varied and less dangerous than the mining communities could offer. The recreation industry was just less specialized and much less dangerous than mining. Resorts, although part of an important statewide phenomenon, were usually locally owned. These owners had no direct connections with foreign labor supplies known to those with contacts in the mining and business world at large. There seems to have been little imported labor at the resorts,
where it was typical in the mines.

Lastly, the resorts simply lasted longer than the mines. Both mines and resorts were first being developed in the 1860s. Resort communities operated continuously into the late 1920s and 1930s, while mines displayed a sporadic industrial life. Even during the boom period of 1870-1890, mine operated only when the fickle price of mercury allowed for production to exceed costs.

Perhaps the more universal, steadier appeal of recreation in the hills was the deciding factor. The combination of local resources and large health centers was more effective in the long run. Not only for business at the hotels, but it was also well suited to the agricultural practices that had been a natural outgrowth of the settlement of many of these hinterland areas.

Bartlett Springs had a huge facility, and so it had a substantial impact on the local economies of eastern Lake County as well as western Colusa County. Farmers, ranchers, and homesteaders could secure a good cash income from the sale of their wares to the resort. In fact, when the automobile became common enough, purchases were made outside the community, resulting in a "gradual decline in prosperity and population in the eastern hills" of Lake County (Simoons 1954:317).

Bottling works were quite often established by companies that developed springs. In some cases the bottling works remained in operation after the recreational facilities had closed down. There were numerous tasks required in the bottling works, including washing bottles, stacking crates, and packing for shipment. One Lake County resident remembered growing up in the Bartlett Springs area, waiting for the time when she:

was old enough to work at the resort.

My job was to carefully examine each bottle of water at the bottling works and set aside all bottles of water that contained even a small speck (Mauldin n.d.:5275).

Such jobs at the bottling works must have been numerous, as
were those tending to the "hundreds of small housekeeping cottages built in rows on the side of the hills" (Mauldin n.d.:5275).

Bartlett Springs drew on the agricultural communities in High Valley, Upper Lake, Twin Valleys, and parts of Colusa County for their supplies of meat, produce, and hay for feeding the riding horses maintained at the resort (Simoons 1952:116-117). Fouts Springs was supplied in the 1890s with butter, milk, fruits and vegetables from the nearby Swank ranch (Moore 1980:43-44). The continuing need of the resorts was to provide their guests with the bounty of the local area. Travelers, invalids, and pleasure seekers were enticed to the mountain retreats because of the charm and salutary effects of particular local waters, vistas, and the kitchen provisions which were always emphasized in the promotional literature of the era.
Recreation in the Hills

The foothills of the Sacramento Valley, both east and west, have long been used as a recreational retreat from the summer heat of the lowlands. Even as early as the 1860s, campers were enjoying the mountains, returning each year to the same area. Hunting and fishing were, of course, practices both for survival and for recreation (Berg 1976:61).

Around the turn of the century, hunting and fishing were excellent in the western foothills of the Sacramento Valley. Many farmers came to the mountains after the harvest season to hunt deer. Venison jerky was an important winter food supply. Entire families would stay in the foothills all summer, avoiding periodical outbreaks of malaria in the valley while they escaped the heat. The men would stay in the valley until the harvest was over, and then join their families in the mountain camps.

They were just full in the mountains. Letts Valley, Fouts Springs and Morris Camp, Upper Britton Ranch, Bonnie View. All them campers came and they'd pay them people who owned it [campsite] or they didn't pay anything (Moore 1980:41).

The resorts also welcomed campers, since it was an established custom to have camping facilities for those less affluent who wished to take the waters.

Entertainment facilities provided by the resorts were an important part of their appeal to pleasure seekers. Every resort had some form of dancing pavilion or social hall, but some resorts, for example Fouts Springs, went to great lengths to entertain their guests -- both local residents and visitors to the springs. "They had a big dance hall at Fouts Springs. An immense, big dance hall. Fine one" (Moore 1980:41).

The resorts promoted recreation, but the general character of the activities was rather subdued. Croquet, swimming, bowling, and billiard facilities were usually provided, in keeping with standard prescriptions for recovering one's health (Simoons 1954:315). For those in the prime of life, however, advertising brochures promised good
hunting, fishing, and excellent outdoor activities of every kind.

Towns that had no mineral springs to offer tried to attract visitors by emphasizing the hunting and fishing available in areas away from the more densely populated resort centers. During World War I, Stonyford did a good summer business with hunters, campers, and fishermen who used the mountains without the aid of organized facilities (McComish & Lambert 1918:176).

When the Forest Service took over the northern part of the project area in 1907, there were radical changes in store for most users. However, recreation seems to have been least regulated, since it was then not considered within the purview of resource management. Citizens were urged to enjoy the forests for their asthetic value. By 1915, maps were printed that outlined trails, discussed campsites, explained regulations about camp fires and permits, and generally were encouraging people to use the recreational resources of the forest as they had done earlier. By the late 1920s, the California National Forest had instituted a trail program to open up large amounts of country in a way permitting those unfamiliar with the area to travel with relative ease (See Figure 2). This had been accomplished by the early 1930s, before the Civilian Conservation Corps was created (Forest Service 1929:3; Cronemiller 1946:4).

Hunting was always magnificent in the project area. On the west slopes, Mt. Sanhedrin and Hull Mountain were favorite spots for elk and bear (Carranco & Beard 1981:159-61). The southern end of the Coast Range in California was the end of the range of the Columbian black-tailed deer, favored by hunters everywhere since 1870. Several attempts were made to regulate hunting, including, in 1911, shortening the open season to the months of July and August. It was the most regulated of all the recreational practices aside from campfires. Public sympathy and cooperation with the hunting controls did not abate the steady decline of the deer population from about 40,000 in 1920 to 30,000 in 1930. At that time, 5,000 hunters were taking 2,000 deer per year from the California National Forest (Miller 1925:10; Nelson 1930:664-665).
Figure 2
Recreation Map, Diagram of Roads and Trails,
California National Forest, ca. 1917
(Forest Service 1917)
The packing station at Copper City is a good example of a hunting area in the interior portions of the Mendocino National Forest. Originally the Copper City area was prospected for copper in the early 1900s, and, apparently, some land was patented through the mining laws, although it is unclear how it was accomplished. The area was used as a packing station from about 1930 to 1950 by John Powell, and Charlie Powell was said to operate a store nearby. There were crude picnic tables, food storage cabinets, and a small corral for keeping the pack animals. John Powell was warned repeatedly about his messy habits, but he never did clean up the trash strewn about the camp area. The area is still being used as a hunting camp (Special Use Case Folders, James Powell, Mendocino National Forest, Historical Files, 1937-58; Isle 1977; Huberland and Crotteau 1980).

Hunting and fishing were recreational mainstays on the Mendocino National Forest, and doubtless for the project area as a whole. Construction of highways into the Sierra Nevada far exceeded road development into the Coast Ranges. Campers preferred areas with better access and less travel time (Price 1937:1). The development of summer homesites on the Mendocino, a policy vigorously pursued by the Forest Service, never exceeded 5% of the total homesite development in the region as a whole (Berg 1976:18). Of course, campgrounds were developed, and, in the early 1940s, Cedar Camp, Lake Pillsbury, and Brownell Camp at Plaskett Meadows were the principal camping areas. The recreational use of the forest, however, continued to be centered on the hunting season, which accounted for 70% of the visitors before World War II (Forest Service 1943:22, 24).

Summer use of the mountain areas that comprise the project area was an early development in the white occupation of northern California. The habit of Sacramento Valley residents vacationing in the cooler mountains was the beginning of this practice. The development of resort hotels promoted the localized recreational use of the southern part of the project area, but there was also considerable use of the northern mountains by hunters and fishermen eager to camp away from the crowded hotels.

In general, the recreational use of the project area was less regulated than other activities, especially
grazing. There were significant recreational developments before World War II, but recreation was less important here than in the equally cool Sierra Nevada. Better roads made the eastern foothills more accessible. In the Mendocino National Forest and the East Lake Planning Unit, recreation was overshadowed by the attention given more economically important resources.
The history of the public domain in the United States has two important periods. At first, federal land policies (administered by the General Land Office and later the Bureau of Land Management) were designed to dispose of the vast areas that were either purchased, annexed, or ceded to the United States Government. This original policy resulted in many destructive land practices, including extensive damage to watershed, timber, and grazing resources throughout the United States.

About the turn of the century, this aggressive exploitation of the natural resources on the public domain was brought into serious question by the conservation movement. Conservationists believed that resources should be used, but that resources properly managed would produce much longer, if not indefinitely. Lands that had been formerly subject to sale or disposal were withdrawn from entry by the public, and programs were established to manage these "reserved" areas.

Those who had benefited from the former policy of land disposal were not willing to discontinue their activities. A struggle began,

... a tug of war between forces advocating the continuation of the process of settlement and development, and the growing number of those maintaining that the equity of the public in the valuable resources which remained should not be dissipated (Peffer 1951:5).

The struggle was largely resolved when the Taylor Grazing Act was passed in 1934. This act, with amendments, effectively closed the public domain to further wholesale disposal, and the important regulations on land use provided for some control of the type and amount of use of the remaining public domain. A radical change was, therefore, wrought in the administrative policies of the General Land Office, precursor agency to the Bureau of Land Management.
By the 1930s, however, the Forest Service had already been managing many important areas withdrawn as National Forests. The Taylor Grazing Act affirmed and extended the management of lands to the public domain which was managed by the General Land Office. The Taylor Grazing Act authorized the Secretary of the Interior to make widespread requirements for the use of the public domain. The result was that the vast rangelands still in the public domain were regulated in the same spirit as the withdrawn National Forests. The stage was set for government regulation.
Reclamation and Irrigation

At the same time that the principles of conservation were formed and implemented, plans were emerging for the beginning of land reclamation. The Reclamation Service was created in 1903 within the United States Geological Survey to conduct investigations and construct irrigation and land reclamation projects that were too large or too involved for private interest to organize and finance.

Many private landowners had been successfully irrigating farms for some time before 1888, when Congress first instructed the Geological Survey to begin "irrigation investigations" throughout the United States (Dana 1956:364-65). The watersheds of the Sacramento Valley were among the first to be investigated for dam sites by the Reclamation Service. In 1900, an initial survey of the Stony Creek headwaters was conducted by the Geological Survey (Cole 1903:20).

The earliest reports of explorers in the Sacramento Valley record descriptions of tall grasses and the potential for development as a grazing resource. Following the Gold Rush, the broad open grasslands were grazed heavily to provide a cash crop for the first settlers. The paradise turned sour suddenly with the advent of severe droughts and other pestilence which killed a good number of cattle. Rainy winters, with the resulting floods, began to convince the early settlers that some form of control of water runoff was an imperative to the steady development of the country's riches. The role of water resource development has dictated agricultural practices and commodities in the Sacramento Valley from the digging of the very first canal on Cache Creek by James Moore in 1856 (McGowan I, 1961:388).

The important drainages in the project area tributary to the Sacramento River include Cache Creek, Stony Creek, and Thomes Creek. On the west side of the project area, the Eel River and its tributaries as the main drainage system. Water resource development occurred on the Eel River, Cache Creek, and Stony Creek, but projects have only been proposed for Thomes Creek.

Water projects in the Sacramento Valley involved storage reservoirs for irrigation purposes. The construc-
Sketch map of California showing location of irrigation districts formed under the Wright Act of 1887.

Map 23

The Original California Irrigation Districts, ca. 1887 (Adams 1916:8)
tion of Scott Dam on the Eel River, was a combination of hydroelectric power generation and irrigation in Potter Valley. Planning and construction of these projects were financed by private, federal, and, at the very beginning, local interests.

The first efforts to develop water resources were local, sometimes involving individuals or small groups. These attempts were plagued by repeated failure because of inadequate financing and, especially, the disbelief that such measures were worth the immense amounts of money necessary for successful operation. After the drought years 1862-63, Will Green, Colusa County pioneer, chronicler and promoter, surveyed a canal that tapped the Sacramento River. The intended route was south through the present counties of Glenn, Colusa and Yolo, irrigating fields along the way and providing for winter overflow of the Sacramento. The estimated price was $12,000,000, an amount neither Congress nor the State Legislature was willing to provide. The Legislature did reimburse Green for his survey costs.

Despite the lack of government interest in irrigation, the irrigated land in the Sacramento Valley slowly increased until 1872, when 43,000 acres were partially irrigated (McGowan I, 1961:390). As settlement and development continued, the difficulties associated with water rights became the chief detriment to further irrigation system construction. Even with the passage of the Wright Irrigation Act of 1887, which authorized creation of irrigation districts and the sale of bonds for financing, effective, large-scale irrigation systems were not developed until after the creation of the Bureau of Reclamation as a separate agency in 1902.

Most of the early irrigation systems did not store water. They simply distributed a supply abundant in the spring and early summer. Diversion dams were the common method for directing the spring melt into irrigation canals, but a significant amount of water continued downstream. The continued fight over riparian rights, therefore, resulted from a lack of technology sufficient to increase the available water supply when it was really needed during the dry season.
Map 24

Local Irrigation Practice on Stony Creek
(Mead 1903:152)
During 1887-88, five irrigation districts were organized in Tehama, Glenn, and Colusa counties. The Orland Irrigation District was one of the first formed, but it accomplished nothing. The Kraft and Orland Southside Irrigation Districts were likewise ineffective. Only the Central Irrigation District, which built and operated about 40 miles of canals, was successful. Its operation continued until 1893, when legal battles shut the system down until they could be leased in 1903. By 1916, the Sacramento Valley Irrigation Company was in control of the works (Adams 1916:120-121).

All of the early irrigation systems were gravity-feed, so attempts to irrigate arable land any distance from the Sacramento River were not possible. Coupled with the small flow of the tributaries of the Sacramento, e.g., Stony Creek, without proper water storage reservoirs, irrigation of potential agricultural lands along the eastern border of the project area was concentrated in the area immediately surrounding the source of water. Map 24 shows the irrigation ditches in use in Glenn County in 1903 along Stony Creek. It is interesting to note the profusion of ditches, each bearing a different name, in the areas immediately adjacent to the project area where land consolidation, typical to Sacramento Valley agriculture, had not yet occurred.

The first use of Stony Creek was proposed by Will S. Green in an 1866 survey for his massive $12,000,000 irrigation system. His plan called for a diversion dam close to the present Black Butte Dam. Later, in 1883, the Stony Creek Canal Company had surveyed Stony Creek "from the mouth of Elk Creek to Thomas [Thomes] Creek...seven miles northwest of Newville." There was planned a canal system to irrigate nearly 400,000 acres of land, but the proponents of the measure, Green included, were not able to acquire water rights. The attempt was abandoned. The route of the canal was to be down the western side of the Sacramento Valley to Willows. Green's plan, of course, never came to be, but his route was adopted by the Stony Creek Irrigation Company in 1888, and it was subsequently extended to the town of Orland in 1893 (McGowan I, 1961:393; Department of Water Resources 1980:F-1).
Photo 12

Irrigation Along Stony Creek, 1903
(Mead 1903:153)
Photo 13

Orchard in the Sacramento Valley
(Mead 1903:152)
By the 1890s, Stony Creek was irrigating a sizeable portion of the area around its route, including alfalfa fields, orchards, and one Chinese garden (Rogers 1891:339).

Irrigation systems that depended on distribution of available run-off had been developed somewhat extensively by the beginning of this century. Monocultural wheat farming, without irrigation, had caused a decline in total yield per acre. Describing the situation, one observer wrote:

...The chief industry of Glenn County, as of other counties in the Sacramento Valley, has been the growing of wheat and barley without irrigation. For years both yields and prices were high and farmers were prosperous, but as prices fell and yields decreased on account of long-continued cropping without a change the industry ceased to flourish, and in many cases ceased to be profitable.

The solution to the dilemma was extensive irrigation of lands in the Sacramento Valley as well as marginal land in the western foothills. A change of crop, from unprofitable grains to more lucrative fruit trees and alfalfa was also in order. But such crops required large amounts of water to farm on a scale similar to the past wheat farming (Fortier, et al. 1909:74).

Irrigation was proposed as the cure for an economic slump. Backed by the new technologies associated with dam building to created a regulated, lasting water supply, it was to revolutionize agriculture. By 1914, experiments with monocultural grains, e.g., rice, were beginning, and the transformation of the Sacramento Valley's agriculture had gone from livestock ranching, dry farming of grains, fruit farming, to monocultural rice paddies.

Regulated flow of water allowed for dairy and fruit farming on a much larger scale, but the water provided by the present reservoir system has been found to be insufficient. Presently, the California Department of Water Resources is proposing an extensive revision of the reservoir system. It is projected to involve at least one other reservoir (Newville) which would inundate Newville. The flood pool would then extend from Thomas Creek on the north
nearly to the southern border of Glenn County (Department of Water Resources 1980:1-2, 1-3, 1-5, 1-7).

The Orland Project.

By 1915, the United States Geological Survey had been compiling data on potential reservoir sites for many years. In this year, however, the effort began in earnest. More reservoir sites were proposed, and those already constructed were surveyed again for possible expansion of capacity.

Stream gauging stations were established in the 1890s, and, by 1915, nearly ten years of good stream flow information had been compiled on most of the rivers in California. The United States Department of Agriculture began studying "the existing legal, engineering, and agricultural conditions along nine typical streams used for irrigation in the state [California]" (Chandler 1915:310).

Stony Creek was one of the first rivers to be investigated by these federal agencies. By 1903, both the Geological Survey and the Office of Experiment Stations (Irrigation Investigations, Department of Agriculture), had published reports on existing use and irrigation potential for Stony Creek (Cole 1903; Mead 1903:151-165). The study by the Geological Survey included possible developments on the tributaries of Stony Creek. Ostensibly the federal government was requested by local interest groups to complete these surveys. In this case, the California Water and Forest Association, in conjunction with the Willows Chamber of Commerce, had petitioned for the work.

The agencies concluded that the greatest irrigation resource for Glenn and neighboring counties was the Sacramento River. But they went on to speculate about possible irrigation for lands in the foothills, as well as areas further down in the valley proper. The forum was to develop a system to control flow, rather, as before, simply to distribute spring run-off (Cole 1903:9).

The Orland Project, one of the first that the newly formed Bureau of Reclamation began to study in 1902, was really three major projects, constructed over a period of three decades.
The construction of the East park Dam on Little Stony Creek began on August 27, 1908, and it was finished for the 1910 growing season. This original reservoir held 51,000 acre-feet, which was sufficient to irrigate about 14,000 acres. But it turned out there was insufficient water to meet demand, so the Rainbow Diversion Dam and East Park Feed Canal were added in 1913-14 to supply water from Stony Creek to the East Park Reservoir. At the same time the Northside Diversion Dam was built to direct water from Stony Creek to the North Canal. With the additional improvements, the available water could irrigate 20,000 acres.

The Stony Gorge Dam site had been investigated in 1909 and again in 1918, but local water users were unwilling to invest in further expansion of the system. The dry season of 1924 caused considerable crop failure which changed the attitude of most farmers. Construction of the Stony Gorge Dam began in 1927, and the job was finished in October of 1928. The Orland Project was then able to store twice its original capacity.

Over the years the system functioned very well. At one point the ditches were lined with concrete to prevent water loss, but no major repairs were required until the Northside Diversion Dam failed in April of 1954. It was replaced the following fall and winter.

The last step in the Orland Project was the addition of the Black Butte Dam and Reservoir by the U.S. Army Corps of Engineers during 1960-63 (U.S. Army Corps of Engineers 1969:75-76).

The development of the agricultural economy in the area as a result of the controlled irrigation was as predicted for those who could obtain sufficient water. It is important to note that not everyone who wanted water received it, and this situation remains an important disparity even today.

The principal crops grown with the aid of the Orland Project include irrigated pastures, wheat, alfalfa, sorghum, olives, nuts, and citrus fruits. Further west, the hills are used for the grazing of livestock (Water & Power
Indian Valley Reservoir.

The proposed use of this area for a reservoir began in the early 20th century when the United States Geological Survey was engaged in inventorying most of California and other states for potential water resources development.

Indian Valley is located on the North Fork of Cache Creek. It was one of three sites on this watershed that proved to be suitable for impounding water. The other two were Twin Valleys, above Bartlett Springs, and Long Valley. The final recommendation of J.B. Lippincott, resident hydrographer for the USGS, went to Indian Valley. The decision was based on the size and shape of the valley, plus costs associated with construction, materials, and labor. Much expense could be avoided, for example, by using nearby quarries to supply needed rock. Lippincott estimated the dam would be about 130 feet long and impound about 37,625 acre-feet of water, all at a cost of $453,000 (Lippincott 1900:44; Chandler 1901:28-29).

The Lake County Irrigation Company, incorporated in early 1911, took great interest in Indian Valley for the purpose of furnishing water for farms in Big Valley. By the Middle of June, nearly all of the Indian Valley had been transferred to Phil T. Laugenour of Woodland, with S.H. Rice having filed for water rights for the irrigation system (Mauldin n.d.:9690).

But nothing happened to Indian Valley until the Yolo County Flood Control and Water Conservation District developed the area as a reservoir for flood control purposes. Construction of the 225 foot earthfill dam created a reservoir about six miles long and one mile wide, with a reserved flood storage capacity of about 40,000 acre-feet, only slightly over what Lippincott predicted the impound would hold (Yolo County Flood Control and Water Conservation District n.d.; Clair A. Hill and Associates 1970; Orlins 1971).
Map 25

Cache Creek Basin, 1900

(Chandler 1901:10)
Map 26

Cache Creek and Clear Lake, 1900
(Mead 1901:156-57)
Irrigation in the Cache Creek Basin.

Irrigation investigations in the beginning of this century analyzed drainages from perspectives of local water supply (e.g., the Orland Project) and for long range delivery to southern cities. The Bay Area was in dire need of a sufficient, steady water supply, and, by 1920, several proposals were under study. One of these involved using several drainages in the project area: Gravelly Valley, Indian Valley, Clear Lake, and Berryessa Valley. The proposal was to interconnect these water systems by aqueducts, tunnels, or existing stream beds to form a huge reservoir complex. This proposal was abandoned in favor of another plan involving the Hetch Hetchy Valley (Harroun 1920:passim).

Cache Creek was the location of one of the first irrigation ditches in the Sacramento Valley. Maps 25, 26 and 27 show Moore's Ditch, or the Moore Canal. There were other ditches built just west of Woodland and Yolo, all of which proved to be good investments, since maintenance costs were small and water was a valuable commodity. The owners of Moore's Ditch, in 1878, collected a revenue of $7,000. Other development included the Cacheville Agricultural Ditch, the Cottonwood Ditch, Adams' Ditch, and the Capay Valley Ditch (Anonymous 1881:121). Most of these ditches were purchased by the early 20th century by the Yolo County Consolidated Water Company, with headquarters in Woodland (Fortier et al. 1909:32).

The size of these ditches no doubt varied, but Adams' Ditch, for example, was about ten feet wide on the bottom, with a depth of two feet (Anonymous 1879:81). It is likely that ditches would have been shallow. Repair and maintenance would be a good deal easier. Ditch building techniques were likely very similar to those used in the Mother Lode of California, since the mining fields were the first stop for many coming to California.

James Moore had arrived in the area in 1855. He contacted William Gordon who had established residence on the Rancho Rio Jesus Maria in the winter of 1842-43. Gordon sold Moore all riparian rights to Cache Creek, and a right-of-way across Gordon's lands.
Map 27

Canals of the Yolo County Consolidated Water Company
(Fortier et al. 1909:33)
In 1856 work began on construction of Moore's Ditch. A temporary brush and gravel dam was erected, a headgate installed and a short canal built with a capacity to carry a large volume of water. Gradually reduced in size as it left the creek, this canal extended 3.5 miles to a small tract of land owned by [Moore]. Its volume during the first eight years never exceeded 2.5 cubic feet per minute... (Russell & Coil 1940:72).

The canal was considerably enlarged in 1864 when the two tributaries shown on Maps 25 and 27 were added. The total length was about nine miles, with construction costs amounting to about $10,000, mostly labor (Russell & Coil 1940:70, 72). About 12,000-15,000 acres were irrigated by Moore's Ditch, which grew continuously and finally had five main branch lines with numerous distributing ditches (Anonymous 1879:80). For the development of water resources involving Cache Creek, Moore's Ditch is very important, since the original bond that Gordon gave Moore for riparian rights to Cache Creek was the focus for many future legal battles, which forced many fledgling irrigation projects to close down operations (Mead 1901:passim).

The Clear Lake Water Company began construction of the Capay Valley Ditch in 1871. beginning at the head of the Capay Valley, above Rumsey, the ditch ran most of the length of the valley. Water was first carried by the ditch in May, 1874, but lands only a short distance beyond Guinda were ever irrigated. The ditch was built at great expense, estimated at $25,000, but it never returned more than about $500 per annum. Only a fraction of the projected 13,000 acres in the Capay Valley was ever reached, and the operation was cut short on July 31, 1876 by a suit (based on Moore's original bond from Gordon) filed by the Woodland Ditch Company. The Capay Valley Ditch was abandoned by the original owners, but local farmers apparently used the worksss best they could. Unfortunately, the type of wood used for the flumes rotted easily from exposure, so the system did not endure long (Anonymous 1879:30-31; Mead 1901:178-79).

By the turn of the century, one successful farmer in the Capay Valley had given up irrigation altogether. He had
shown that pumping water was more reliable than depending upon the fickle water level of Cache Creek. Moreover, the water from Cache Creek was shown to be harmful to fruit orchards, though excellent for other crops (Russell & Coil 1940:80, 81).

The hopes of many irrigationists lay with the possibility of developing existing reservoirs by simple addition of flood gates to regulate the flow. The Clear Lake Water Company, truly doomed to fail, had originally devoted its efforts to controlling the level of Clear Lake. Incorporated in San Francisco, with apparent capital to burn, they:

secured the passage of a legislative act which authorized them to build a dam across Cache Creek (the outlet), put up mills, etc. They built the dam and mills, and as a result the lake was raised several feet above the highest point ever known before. Sickness prevailed as a consequence and great indignation followed. Finally, in November, 1868, an armed mob assembled and after securing everyone who was considered friendly to the company, set fire to the flour, planing and saw mills, and destroyed the dam (Anonymous 1891:146).

"...For years afterwards Lake County paid interest on bonds floated to liquidate the damages..." (Russell & Coil 1940:73).

The name of the company was changed to the Spring Valley Water Company of San Francisco, which in the 1890s owned vineyards and a winery in Lake County (Anonymous 1891:146). William Bowers Bourn, Jr., who owned this company, also owned the Empire Mines and Investment Company. The Empire Mine in Grass Valley, California, was one of the largest gold producers in the world, and it provided a solid base for Bourn's financial kingdom (Docken 1979).

Water Resources: Eel and Russian Rivers.

The development of water resources in northwestern Lake and-eastern Mendocino counties has until recently involved only the hydroelectric power system constructed by the Snow
Mountain Water and Power Company and its predecessor, the Eel River Power and Irrigation Company. Because of the terrain in this part of California, there is insufficient agricultural land available to justify the expense of major reservoir systems. The predominant use of the hills has been for grazing, while in the several fertile valleys local streams were sufficient to supply needs for farming and other activities (Adams 1913:12-15). The only apparent exception to this rule would be Lake Mendocino, impounded by the Coyote Valley Dam. It was built in the 1950s by the U.S. Army Corps of Engineers. It is primarily a water supply for the Ukiah area, so its chief function is again nonagricultural in nature.

In the early 1900s, many cities sought steady, reliable water and power supplies, but the necessary financial backing was difficult for smaller communities to obtain. The Ukiah Board of Trustees succeeded in interesting W.W. Van Arsdale of San Francisco (and a Ukiah area ranch owner) in the enterprise. Van Arsdale and George W. Scott formed the Eel River Power and Irrigation Company in 1905. Soon after, this company secured the water rights on the Eel River and located the site for the Cape Horn Dam on the Eel River north of Potter Valley.

Construction of the dam began, but the project proved too large for the financial backers. "E.S. Pillsbury and Senator Charles N. Felton were approached, and, in 1906, the Snow Mountain Water and Power Company was organized, with a capital of $5,000,000" (McCollum 1954:1). This was ten times the amount available to the Eel River Water and Irrigation Company.

Work resumed on the Cape Horn Dam after the formation of the second company in February, but it was again halted by the San Francisco earthquake in April of 1906. Later in the fall, work began again. The Cape Horn Dam, which impounded the Van Arsdale Reservoir, was completed in 1907. Power was first delivered to Ukiah in April, 1908. The transmission system was gradually enlarged, and, by 1909, power was provided to Wrights Station, near Santa Rosa, to the west, as well as Felton, St. Helena, and through the Napa Valley to Oak Knoll (Fowler 1923:419).
The capacity of the original power plant was 4,000 kilowatts. It was enlarged to 7,000 kilowatts in 1910 and again in 1917 to 9,000 kilowatts (Bonner 1928:189). The water from the afterbay of the Potter Valley powerhouse "greatly benefited" Potter Valley, but it was not until after 1925 that the local farmers constructed the present irrigation ditches (Carpenter & Millberry 1914:86; Nissen & Kerri 1925:41).

The Eel River Power and Irrigation Company had first proposed the reservoir in Gravelly Valley, and the plan was continued by the Snow Mountain Water and Power Company after completion of the Cape Horn Dam and the Potter Valley Powerhouse. The company applied for and was granted a special use permit by the Forest Service. But, because of both financial and construction difficulties with the initial excavation to clear bedrock, work was slowed and eventually halted in May, 1910. After about 60% of the dam excavation had been completed, a large portion of the south abutment broke free and slide into the excavation. Daunted, the company discontinued operations.

The company requested an extension of the time limit on the special use permit in 1911. Since construction was halted, however, the Secretary of Agriculture canceled the permit in 1912 (Holland 1957:2). By the end of the First World War, hydroelectric power had come into great demand, signalled by the passage of the Federal Water Power Act of June 10, 1920. Under the provisions of this act, the company applied for and received a license to finish the job they had started a full decade before (Holland 1954:2; Dana 1956:366-67).

The construction of the dam was not without further problems. Heavy rains during the winter of 1920-21 forced shutdown of the operation in November. The rain and the resulting high water caused the south abutment to settle again. After clearing the debris away the next spring, it was discovered that a boulder, assumed to be part of the bedrock, had slipped nearly 40 feet (Figure 3). The boulder was removed in due course, but the length of the dam had to be increased to compensate for the lost "bedrock" (Anonymous 1921a:751).
Construction difficulties with Scott Dam were apparently well known. When Pacific Gas and Electric Company were negotiating the purchase of the hydroelectric system in 1929, care was taken to contact none other than J.B. Lippincott, an important figure in hydraulics at the time, to attest to the stability of the structure (Lippincott 1929a, 1929b:passim).

E.S. Pillsbury and George W. Scott were both presidents of the Snow Mountain Water and Power Company. W.W. Van Arsdale was a director for both the Snow Mountain Water and Power Company and the Eel River Power and Irrigation Company. The difference between the two companies was primarily in available capital and residence. Most of the
Figure 4
Snow Mountain Electric Power Company Letterhead; 1907
(MNF, Historical Files)
Eel River directors either lived in or owned property, like Van Arsdale, in the Ukiah area. All of the directors of the Snow Mountain Water and Power Company had primary residences in San Francisco (California State Archives, Records of Incorporation, Eel River Power and Irrigation Company 1905; Snow Mountain Water and Power Company 1906).

There was one attempt to develop hydroelectric power on the eastern slope of the project area, but financial difficulties beset the efforts of the Snow Mountain Electric Power Company from the beginning.

The original intent of the Snow Mountain Electric Power Company was similar to their western counterparts in Gravelly Valley, but on a much smaller scale. They lacked the necessary capital or incentive to promote a large reservoir project. Their aim was to provide electric power to the Sacramento Valley towns of Willows, Corning, and Williams. No doubt they would also electrify Fouts Springs, where Charles H. Glenn, son of the wheat magnate and president of the company, resided. Despite their failure, they did manage to develop an inspired logo for their company stationery, an:

artist's conception of the power development at Red Bridge -- between St. John and Snow Mountain. The sketch shows St. John in the background covered with snow, with Snow Mountain on the left. The letterhead indicates power development with industrial plants shown in the background [Figure 4].

The company had a sawmill in Letts Valley to cut timber for building the power house and other necessary developments. It was necessary to cross Stony Creek and at that time they built the Red Bridge...

The flat just on the north side of the creek across the bridge was to have been the location for the power house itself. The water was to have come out of the middle fork of Stony Creek. The source of the water supply was to run along the side of St. John Mountain for a distance of 2-1/4 miles to the power house at Red Bridge. The company sold stock and raised approximately $15,000 for the project (Wickes 1954:1).
Water Resources Development: Proposed & Existing, 1964
(Anonymous 1964:81)
The project was abandoned after nearly four years of effort and many false starts. The Pacific Bank of San Francisco was bankrupted, causing the local banks of Willows, Colusa, and Williams to withdraw their support. The plans for construction were completed, and a good road had been constructed from Fouts Springs to Red Bridge. Lumber was hauled to the powerhouse site from the sawmill in Letts Valley, which had been constructed specifically for this project.

The Pelton Water Wheel Company provided engineering advice for the project, which would have generated about one kilowatt. The Snow Mountain Electric Power Company must have planned some kind of expansion, since one kilowatt is a very small amount of power. The dam site was on the North Fork of Stony Creek, in the SE 1/4 of SE 1/4 of Sec. 19, T.18N.R.7W. A flume route had been surveyed that ran "southeasterly" from the dam to the penstock in the NW 1/4 of SW 1/4 of Sec. 28, with the powerhouse near Red Bridge in the SE 1/4 of SW 1/4 of Sec. 28 (Wickes 1954:1; Knock 1907; McComish & Lambert 1918:136). After many inspections, letters of enquiry and extensions, the Forest Service canceled the special use permit, issued November 6, 1907, on May 26, 1910 (Wilson 1910).

The development of water resources of the North Coastal Area has been a subject of keen interest to state and federal water agencies. One study, completed in 1964, and depicted in Map 28, proposed to construct "35 dams and reservoirs, ten pumping stations and 15 power plants." It was speculated that the system would "serve the needs of Californians for the next 60 years" (Anonymous 1964:81).

In California, where water is a valuable commodity, proposals for such enormous and complex water developments is commonplace. Currently, the State of California, Department of Water Resources, is developing a reservoir scheme on the eastern side of the Mendocino National Forest with the intent to increase the water available to Sacramento Valley agriculture (Department of Water Resources 1980).
Agriculture in the Sacramento Valley was in decline by 1900. Monocultural wheat growing had depleted the native soils. Land prices were falling, the populations of the valley counties were dropping, and profits, once high, had fallen to nearly nothing. Many in the valley believed that extensive irrigation would open up large tracts of lands closer to the foothills. Such areas had not been depleted. The hope was that the cycle would renew itself, but this time including better crops, such as orchard edibles and alfalfa, which tended to replenish soils.

Some banded together to form the Sacramento Valley Development Association. In November of 1900, this association petitioned the President of the United States to set aside as a forest reserve such of the public lands about the head of Stony Creek and its tributaries as the experts of the Geological Survey shall recommend as necessary for the protection of the water supply of said creek.

Before the end of the month, the designated area was closed to further public entry (Cole 1903:20).

In 1902, an inspection of the proposed reserve was made by Professor W.W. Mackie of the University of California. Mackie recommended that the reserve be created primarily for its watershed value. He alluded to the conflict he scrupulously avoided mentioning in his report when he emphasized the importance of irrigation to the Stony Creek Valley. He wrote: "Beginning at Ladoga and ending at Newville, are many alfalfa fields and orchards, which owe their existence entirely to irrigation" (Mackie 1902:32).

Presumably, the planned construction of dams along Stony Creek would benefit the hinterland communities even more. Others thought quite differently. The year after Mackie had submitted his report favoring the reserve, there were a series of public meetings held by the newly formed Stockman's Defense Association. At one meeting in Elk Creek, a petition was signed by 300 people protesting the formation of the reserve. It was sent off to Washington,
but to little avail. A few years later, in 1906, Robert Ayres, an inspector for the newly formed Forest Service, was nearly mobbed at one of the meetings he attended (Price 1946:2). "There has never," reported Ayres, "been a reserved proposed against which there has been such bitter and organized opposition" (Ayres 1906:17).

The Stockman's Defense Association was composed of local people who lived on the periphery of the disputed reserve, primarily on the eastern side. The president of the organization was William Markham, whose father had settled in the southern part of Stony Creek Valley in the early 1860s. Markham was married to Anna Burrows, daughter of Rufus Gustavus Burrows. Burrows had established himself in the Newville area in the late 1850s (Davis 1915:651; Guinn 1906:942). Ayres thought it imperative that the stockmen be given a hand in the administration of the new reserve. He felt their aid in fire detection and control would be invaluable. In closing, Ayres recommended that Markham be given a position of importance in the new forest administration, and that

"...it should be the policy to favor the stockmen as much as possible, until they have become accustomed to the new conditions. This point can not be too strongly urged, because the people are so bitter against the creation of a reserve that the slightest excuse would cause a disturbance, and should the administration be out of sympathy with these people, the trouble would be endless (Ayres 1906:18, 20-21).

The proposed forest reserve was also protested by people on the western side of the Coast Ranges. In Lake and Mendocino counties, a petition (similar to the one issued by the Elk Creek meeting in 1903) was circulated in 1906 (Price 1946:3). Again, the effort was to no avail. Theodore Roosevelt proclaimed the Stony Creek Forest Reserve on February 6, 1907. The name of the Reserve was changed to the California National Forest on July 2, 1908, and again to the Mendocino National Forest in 1932 by Herbert Hoover (Forest Service 1962:13, 24, 65).

Recommendations made by Ayres concerning supervisorial personnel were ignored. It appears that his opinions
concerning the locals were likewise discounted. Many problems resulted from this initial unwillingness of the Forest Service to recognize an important local situation.

The debate focused on which resource was to have the dominant role under the new management. The Forest Service was primarily concerned with the Reserve as a watershed (as was the Sacramento Valley Development Association), while the local folk were attempting to assert their ill-defined, prior grazing rights. Of course, the Forest Service made many attempts to reconcile these difficulties, for instance the meeting held in Corning with the Forest Service and the Northern California Wool Growers Association in 1923 (Miller 1925:1). But the fundamental direction adopted from the onset of Forest Service management was to undermine the local grazing economy.

The policy concerning grazing practices caused the most strife in the first years of the management of the Mendocino National Forest. The discussion above in Chapter VII outlines the regulation of grazing, especially after World War I. The main goal was to reduce the number of animals using the range, as well as to closely control all grazing practices. Admittedly, grazing needed some regulation, but the issues are unclear and facts are distorted because the debate became so heated.

The permit system established by the Forest Service had been developed, like many other administrative systems, for forests nationally, and it was never welcomed by locals who had long established grazing rights in the areas the Forest Service was just beginning to regulate. This was certainly true of the Mendocino National Forest, and it is reflected in the attempt by Lake County residents to have the President eliminate the Cache Creek drainage from the Forest in 1910 (Price 1946:4).

Those who opposed the formation of the Stony Creek Forest reserve were not without their allies nationwide. In fact, the fight between the Forest Service and ranchers, particularly sheepmen, was long and bitter. Finally, in 1911, the United States Supreme Court ruled against the combined efforts of open range proponents. The wool growers had sought to undermine the national policies of the Forest
Service by raising the issue of states' rights in determining management policies for public lands within their borders (Anonymous 1911a).

Forest Homesteads and Administrative Sites.

The Forest Homestead Act of June 11, 1906, permitted homesteading on national forests provided the lands entered were agricultural in character. This law specified that areas that were "needed for public purposes" were exempt from this law (Dana 1956:147).

In California, foresters were decidedly against any further homesteading in the national forest interior for two reasons. First, the lands available in the national forests were sub-marginal in character, and, second, each application had to be checked by the already overworked staffs of each forest. Considerable time was consumed in the process of inspection and evaluation of these forest homesteads, many of which were ultimately rejected. The result was that:

hundreds of administrative sites -- potential forest homesteads, but embracing lands for which forest officers could foresee a higher future use -- were withdrawn... as a measure to save such lands for future use..." (Brown & Show 1944:271).

This attempt to stymie forest homesteading did not go unnoticed. In 1909, Secretary of the Interior Richard Ballinger questioned the withdrawal of so much land for administrative purposes. Of the 2,565 administrative sites withdrawn on the western national forests, he revoked 149 because their withdrawal was "detrimental to western interests" (Brown & Show 1944:271).

The issues involved in this debate went far beyond the individual homestead. In fact, homesteading in the national forests was never the panacea it seemed to be. An "old song" describes the situation nicely:

How happy I am on my government claim,
Where I've nothing to lose and nothing to gain,
Nothing to eat and nothing to wear,
Nothing from nothing is honest and square.

But here I am stuck, and here I must stay,
My money's all gone and I can't get away;
There's nothing will make a man hard and profane
Like starving to death on a government claim
(Anonymous 1935:5).

On the Mendocino National Forest, 92 forest homestead applications were made during the period 1907-15, but only 40 of these passed the scrutiny of forest officers. The cost of inspection was "unjustifiable" (Mace 1916). By 1920, only four of the original entrants were occupying forest homesteads. The total area under cultivation for crops other than hay was only seven acres (Anonymous 1920). The claim of foresters statewide that lands were being homesteaded that were submarginal agricultural lands seems to have been justified.

The reaction of the Forest Service to homesteading on the national forests was to withdraw these submarginal areas for administrative purposes. On the Mendocino, this policy was pursued with some vigor. Nearly 60 administrative withdrawals are shown on the forest atlas compiled by the United States Geological Survey in 1911 (Forest Service 1912b). Quite often the standards used to compile lists of administrative sites were ill-defined. Moreover, there were constant additions and deletions during the period prior to 1920, making the nature and number of these sites difficult to determine without intensive site-specific research. The number of administrative sites totaled 84 in 1918, when a survey of the California National Forest resulted in dropping 40 of these because they were not necessary for forest management. Tables 4 and 5 show the lists of sites used and released in 1918.

The improvements made by the Forest Service on their administrative sites ranged from buildings actually erected by the government to "a rough cabin and some fencing enclosing a small pasture," sold to the Forest Service by homesteaders relinquishing their claims (Price 1946:7). Improvement inventories exist for select forest sites. These inventories record in some detail the buildings,
**Table 4**

*Administrative Sites in Use, 1918*

<table>
<thead>
<tr>
<th>District 1</th>
<th>District 2</th>
<th>District 3</th>
<th>District 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilder</td>
<td>Mill Creek</td>
<td>Pinnacle</td>
<td>Seven Troughs</td>
</tr>
<tr>
<td>Oriental</td>
<td>Wylie</td>
<td>Driscoll</td>
<td>Lee Logan</td>
</tr>
<tr>
<td>Oriental Addition</td>
<td>McDaniel</td>
<td>Elk Mountain</td>
<td>Black Butte</td>
</tr>
<tr>
<td>Burrows</td>
<td>Stonyford</td>
<td>Pine Mountain</td>
<td>Twin Rocks</td>
</tr>
<tr>
<td>Log Spring</td>
<td>Letts Valley</td>
<td>Blabon</td>
<td>Montague</td>
</tr>
<tr>
<td>Poison Glade</td>
<td>Signal Peak</td>
<td>Berryhill</td>
<td>Eel River</td>
</tr>
<tr>
<td>Poison Glade Addition 1</td>
<td>Bearwallow</td>
<td>Blood[y] Rock</td>
<td>Tantrum</td>
</tr>
<tr>
<td>Poison Glade Addition 2</td>
<td>Sheetiron</td>
<td>John Day</td>
<td>Osborn</td>
</tr>
<tr>
<td>Ball Rock</td>
<td></td>
<td>Spruce Grove</td>
<td>Beaver Glade</td>
</tr>
<tr>
<td>Cold Spring</td>
<td></td>
<td>Bear Valley</td>
<td>San Jose</td>
</tr>
<tr>
<td>Elk Lake</td>
<td></td>
<td></td>
<td>Indian Dick</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cedar Spring</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Haines Delight</td>
</tr>
</tbody>
</table>

(Coffman 1918)
### Table 5

**Administrative Sites Released, 1918**

<table>
<thead>
<tr>
<th>District 1</th>
<th>District 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millsaps</td>
<td>Driscoll</td>
</tr>
<tr>
<td>Dell Harleson</td>
<td>Fouts</td>
</tr>
<tr>
<td>Dead Rabbit</td>
<td>Hewitt</td>
</tr>
<tr>
<td>Mud Flat</td>
<td>Nye</td>
</tr>
<tr>
<td>Raglin</td>
<td>Copper Butte</td>
</tr>
<tr>
<td>Mud Flat Addition</td>
<td>Knoll Springs</td>
</tr>
<tr>
<td>Hay Patch</td>
<td>Elk Creek</td>
</tr>
<tr>
<td>Fletcher</td>
<td>Mickey</td>
</tr>
<tr>
<td>Gridley</td>
<td>Bonaparte</td>
</tr>
<tr>
<td>Cooper</td>
<td>Summit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District 3</th>
<th>District 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shroeder</td>
<td>Black Rock</td>
</tr>
<tr>
<td>Lake View</td>
<td>Jacks Hollow</td>
</tr>
<tr>
<td>Wilson Valley</td>
<td>White Hawk</td>
</tr>
<tr>
<td>Paramore and Paramore Addition</td>
<td>Anthony Peak</td>
</tr>
<tr>
<td>Little Round Mountain</td>
<td>Anthony Ridge</td>
</tr>
<tr>
<td>Bartlett</td>
<td>Pony Meadow</td>
</tr>
<tr>
<td>Packsaddle</td>
<td>Solomons Peak</td>
</tr>
<tr>
<td>Sanhedrin</td>
<td>Green Spring</td>
</tr>
<tr>
<td>Bald Mountain</td>
<td>Police Camp</td>
</tr>
<tr>
<td>Bennett</td>
<td>Shell Mountain</td>
</tr>
</tbody>
</table>

(Coffman 1918)
fencing, and other improvements the Forest Service made (Historical Files, Mendocino National Forest, Willows).

The more important early administrative sites include Berry Hill Station (the first pasture), McDaniels (first summer headquarters for Stonyford Ranger District), Poison Glade (first summer headquarters of the Paskenta Ranger District), Wilder Station, and Alder Springs (summer location of the Forest Supervisor beginning in 1911) (Price 1946:9).

The general trend with administrative sites was to reduce their numbers as forest administration was consolidated and improved. By 1936, there were 51 administrative sites and additions of record on the Mendocino, and, in 1949, 20 more sites were canceled, some of them including original sites that were no longer used (Price 1936; Anonymous 1949).
The Question of Fire

The control of fire was the main consideration for the Forest Service when they first began to manage the Stony Creek Forest Reserve. Wild fire, begun by lightning or human agency, were responsible for extensive destruction of forest resources nationwide, but, in the beginning of Forest Service management, very little was understood about effective techniques of fire prevention, detection, and suppression. Some very obvious steps were necessary to improve fire detection and suppression methods, including establishing lookouts, building and maintaining serviceable roads, and improving forest communication. But even the obvious steps were difficult to accomplish because of funding problems, which were an outgrowth of the prevailing belief that fires were either beneficial to the forests or that they could not be controlled once started (Pyne 1981:64-77; Board of Forestry 1910:77, passim).

The destructive nature of fires that were not wild was equally evident, but harder to assign responsibility for cause. As Ayres wrote in 1906:

... As to the causes of fire, it is impossible to state with any accuracy the true origin of the majority of the fires [on the Stony Creek Forest Reserve]. Campers, hunters, and stockmen blame each other indiscriminately, and the mass of disinterested people who do not live near the reserve insist that the stockmen are the cause of the entire trouble. There have been cases where stockmen have burned over some brushland to clear a space for lambing or kidding ground, or to hasten the green feed in the spring, but it is hardly true that they commit the wilful damage ascribed to them. To say that fires are caused by lightning, carelessness on the part of herders, campers, and hunters, is as near to the truth as it is possible to get...(Ayres 1906:15-16).

Many foresters believed that fires set by herders were useless and should be regarded as incendiary, criminal actions. Since there were no hard experimental findings to base conclusions upon, it was a matter of opinion who was correct. Of course, fires that were set with the intention
of promoting growth of new feed could grow into wild fires of devastating proportions. The Forest Service regarded all fires as potential wild fires, and they attempted to stop those herders who believed that "light burning" was essen­
tial to good range management. At least twice, in 1926 and 1928, undercover agents were used by the California National Forest in an attempt to determine who might be responsible for setting incendiary fires. As with many attempts to target specific individuals, the reports of both these individ­uals consist largely of general statements. It is quite likely that the specific individuals mentioned in these reports were not involved in light burning at all (Pincetl 1926; Carr 1928).

The development of lookout stations and administrative districts for patrolling was first proposed by the survey reports made by Ayres and Mackie (Ayres 1906; Mackie 1902). But it was not until the during 1910 that ranger districts and appropriate lookout points were established. The first four peaks selected were Black Butte, Baldy Mountain, Goat Mountain, and Pinnacle Rock. Riding patrols were instituted in that year, according to four established districts. Each of the fire districts had three or four man patrols, based on the fire danger in the area. The rangers rode through their assigned areas each day, watching for fires, and interviewing and instructing campers and other forest users in proper forest habits. The effect in general was signif­icant in terms of enforcement of the fire regulations of the time (Anonymous 1911b).

This was quite a contrast to the first few years of Forest Service management of the Stony Creek Forest Reserve. For the fiscal year ending in June of 1907, the amount of area for a single man to patrol during the fire season was as 100,000-200,000 acres, about half of what the same person was expected to patrol during the winter season (Forest Service 1907:2).

Even if a patrol did locate a blaze, suppression of fires were often difficult:

By God ... , in those days they [fires] was all, all of them give us trouble. But we didn't have but axes and rakes to fight with, you know. Didn't have no
equipment or nothing. It was all hand work. ... We just had to stay with it ... I've been on a fire line fighting a fire for 40 hours straight, never go to camp. The crew; just rackin' fire and back fire as we go; that was the only way we could do it. We just had garden rakes and shovels and axes; that's all we had. That's all the tools we had. Never had equipment of no kind. Nothing! (Kinloch 1978:32)

Obviously, the development of equipment was an imperative to effective fire management. By the 1920s, pump-equipped tank trucks came into general service. Fire prevention was especially emphasized. Significant fire hazards, such as slash, old buildings, accumulated debris, etc. were removed. Fire lines were coming into use, especially around popular public camping grounds. Those who lease summer homesites on the forest were required to clear their premises of flammable materials (Brown & Show 1944:383-84).

An attempt to use aircraft for fire detection and location began after World War I when the Forest Service and the Army Air Service combined efforts. Beginning in 1920, preliminary air patrol routes for the 1919 season were expanded to include most of the forested areas in California and Oregon (Boyce 1921:771-775). These experiments met with some success and were continued through the 1921 season using the routes shown on Map 29. One of the base stations in California was located at Corning, and the route over the Mendocino National Forest was roughly an oval, clockwise path (Forest Service 1921; Redington 1920).

The Forest Service continued to experiment with aircraft beginning in the 1930s with some efforts to construct air tankers. In 1931, and 1936-39, experiments with air tankers of limited capacity and size were conducted in northern California. Efforts in the second period were directed toward not only water bombing, but powders of various kinds were tested for their fire quenching ability. After World II, the fire fighting situation changed substantially because of the available war surplus equipment suited to rugged conditions (Pyne 1981:64-65).
Air Patrol Routes in the California Region, 1921
(Forest Service 1921)

[See captions over]
AIR PATROL ROUTES
SEASON 1921

ROUTES

#1 March Field to Rogers Canyon, North Baldy, along north side of Angeles to Bear Lake, San Gorgonio Mt., Idyllwild, Hemet, March Field. No sub-base.

#2 March Field, Mt. Wilson, Santa Clara, San Rafael Peak, Zaca[?] Peak, Santa Ynez, to Santa Barbara, returning over same route next day.

#3 Visalia to Homer's Nose, Jordan Peak, Sunday Peak, and Breckenridge Mt., returning approximately same route. No sub-base.

#4 Visalia to Morrow Rock, Hume, Signal Peak Lookout, to Chowchilla, returning same route.

#5 Mather to Placerville, Pacific R.S., Lumber Yard, Duorwall[?] Mt., Pilot Peak, El Portal, Chowchilla, returning same.

#6 Mather to Georgetown, Emigrant Gap, Sierra City, Quincy, Oak Flat, Corning. Returning by more direct route to West.

#7 Corning to Mineral, McCoy Flat Reservoir, Hayden Hill, Alturas. Returning over Turret Peak, Black Fox Mt., Grizzly Peak, Snow Mt., Shingletown, to Corning.

#8 Corning to Hayfork Valley, Orleans, Cottage Grove, Happy Camp, Seiad Valley, Oak Bar, Yreka, Montague, returning over Mt. [?]ably, two miles east of Red Mt., Weaverville, Corning.

#9 Corning to Ball Rock, Alder Springs, Goat Mt., Pinnoche Rock, Mt. Sanhedrin to Covelo. Returning over Covelo R.S., Indian Dick R.S., Horsehead Peak, North Yola Bola, Tomhead Mt. to Corning.

1921 AIR PATROLS Legend

□ Bases at which detachments were stationed. Air Service Radio.

△ Sub-Bases. No radio unless otherwise indicated.

○ Forest radio receiving stations. (Forest Service 1921)
In July, 1955, Joseph Ely, Fire Control Officer on the Mendocino National Forest, suggested the idea of an air tanker to Floyd Nolta,

... a pioneer in agricultural aviation as early as the twenties. ...

A week later ... , Floyd had cut a hole in the bottom of a Stearman biplane, added a gate with hinges and a snag and pull-rope, and filled the thing with water. His brother ... Vance Nolta took it up. Al [Edwards] and Floyd lit the dry grass along the airstrip, Vance came over low and pulled the rope, and put out the fire. We were in business. It was July 23, 1955.

On August 13, 1955, a crew was building handline in the brush on the lower side of the Mendenhall fire on the west side of Bald Mountain on Jack Weddle's Covelo District. They heard a plane coming in close and looked up just in time to see a load of water come down upon them and the edge of the fire. It was the first free-fall ever made on a forest fire (Ely 1981:8).

It may have been the first "free-fall," but experiments with air tankers date to 1911 (Davis 1978:1; Anonymous 1916:35).

By the late 1950s, air tankers were used by both the Forest Service and the California Division of Forestry as an effective fire fighting tool (Reinecker & Phillips [1960]:4-8; Ely, et al. 1957:103-109; Davis 1978).

On the Mendocino National Forest, plans for sophisticated fire protection began with the design of a transportation plan specifically for fire control. This plan, prepared in 1935, was based on a time efficiency study written by S.B. Show and E.I. Kotok in 1930. Both Show and Kotok had been active in fire management studies, beginning with their excellent report published in 1923, "Forest Fires in California, 1911-1920". Other early studies on fire management in California include two reports by Coert DuBois, published in 1911 and 1914. All of these works were directed toward organizing the methodology of research and practice for the management of fire. A specific emphasis was placed on problems associated with the forests of the
Figure 5

Underground Equipment Cache, ca. 1914
(DuBois 1914:77)
California Region (Show & Kotok 1923, 1930; DuBois 1911, 1914).

By 1940, the Mendocino National Forest had proposed a transportation system including roads and aircraft. The overriding concern was to allow both access to and protection of the resources throughout the forest (Forest Service 1943:52-58).

Communications.

The development of heliograph, telegraph, telephone, and radio communications was an indispensable asset for fire fighting. As these improved communications systems were developed, the Forest Service was simultaneously developing better understandings and methods for dealing with fire detection and suppression.

Before the advent of the Forest Service, telegraphy and telephony had already been established commercially in the project area. Such communication systems were not adapted to meet the specific needs of fire fighting. The tack the Forest Service adopted was to use the established systems where they could and build them where they were needed. The telephone was preferred over the telegraph, so the history of communications on the Mendocino National Forest begins with the construction of the first telephone lines. Oddly enough, budget restrictions within the Forest Service delayed the construction of telephone lines, and, when they were built, an old system, the grounded system, was used.

Telephone communications were a part of American life by the late 19th Century, and, when the Stony Creek Forest Reserve was formed, many refinements had been made in theory and practice. Originally, telephone communication was over previously strung telegraph lines. These lines were single-wire, grounded systems. One wire was the carrier, the other was grounded to the earth by means of a metal rod or plate. Telegraph signals passed undisturbed over such transmission systems, but telephone communication, although possible, was subject to squeaks and squawks in abundance when the "grounded circuit" was used.

By the early 20th Century, most commercial operations
no longer used the single wire transmission method for long distance calls at all. They had changed over to a two-wire, "metallic circuit" system. Figure 5 shows the two types of circuits as they are connected to a telephone box.

It is remarkable, despite all the difficulties with the grounded system, that so many short-distance commercial applications were still in use after 1900. The grounded circuit had great staying power, primarily because the cost of the transmission lines was half of that of the metallic system. Considering that the transmission lines were a sizeable portion of the original investment for a small, rural company, it is not surprising that the single-wire system was used well into the 20th Century (Casson 1910:120-123; Fagen 1975:203-204).

The first telegraph and telephone lines through the project area were built in the 19th Century. They connected the mineral spring resorts and towns in Colusa, Lake, and Mendocino counties. The Colusa, Lake and Mendocino Telegraph Company is one example. In 1874, their line ran from Colusa to Calistoga, connecting Bartlett Springs, Upper Lake, Lakeport, Kelseyville, and other towns. A branch connected Lower Lake and Sulphur Bank to the system (Palmer 1881:95). By 1880, Bartlett Springs was promising telephone service to their customers, and, around the turn of the century, the Sunset Telephone Company, earlier the Clear Lake Telephone Company, was operating an exchange out of Lakeport (Mauldin n.d.:5240-5241).

Although inadequate, the funding for Forest Service telephone construction was forthcoming. Lines through the Mendocino National Forest were constructed in pieces.

The line from Paskenta to Covelo was started in 1909 and completed in 1911. The Fouts Spring - Elk Mt. line was started in 1911 and completed in 1913. The line from Elk Mt. to Potter Valley was completed in 1914. This latter line followed the road from Elk Mt. to Gravelly Valley, then along the old road via Weldon and Van Arsdale dam to Potter Valley (Price 1946:11).

Those points, especially lookouts, not connected to the telephone system had to reach the closest "phone, camp or
Wiring diagram for lookout telephone station.

Figure 6

Forest Service Telephone Station, ca. 1915
(Forest Service 1915:55)
ranger headquarters to give the alarm" (Anonymous 1911b).

Telephone line construction was outlined by the Forest Service in pamphlets published in the early part of this century. The location of lines were to be between important administrative points, e.g., ranger stations, lookout stations, and the like. Both poles and trees were recommended for hanging the lines, depending upon the nature of the terrain. Poles were to be used along roads and trails with clear right-of-way. Too much maintenance was required for pole lines through timbered areas, so Washington recommended using trees for hanging lines.

The grounded circuit was the main type of telephone design in use throughout forests. Practice had shown that the metallic circuit, in some cases, was impractical for forest applications, and it could only be used after obtaining permission from the district forester.

The type of insulators shown in the 1915 telephone instruction manual are of two types. The first kind is for mountain on a peg and is the standard, hollow, single-groove insulator, commonly referred to as a pony insulator. The second insulator is shaped like a squat spool, with an annular groove. It was used to suspend wires with other guy wires, connected to trees. The advantage of this style was that the supporting wire or staple would break before the line did, insuring quick repairs. Brackets were made of oak, painted for preservation, and wire was specific for grounded circuits as No. 9 B.W.G. Best-Best galvanized iron wire (Forest Service 1915:27, 32-40, 82).

In order to supplement telephone communication, heliograph stations were set up throughout the Mendocino National Forest. The stations in use during the 1912 season are shown on Map 30. Heliography equipment was not really suited to the kinds of conditions that prevailed in the interior parts of the forest. DuBois urged in his 1914 study that the instrument should be used whenever practical, especially to connect isolated points to lookouts or ranger stations with telephone service. If he was familiar with his division:

a patrolman can go immediately to the nearest highpoint
or ridge from which a lookout station is visible, set up his heliograph instrument and get into communication with the lookout man. The message can then be transmitted to the proper officers...

He noted, however, that:

The standard heliograph is an awkward article to pack and an impossible article to carry on a saddle horse. More obvious problems with visibility and smoke during fires were easily overcome, so it was an effective, although cumbersome, means for communication once it was in place and set up (DuBois 1914:73).

Telephone construction on the Mendocino National Forest is indicated on many Forest Service maps produced over the years, beginning with the atlas of the California National Forest prepared by the United States Geological Survey in 1911 (Forest Service 1912b). Major lines are shown on Map 30 for the season of 1912. Telephone lines continued to be constructed throughout the 1930s, with Civilian Conservation Corps crews and by Forest Service personnel. Ultimately, radio took over communications, and the old federal telephone lines were removed by the early 1970s (Mauldin n.d.:7800).

Radio was first used by the Forest Service in 1916 on the Apache National Forest in Arizona. It was a simple, telegraph setup (Slonaker 1979:23-27). During the 1920s, developments of many rudimentary devices continued, and, in 1930, the Columbia National Forest was using the new radio telephones on a trial basis for fire control communications. The use of radio telephones dispensed with stringing miles of emergency telephone wires. These early sets could receive and transmit, but they weighed 50 pounds and had to be packed into interior areas (Duthie 1934:1).

By the late 1930s, radio had been developed to the point where different kinds of equipment could be supplied to the Forest Service. Both portable and packable units were built. The portable unit weighed about 15 pounds, and it was capable of transceiving voice and code up to 20 miles. Some experimentation was also ongoing with an ultra-
high frequency radio transceiver, but it had line-of-sight limitations.

Along with the radio technology came a much more sophisticated approach to fire control operations. Unlike the early days of fire fighting, coordination of effort by many disparate elements began to assume an important role in fire suppression. Communication was no longer simply the relation of information among several groups attempting to control a blaze. Fire control had matured, and the radio was used to administer suppression action through an established chain of authority from the "fire boss" on down the line (Crebbin 1937:347-350; Simpson 1937:197-212).
The Definition of Resource and Resource Use

The history of the public domain before the Forest Service is usually dominated by resource exploitation, which involved practices directed to short-term gains. Initial policies of the federal government regarding the public domain were directed toward disposal, with little thought of management as it is currently understood.

The General Land Office (Department of the Interior), a precursor to the Bureau of Land Management, was an agency charged with the responsibility for disposal of the public lands. At first, the public lands were sold. That is, there were seen as a cash income. The federal government ceded some portions of public lands to the states so that all could share. Lands were also given, or granted, to organizations, individuals, and so forth as compensation for a service (Civil War military), or as an impetus for a large construction project (railroad land grants). The legislation controlling these transactions was complex, subject to great abuse and to great praise. Homesteading, for instance, never really worked, but it inspired many to labor for five years to obtain a 160 acre tract of land.

Management of the public domain was unheard of until the conservation movement demanded attention for its aims and policies at the end of the 19th Century. The ensuing battle between those who sought to manage and those who desired unregulated exploitation is a fascinating chapter in the history of the United States. Coupled with advances in conservation oriented sciences, the struggle for proper use of public resources still occupies an important place in the political arena.

The formation of the Forest Service (outside of the Department of the Interior whose policy was disposal, not management) began an entirely new chapter in the development not only of the regions withdrawn as Forest Reserves, but for the surrounding areas as well. The range of impact varied, however, depending upon the nature of the resource and the amount of control the Forest Service had over a specific area. For example, many reserves withdrawn had large private inholdings. Forest Service efforts to gain the cooperation of landowners appreciably affected their
planning and management in a given area. The result was a repeated failure to accomplish important tasks. By 1920, the Chief Forester began to plan the consolidation of national forest inholdings through exchange and purchase (Steen 1976:147).

The history of lands managed by the Forest Service follows the development of policies to define the important resources and to articulate effective policies for management and protection of those resources. Initially, protection of timber and associated watersheds was the overriding concern. The Forest Service was charged with management of resources to promote better land use, but the definition of resources was a perplexing issue for many years after 1905. Early in the history of the Forest Service, recreation, hydroelectric power, irrigation, reservoir development, grazing, and mining were of special concern. Homesteading within national forests was allowed by the Forest Homestead Act of June 11, 1906. This created much competition between the Forest Service and local communities. The few available sites for homesteading were also prime locations for ranger stations or for grazing government work animals.

Problems of funding created competition between various resources, and, quite often, recreation was denied monies for the facilities necessary even for the "primitive experience." Even so, the Forest Service provided the public with information concerning the national forests in California with a series of maps. Figure 6 shows the frontispiece of the map issued for the California National Forest ca. 1917.

The slow acceptance by foresters of new definitions of resources was a struggle for advocates of forest aesthetics, especially when the choice was between an important protection plan and the development of a resource for public use. Recreation benefited greatly, as did other resources, from the implementation of the intensive conservation work of the 1930s. Under the forceful supervision of Franklin Roosevelt, the New Deal ushered in changes that significantly enhanced the value and credibility of forestry and conservation in the United States.
The Civilian Conservation Corps.

The economic depression in the United States during the early 1930s is a well known and studied subject in history. California experienced particular problems because of the influx of migrants from the great midwestern plains. The severe droughts had caused considerable upset to the agricultural communities and resources of the midwestern states, and California became the haven for these displaced families. The demand for farm workers was soon overwhelmed by the size of the migration. By 1931, the welfare and unemployment problems were acute in California. One kind of state relief was organized labor camps for single men, first begun in 1931-32. These first labor camps in California had only limited success, since organization and management of the camps were not well defined or directed (Caughey 1970:452-455; Black 1932:passim).

The inauguration of Franklin Roosevelt brought about sweeping changes, dubbed the New Deal, and Forestry or conservation work received enormous appropriations after languishing for decades in budget backwaters. Roosevelt lost no time. Less than three weeks after assuming office, he introduced in Congress a bill requesting the establishment of a program for Emergency Conservation Work. The emergency employment act of March 31, 1933, authorized the creation of agencies:

for the purpose of relieving the acute condition of widespread distress and unemployment now existing in the United States, and in order to provide for the restoration of the country's depleted natural resources and the advancement of an orderly program of useful public works... (Granger 1933:760).

Roosevelt signed an Executive Order creating the Civilian Conservation Corps on April 5, 1933. The CCC remained under the administrative wing of Emergency Conservation Work until 1937 when Congress officially established it as the successor to the ECW. The CCC was the most popular of Roosevelt's depression planning, and it was unusually successful until it was disbanded in 1942 (Dana 1956:250).
The CCC was an interdepartmental effort within the Roosevelt Administration. The Department of Labor selected the enrollees and worked with state relief organizations. The Department of War transported, conditioned, and administered the camps. The Departments of Agriculture and Interior selected sites for camps and planned the work programs (Helms 1980:1-2).

The nationwide effect on the profession of forestry was a complete turnabout:

The scene changed magically from one in which hundreds of foresters were looking for jobs to one of scarcity. On August 1 [1933] there were 2,100 foresters employed in supervisory positions in the 1,257 camps under the general jurisdiction of the U.S. Forest Service (Granger 1933:759).

In California the Regional Forester received a telegram on April 21, 1933, that 165 CCC camps had been approved for the region. Sixty of these camps were to be built immediately. A meeting of all Forest Supervisors, the Army, Park Service, and other state, federal and local agencies was held in San Francisco on May 1-2, 1933. Details of the administration statewide, locating camps, and other organizational problems were worked out. California was part of the Ninth Corps area, including ten other western states. California was divided in districts, each commanded by an Army officer. In northern California, ultimately, there were three districts, Sacramento, Marysville, and Eureka (Price & Deering 1948:2-3; Anonymous 1933a:1).

Immediately after the meeting in May, Army officers from the San Francisco Presidio began to inspect sites for camps that had been proposed by the Forest Service. On the Mendocino National Forest, the sites of Patton Mill, Deer Creek, and Pacific Ridge were inspected and approved (Anonymous 1933b:2).

The first CCC camp in California was located in the Angeles National Forest in the southland. The three camps on the Mendocino National Forest were opened May 15, May 30, and June 5, 1933, respectively. Ultimately there were ten main camps and more than a score of secondary (spike or
Legend, Map 31

Name and Date of First Occupancy, Main CCC Camps

A  Patton Mill (May 15, 1933)
B  Elk Creek (November 2, 1934)
C  Gravelly Valley (June 10, 1933)
D  Boardman Ridge (April 16, 1941)
E  Nye (June 10, 1933)
F  Deer Creek (May 30, 1933)
G  Fouts Springs, Site #2 (November 2, 1934)
H  Fouts Springs, Site #1 (never occupied)
I  Middle Creek (November 9, 1933)
J  Pacific Ridge (June 5, 1933)
K  Hough Springs (October 27, 1934)

Names of Spike Camps

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</thead>
<tbody>
<tr>
<td>1</td>
<td>Colyear</td>
</tr>
<tr>
<td>2</td>
<td>Sugar Spring</td>
</tr>
<tr>
<td>3</td>
<td>Government Flat</td>
</tr>
<tr>
<td>4</td>
<td>Valley View</td>
</tr>
<tr>
<td>5</td>
<td>Paskenta</td>
</tr>
<tr>
<td>6</td>
<td>Log Springs</td>
</tr>
<tr>
<td>7</td>
<td>Red Mountain</td>
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<td>8</td>
<td>Alder Springs</td>
</tr>
<tr>
<td>9</td>
<td>Logan Basin</td>
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<tr>
<td>10</td>
<td>Brush Camp</td>
</tr>
<tr>
<td>11</td>
<td>Hull Mountain</td>
</tr>
<tr>
<td>12</td>
<td>Soda Creek</td>
</tr>
<tr>
<td>13</td>
<td>Skeleton Glade</td>
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<tr>
<td>14</td>
<td>Black Diamond</td>
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<tr>
<td>15</td>
<td>Stonyford</td>
</tr>
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<td>16</td>
<td>Letts Valley</td>
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<tr>
<td>17</td>
<td>Black Oak</td>
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<td>18</td>
<td>Bear Creek</td>
</tr>
<tr>
<td>19</td>
<td>Howard Mill</td>
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<tr>
<td>20</td>
<td>Bartlett Flat</td>
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<td>21</td>
<td>Sawmill Flat</td>
</tr>
<tr>
<td>22</td>
<td>Upper Lake</td>
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(Hobart 1981)
Table 6

Civilian Conservation Corps
Main Camps and Periods Occupied

<table>
<thead>
<tr>
<th>Camp</th>
<th>Periods of Occupancy</th>
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<tr>
<td>Deer Creek</td>
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</tr>
<tr>
<td>Elk Creek</td>
<td>4, 7, 8, 10, 12, 14</td>
</tr>
<tr>
<td>Fouts Springs</td>
<td>4, 5, 6, 8, 10, 14, 16, 18</td>
</tr>
<tr>
<td>Gravelly Valley</td>
<td>1, 3, 7, 9</td>
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<tr>
<td>Hough Springs</td>
<td>5, 6, 8, 12</td>
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<tr>
<td>Middle Creek</td>
<td>2, 3, 4, 5, 11, 13, 15</td>
</tr>
<tr>
<td>Nye</td>
<td>1</td>
</tr>
<tr>
<td>Pacific Ridge</td>
<td>1</td>
</tr>
<tr>
<td>Patton Mill</td>
<td>1, 4, 5, 7, 9</td>
</tr>
<tr>
<td>Boardman Ridge</td>
<td>17</td>
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</table>

(Price & Deering ca. 1933-1942)

<table>
<thead>
<tr>
<th>No.</th>
<th>Interval</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>5 April 1933 to 30 September 1933</td>
</tr>
<tr>
<td>2</td>
<td>1 October 1933 to 31 March 1934</td>
</tr>
<tr>
<td>3</td>
<td>1 April 1934 to 30 September 1934</td>
</tr>
<tr>
<td>4</td>
<td>1 October 1934 to 31 March 1935</td>
</tr>
<tr>
<td>5</td>
<td>1 April 1935 to 30 September 1935</td>
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<td>6</td>
<td>1 October 1935 to 31 March 1936</td>
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<td>7</td>
<td>1 April 1936 to 30 September 1936</td>
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<td>8</td>
<td>1 October 1936 to 31 March 1937</td>
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<td>9</td>
<td>1 April 1937 to 30 September 1937</td>
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<tr>
<td>10</td>
<td>1 October 1937 to 31 March 1938</td>
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<td>11</td>
<td>2 April 1938 to 30 September 1938</td>
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<tr>
<td>12</td>
<td>1 October 1938 to 31 March 1939</td>
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<td>1 April 1939 to 30 September 1939</td>
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<td>1 October 1939 to 31 March 1940</td>
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<td>15</td>
<td>1 April 1940 to 30 September 1940</td>
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<tr>
<td>16</td>
<td>1 October 1940 to 31 March 1941</td>
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<td>17</td>
<td>1 April 1941 to 30 September 1941</td>
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<td>18</td>
<td>1 October 1941 to 31 March 1942</td>
</tr>
<tr>
<td>19</td>
<td>1 April 1942 to 30 June 1942</td>
</tr>
</tbody>
</table>

(Price & Deering 1948:5)
The original qualifications for the men admitted to the CCC were that they be 18-25 years old, unmarried, unemployed, and have dependents. The requirements were changed to an age span of 17-23, and enrollees were not required to have dependents. Pay was $30 per month, and allotments were sent directly to the families of the enrollees. Originally the camps were composed of men from out of the immediate area or state, but eventually local, experienced men ("lems) were enrolled to provide local information and forest experience (Dana 1956:248-49; Holland & Hill 1942:28-19).

The first camps in California were temporary tents on platforms because of the uncertainty of the funding for the program. Permanent camps were much more elaborate, usually consisting of an administration building with a flag pole, kitchen and mess hall, recreation hall, school house, infirmary, lavatory, and five barracks. "Always of wood, the buildings may be painted brown or green, creosoted, or covered with tar paper..." (Holland & Hill 1942:36). The camps were designed to house about 200 men, and a first or second lieutenant was put in charge.

Camps were constructed in two stages. An advance team of about 25 enrollees was on the site at first, clearing the area, digging ditches, and performing other unskilled tasks. Then a crew of skilled carpenters would finish construction of the camp. About two weeks passed before the U-shaped compound was finished.

Certainly the most lavish CCC camp on the Mendocino National Forest was Camp Patton Mill. The grounds held an auto shop, a swimming pool, and was one of the few to be electrified by the efforts of its own residents, all in the first year of occupancy. In October of 1933, the camp was rated the highest in the Marysville District, and it had a record re-enrollment of 162 out of 179 boys (Anonymous 1933d:2; Anonymous 1933e:3; Anonymous 1933f:2).

Although almost entirely Californian in personnel,
an easterner would feel perfectly at home in Camp Patton Mill, F-39, Mendocino National Forest, having no difficulty in finding his way from "Broadway" to "5th Avenue," or "42nd Street." "The Civic Center" on a large sign on the recreation hall, however, does homage to the "City by the Golden Gate" and the main street, "Malin Drive," honors Lt. N.A. Malin of the 30th Infantry who is commanding officer of the camp. Even the four bunkhouses have been named: "Valley View Apartments," "Bachelor Hotel," "Brown Derby Apartments," and "Buckhorn Inn" (Anonymous 1933g:3).

Camp labor crews were usually in the charge of foremen, who in turn reported to a project superintendent. Ultimately, local experienced people were employed wherever possible because of their skill and experience, and also because the camps tended to displace local labor.

The types of work that the CCC performed were principally construction of truck trails, fire breaks, campgrounds and buildings, reforestation, insect and rodent control, stringing telephone lines, and fire fighting (Price & Deering 1948:6). The CCC camps on the eastern side of the Mendocino National Forest were involved in construction of a second "Ponderosa Way." Hough Springs, Fouts Springs, Pacific Ridge, Elk Creek, and Patton Mill were all built for the purpose of clearing this enormous fire break that ran the entire length of the forest (Hobart 1981; Lafferty 1980:9).

By the time the CCC began to build telephone lines for the Forest Service, both metallic and grounded circuits were in common use. The metallic circuits were used for main trunk lines, but the single line grounded circuits were still being used for lines through heavily forested sections between lookout or guard stations. The line was packed into these backwoods areas, in lengths of 1/4 mile, each man carrying one coil or "reel" per trip. The insulators they used were the split type, and the wires were attached to the trees with a large staple as was the common practice about 1910. According to Charlie Lafferty, there were phone lines put up throughout the areas of the forest he worked in, connecting all of the main ranger stations with lookout and guard stations (Lafferty 1980:6-10).
The effect of the CCC was substantial on the attitude of a country without jobs. Many comments have been made regarding the preparedness for war that the CCC provided (Price & Deering 1948:8). But probably the most significant contribution the CCC made, aside from the work itself, was to the local communities in the areas where they were located. Nearly $5,000 per month was expended in local areas, by a single camp, providing a stimulus to local business that was in dire need of help, especially in rural areas. No other single program captured the imagination of the general public like the CCC, and its contribution to forestry, along with other conservation work, at a time when the Forest Service was just beginning to articulate important policies and programs itself, was substantial.

Other Policies and Programs.

The evolution of the policies of the Forest Service involved a close meld of national politics and the requirements of local communities. Such a situation was recognized as early as 1908, when Pinchot inaugurated his policy of direct administration of national forests. Delegation of authority was an obvious necessity for the early management of forest reserves, but, in the ensuing years, was gradually replaced by more direction from Washington.

The 1920s were years of great devotion to research, especially directed toward the particular needs of California forests (Hill 1931; Pratt 1931).

California as a region slowly developed its own form of independence, earmarked by the organization of the California Forest and Range Experiment Station in 1926 at Berkeley. The first director, Edward I. Kotok, had already contributed much to the specialized policies involving fire management in the California Region, and he set the pace for continued intensive research. It must have been an exciting time.

By the 1930s, the Forest Service was sufficiently organized to administer the biggest conservation programs of modern times, the Emergency Conservation Work, which included the Civilian Conservation Corps, developed by the Roosevelt Administration. In addition to the obvious impor-
tance of the work performed by the CCC, over $44,000,000 was made available to the Forest Service for a national acquisition program (Dana 1956:250).

The passage of the Sustained-Yield Forest Management Act began the recent phase of forest custodianship, further outlined in the Multiple Use-Sustained Yield Act of 1960. Even though the specifics of the operation were hotly debated, the "balanced allocation of timber, water, range, recreation, wildlife, and other resources" (Steen 1976:278) sought a compromise between use and protection not dreamed of by conservationists of Pinchot's time.
CHAPTER XII
INTRODUCTION TO THE PREDICTIVE MODEL

Purpose of Predictive Model

A review of the historical literature has indicated that the project area has been the location for a remarkable range of historic activities. Between 1850 and 1907 when the Forest Service took over the management of what is now the Mendocino National Forest, farming, livestock ranching, mining, recreational development, timber cutting and milling all played significant roles in the history of the region. After the Mendocino National Forest was created, the Forest Service managed the land, thus initiating another series of historic activities, fire observation and control, timber management, grazing management, and the like.

The East Lake Planning Unit of the Bureau of Land Management was not subject to any significant government regulation until after the passage of the Taylor Grazing Act in 1934. Historic activities, however, were in some ways more significant in this southern region than along the summit of the Coast Range. Mining activity was much more in evidence. The Capay Valley, just outside of the project area, was the scene of some of the earliest irrigated areas in northern California.

The predominant overlaps between the current Bureau of Land Management and Forest Service areas are ranching and recreational mineral springs zones.

All of these historic uses have left their mark upon the land. The project area has many sites and structures associated with 19th and 20th century development. The physical remains of historic activities present a variety of problems for federal officials today. Historic resources must be identified, and their significance assessed so that they can be properly managed under the several applicable federal statues and guidelines.

This predictive model is a tool to aid federal officials in the cultural resource management process. Using
basic federal records, the model indicates the kind and location of historic use types throughout the project area, including dominant economic activities, associated population structures, ethnicity of occupants, occupational trends, patterns of immigration, and how they changed over time. These data, displayed in tabular and graphic form and analyzed in the text, will be useful to federal officials because they indicate regional historic trends that can be used to devise more specific research programs for future cultural resource management work.

The development of the predictive model has not been without its problems, and it has limitations that will be defined and discussed below. Nevertheless, this work, we believe, is an important attempt to raise the level of usefulness of historical research beyond subjective and impressionistic treatments that usually characterize historical overviews.

This effort has been directed expressly to provide predictive data about location of historic site types throughout the project area. It includes a statistical analysis of population and cultural information that will be useful to all future investigators, historians, ethnographers, and archeologists alike. Moreover, it is a demonstration of the rich documentary holdings of the Forest Service, the Bureau of Land Management and other federal agencies, and some of the uses to which it can be put.

Finally, the predictive model provides a basis for comparative studies outside the project area by putting this study in the broader context of studies that have been done by historians, economists, geographers and others interested in 19th century historic development. It is hoped that by raising historic research in cultural resource management to this level, subsequent studies will be more useful and significant to cultural resource managers, the public, and to other students of the past.
Statement of the Research Problems

Historians faced three major problems in preparing this study: the size of the project area; the diversity of historic patterns; and a vast storehouse of useful documentary data.

The physical size of the project area, approximately 3,000 square miles, is complicated by its geographical complexity. It includes fertile valleys suitable for agriculture, mountainous regions more valuable for their grazing, and water and timber resources. While some parts of the project area are near population concentrations, other areas are remote and difficult of access. For these reasons, the project area was not uniformly settled, settlement did not occur at once, and different settlement and land use patterns emerged. Therefore, the history of one part of the project area may be dissimilar to the history of other parts. Further complicating the picture is the fact that the project area includes parts of eight counties with boundaries that changed over time. By and large, the project area includes the border areas of these counties, places that did not play a major role in the county histories. Sorting through the many boundary changes affecting the project area can be a baffling and frustrating experience. The administrative boundaries imposed by the Forest Service and the Bureau of Land Management likewise changed over time adding further confusion to the research process.

The third major problem concerned the vast array of pertinent primary documents associated with the project area. This embarrassment of documentary riches presented to historians problems of reviewing, assessing, interpreting, collating and analyzing data that can scarcely be imagined by those without similar experiences. A glance at the historic land use files and the census data in Appendices C, D, and E provides a quick indication of the magnitude of the task.

This effort has by no means exhausted the documentary resources available for the identification and interpretation of historic resources in the project area. Indeed, we have merely scratched the surface. For example, we have not reviewed property records in the various country recorders' offices that would reveal complete property ownership
histories because the task is simply too large to tackle for
the entire project area. There are approximately 5,000
parcels of land in the project area that were once in pri-
ivate hands. From experience, it usually takes half a day to
run through a chain of title, so it would 2,500 person-days
to completely investigate the property records for the pro-
ject area. And this does not take into account other impor-
tant county records useful in cultural resource management,
such as tax, probate, and other court records. To undertake
extensive research in county records at this stage is
clearly out of the question.

On the other hand, information on land tenure was not
disregarded altogether. County maps of the historic era
under study were used extensively to locate and further
identify census townships and to clarify the data analysis.
Moreover, for management purposes, the important parcels
involve those patented in historic times and reconveyed to
government control. The Regional Office of the United
States Forest Service, in San Francisco, kept files for
reconveyed parcels which contain abstracts of land titles,
so the work already has been completed. Unfortunately, at
this stage of research, this enormous body of information,
in storage at the Federal Archives and REcords Center in San
Bruno, was not consulted. As a resource for specific future
use, however, it would save immense amounts of time. These
files are arranged alphabetically by the last land owner
before the federal government resumed control of the tract.

As an alternative, we have reviewed and analyzed
historical sources that seemed to have high research poten-
tial, and that could be reviewed in the time allotted for
the project. For the predictive model the two most impor-
tant sources of information were the United States decennial
censuses and the land entry records of the General Land
Office (now the Bureau of Land Management). These two
record groups provide a rich data base that is the founda-
tion of the predictive model, and they are described below.
Description of Data Base

The United States decennial censuses provide information on population, agricultural production, and manufacturing. The most important data is displayed in the unpublished population schedules. Every ten years, census takers enumerated the whole population of the United States, at least in theory. Some groups, it has been proposed, were under-enumerated, but on the whole the population census schedules provide a remarkably comprehensive body of detailed documentation for all people, including those living in the project area. The population schedules include the name, age, sex, race (White, Black, Asian, Indian), occupation, dollar amount of real and personal property owned, and place of birth for each person enumerated. All of this information was arranged by household, enabling researchers to reconstruct social structure of the homes visited.

Census takers enumerated people in their districts usually in the order in which each household was visited. Very often the census districts cannot be precisely determined from the data in the census. By matching census information with historic property ownership maps, researchers can sometimes reconstruct the area travelled by the census taker. Since non-property owners were also enumerated there is not a complete correlation between property ownership data and census data.

The information available from census documents can be very helpful, but extra care must be exercised when dealing with these documents. In addition to the problems mentioned above, sometimes the manuscript census were re-copied by other federal officials who were not scrupulous about maintaining the integrity of the original document. There are also instances where part of the original census was lost or destroyed, thus compromising the value of the record group.

The agricultural census also contains valuable data on land use patterns in the project area. They were usually compiled at the same time the population censuses were taken. Agricultural schedules include the name of the owner, agent, or overseer who lived on the farm, the number of improved and unimproved acres, capital invested in farm
machinery, annual amount expended on farm labor, the number, kind and value of livestock and poultry, amount of cereal grains, vegetables and fruits raised. This census offers detailed data for individual farms, but since absentee owners could be used to identify the farm, it is sometimes difficult to correlate agricultural information with other data. In addition, the cautions outlined for the population schedules also apply to the agricultural information.

The manufacturing censuses are also useful for determining the kinds of non-agricultural land uses that occurred in the project area. These schedules include the name of owner, kind of motive power (if any) that was used, amount of capital invested, kind of industry pursued, amount and value of productions, and amount of labor employed. While these schedules contain useful information, they are subject to the same problems outlined above for the other schedules.

Land entry information available from the records of the General Land Office (GLO) is voluminous. All transactions were defined by law, but the records themselves, e.g., the Tract Books, were created by the administrative needs of the GLO.

The full story of the use of the public domain, loosely defined as the land belonging to the federal government, is complex. The history of legislation enacted by Congress is likewise complicated and confusing, but some background is necessary for understanding the rationale behind the key assumptions as as a segue into the use of the card files.

The original intent of Congress was to dispose of the public domain. In California, all lands, aside from those awarded prior right (e.g., Mexican Land Grants), were originally part of the public domain. Federal lands were to be converted into cash to offset government expenses. Lands were given, in the form of bounty or scrip, to war veterans, states were granted lands within their borders for many purposes, and railroads were deeded huge tracts to promote construction efforts. Figure 7 is a summary of this effort in California.
Legislation enacted by Congress concerning the public domain was often the center of great controversy. Tales of abuse of the provisions of the land laws abound (Puter & Stevens 1908). A careful study of the land entry records, however, brings to light many of the worst abuses, such as aggrandizement of large singleholdings, so the fraudulent practices carried on by some unscrupulous individuals are at least indirectly recorded. However, this warning: the records need to be interpreted correctly and correlated with other information resources, which is no easy task. This study is an extensive effort to use available General Land Office land entry records for the project area. This section of the report will describe the background to the actual making of the record group and the research methodology employed to use this immense information bank.

A Brief Review of Public Land Laws.

The Pre-emption Act of 1841 is the beginning of legislation that affected California. It summarized and restated acts that had come before, and it was the basis for settlement of government land previous to actual survey of the domain. This law allowed early settlers, after the government survey had been completed, to pre-empt a 160 acre parcel from other entry or sale by paying the minimum established price of $1.25 per acre. Proof of settlement and improvement was required, and the land had to be non-mineral in character. A Pre-emption Entry was recorded as a Cash Entry Patent by the General Land Office.

The most famous statute was the Homestead Act of 1862. It was intended to promote settlement, not to convert land directly into cash. However, it must be remembered that an influx of settlers increased land values, which in turn increased the value of lands granted to states and railroads. The possibility of acquiring land through settling on and improving it was very popular with the general public. Again, the size limitation was 160 acres.

The basic qualifications for acquiring land were the same as under the Pre-emption Act of 1841, but proof of habitation was not required at the time of filing a homestead claim. In fact, no patent could be acquired for the land as a result of homesteading under the 1862 law until at
Figure 7

Public Domain Disposal in California to 1956
(Dana & Kreuger 1958:46)

N.B.: Homestead Entries include Commuted, Forest and Stockraising Entries; Other includes Scrip and Military Patents.
least five years had elapsed from the time of application and not more than seven years after that time (Revised Statutes 2289-2291).

After making application and after actual habitation of the land for at least six months, the entryman was entitled to "commute" his claim, or obtain a patent for it under the Pre-emption Act by purchase at $1.25 per acre. According to instructions of the General Land Office, published in March of 1883, an entryman had to establish actual residence on the land within six months from the day of first filing (Revised Statutes 2301; General Land Office 1883:4).

Much of the public domain open to homesteading in the West was semi-arid, and it turned out that a 160 acre parcel was insufficient to support a family. But accommodation by Congress came slowly. The Enlarged Homestead Act of February 19, 1909, allowed for homesteads of 320 acres in certain select western states. California was added to the list in 1912, 50 years after the original homestead law was enacted (Peffer 1951:154-56; Dana 1956:29-30; 35 Statutes 639). But even larger parcels didn't entirely relieve the plight of the homesteader, so in 1912, the Enlarged Homestead Act was amended to reduce the required residence time from five to three years (37 Statutes 123).

The significant abuse under the provisions of the original Homestead Act of 1862 was the commutation clause. This clause allowed an entrant, six months after his initial claim was filed, to "commute" or purchase his claim to $1.25 per acre. In some cases, large singleholdings of timber, range or farmland were consolidated. It is important to note that some homestead entries in the project area were commuted to cash entries.

The Act of 1891 revised many land laws, including increasing the waiting period for commutation of homesteads from six to fourteen months. The Pre-emption Act of 1841 was repealed, as well as clarification of other provisions of the Homestead Act of 1862 (Dana 1956:30-31, 187).

The Timber and Stone Act of 1878 was originally designed to allow homesteaders their own wood supply. A plot of 160 acres could be patented through the provisions
of this law, at a cost of $2.50 per acre. This act was surely abused. Timber companies would "scour" the land, locating the most valuable timbered areas. They would then recruit people who would, ostensibly, enter the land legally, but, in fact, would deed their patented parcels to a single individual or company. In Modoc County in the beginning of this century, over 14,000 acres went to a single individual in less than six months. Timber and Stone entries were recorded as Cash Entry Patents by the General Land Office, and "...until 1908 the maximum price asked was $2.50, but thereafter sales have been made on an appraisal of value with a minimum of $2.50 per acre" (Charmeley 1942; 1962:4).

The Forest Lieu Selection Act of June 4, 1897 was a tremendous disaster. This law allowed for exchange of lands, acre for acre, on the public domain. Individuals would exchange poor or cut-over lands for other parcels of much higher value. The loss to the federal government was substantial, and the law was repealed in 1904 (Charmeley 1942;1962:7).

With the advent of the conservation movement around the turn of the century, some attempts were made to preserve the public domain in the hands of the federal government. This was a direct about-face from former policies of land disposal. Select public lands were "withdrawn" from all entry except mineral. Agencies were created, the Forest Service for example, to manage these lands.

Management in the early years of the Forest Service was largely stewardship, since funding for intensive programs was not provided. Those who had been given a free rein on the public domain naturally resisted any attempts to control their activities, and so an ongoing struggle began between these factions. Some lands were preserved or conserved, and other areas remained open to entry and exploitation. But the basic directive for the federal government was no longer simply to dispose of the public lands (Peffer 1951:5).

The Forest Homestead Act of June 11, 1906, provided for entry onto agricultural lands withdrawn as forest reserves. This act is discussed in the section of this report dealing with administrative sites on national forests. The provi-
Sions were similar to the homestead laws, and the land entries were recorded similarly by the General Land Office. Many of these homesteads were on sub-marginal agricultural lands, and they were either abandoned by the entrant or canceled by the Forest Service.

The last significant act to allow agricultural entry on the public domain was the Stockraising Homestead Act of 1916. The maximum area that could be entered was 640 acres, for ranching or grazing purposes, and the entryman was required to make improvements of not less than $1.25 per acre (39 Statutes 862-64). Significant amounts of land were patented under this law, but all mineral rights were reserved to the federal government.

Mining activities on the public domain, as far as locating and working a claim, were controlled by local communities or mining districts. Federal laws usually adopted these rules, with additional clauses that provided for the sale of mineral lands at $2.50 per acre for placer claims and $5.00 per acre for lode claims. By the 1870s, miners were required to spend at least $100 per year on their claims, and the claim could not be patented until at least $500 worth of improvements had been made. This was half the amount required by Congress in 1866.

The Mineral Leasing Act of 1920 dispensed with sales entirely for "nonmetalliferous" mineral lands, while claims for gold, silver, and other metals continued to be located, entered, and patented much the same way that homestead were acquired (Dana 1956:370).

If a claimant desired to patent a mineral claim, then he was required to enter his claim, establish the required improvements, and conduct a mineral survey to guarantee the location and mineral character of the land. He had to provide the General land Office with affidavits of these improvements, etc., and then received his patent. However, since mineral claims were legally transferable and there was no time limit within which the entrant must patent his claim, this system was much abused. An individual could maintain a homesite, for example, in a national forest, simply by doing his "assessment work," which did not directly require proof of significant mineral content.

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Within the project area, many Mineral Patents were granted to individuals or sometimes companies operating quicksilver mines in the area where Napa, Colusa and Yolo counties converge. The extent of actual activity, however, reaches beyond the patented areas alone. Many claims were recorded only on the county level, and others, such as prospects, may have not been recorded at all. Moreover, related activities off of the actual patented parcels were agricultural, in order to produce commodities necessary for survival of the mining settlement. For example, the Redington Quicksilver Mining Company engaged in ranching and farming to support its workers and work animals. For the project area at large, then, mining seemed to work as an attractant to location of a relatively dense settlement. Therefore, the proper study of remains of these mining activities goes somewhat afield of the actual diggings.

Land Entries and the Land Entry Card Files.

There were many types of land entries onto the public domain, at different times, and under many different laws. Administratively the General Land Office grouped the ones included in this study into two general categories. An Entry was the initial filing of a claim, and a Patent was the actual transfer of title. For example, a Homestead Entry is not the same as a Homestead Entry Patent. The following list of categories and abbreviations contain the types of entries and patents we included in the card files. These groups are discussed below.
The use of the abbreviations MA and MC are infrequent, but they are included here for completeness. Note that both Pre-emption Entries and Timber and Stone Entries are Cash Entry Patents. In the Tract Books of the General Land Office, the only difference between the two is the cost per acre: Pre-emptionn Entries were $1.25 per acre and Timber and Stone Entries were $2.50 per acre. Occasionally there are other ways to separate the two types of entries, but the most reliable is the cost.

As discussed above, the history of public land legisla­tion is very complex. analysis of the implementation is even more baffling, since there remain no histories of the administrative policies in any detail. The endless details of daily operation, which were doubtless well known to clerks of the late 19th century, need to be inferred from the records themselves and the few memorandums and admini­strative handbooks that remain.

Before any official entry could be made on the public domain, it was necessary to conduct a survey to establish the township and section lines. The General Land Office,
Figure 8

General Land Office, Project Area, District Land Offices and Statutory Dates of Opening
through the United States Surveyor-General of California, had surveyed most of the state by the late 1880s. Excluded from these GLO Survey Plats were the interior portions of the Mexican Land Grants. The GLO Survey Plats, along with the notes that were taken in the field by the surveyor, are an extremely valuable source of site-specific information. However, in most cases, the information required by the Surveyor-General was only the township and section lines. The additional information that appears on the GLO Survey Plats can be houses, fields, fences, barns, roads, trails, springs, etc., but the inclusion was entirely at the whim of the surveyor. The coverage is, therefore, completely unpredictable, in addition to the numerous errors the surveyors committed because of difficult terrain, especially in the present project area.

After the survey was completed, the land was "offered" for entry to the general public. Individual qualifications were that the entrant be a citizen of the United States and the head of a household.

The basic method of recording land entries was the Tract Book, kept by each District Land Office. Figure 8 shows the Land Offices within the project area and their dates of first opening. The Tract Books are generally arranged by township and range, and, within township, by section. Occasionally, there are supplemental pages to a given Tract Book.

The Tract Books were the daily logs of the land offices throughout the United States. They record, in ledger fashion, the parcel entered by quarter of quarter-section, section, township, range, acres, name of purchaser, date of sale, receipt or transaction number, name of the patentee, date of patent, and volume and page number of the particular patent book where the deed is recorded. The Tract Books contain notations involving all kinds of actions that were not final. Some entries are scribbled over in pencil or ink, and later transactions are entered above the initial date or name or number. Sometimes they are entirely illegible. As a beginning for research, therefore, another tack was taken.
Figure 9

California Tract Books,
Microfilm Roll Index for Northern California
(Bureau of Land Management n.d.)
In the 1960s, the Bureau of Land Management, successor to the General Land Office, began a massive program of microfilm and microfiche reproduction of their original records. Many of these documents were falling to pieces through overuse, and the accessibility of information needed to be improved (Bureau of Land Management 1970:14).

Part of this filming project was to compile what is currently known as the "Historical Index." This Historical Index is a chronological list, by township, of all the action taken in a township up to and including when it passed from government title. The index was compiled from all available documents. However, it was not edited, so it occasionally contains mistakes or omissions. Nevertheless, it is legible, readily available on microfiche, and it provided an ideal starting point for work involving land entry materials.

The first step in compiling the data base for the project areas was to record information contained on the GLO Survey Plats, which were assumed to be a good source of site-specific information. The project area contains about 90 townships, and seven overlap both the Mendocino National Forest and the East Lake Planning Unit. The original intent was to establish a card filing system so that each agency could retrieve, by township, the information found on the GLO Survey Plats.

Figure 10 shows the original design of the site reference card, along with an example of the card filled out for a specific site found on a plat map, in this case, a road. At first, color-coding was used (but was not subsequently adhered to), with the following groups of site types:
<table>
<thead>
<tr>
<th>Color</th>
<th>Site Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buff</td>
<td>Roads, Trails, Houses, Cabins</td>
</tr>
<tr>
<td>Yellow</td>
<td>Fences, Corrals, Fields, Flats, Glades</td>
</tr>
<tr>
<td>Brown</td>
<td>Sawmills, other logging improvements</td>
</tr>
<tr>
<td>Pink</td>
<td>Ponds, Springs, Lakes, other water resources</td>
</tr>
<tr>
<td>White</td>
<td>General, including Ranger Stations, Indian Villages, etc.</td>
</tr>
<tr>
<td>Blue</td>
<td>Mines, Mineral Lands</td>
</tr>
</tbody>
</table>

Each site type described on the card is located within a section, quarter-section, or group of sections, as shown in Figure 10.

The basic aim was to compare information from the GLO Survey Plats with other sources. Once the data were compiled on the cards, a map was prepared (as a test) of the Mendocino National Forest, 1/2" = 1 mile, showing the data for each group of sites, allowing a forest-wide perspective. Some areas, which are well known to have been occupied in historic times, were entirely blank. The GLO Survey Plats, therefore, form an information source which can be good, but which is incomplete and often inaccurate.

The next step was to consult the Historical Index, which was assumed to be complete for all land transactions up to final patent of a parcel. The first attempts were directed to the areas that were blank on the GLO Survey Plats.

In order for a final patent to be issued on a Homestead Entry, agricultural improvements, including houses, barns, fences, etc., were required. The patentee had to submit to the Land Office for his area statements describing the improvements, affidavits of two witnesses, and advertise his claim in a local newspaper. For the most part, then, each Homestead Entry Patent (HE Pat) should have at least a cabin on the 160 acre parcel. The location of any HE Pat should predict the whereabouts of potential historic remains.
Figure 10
Land Use Cards, First Design: General Land Office Survey Plats

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Date</td>
</tr>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td></td>
</tr>
<tr>
<td>1/4 Section</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Date</td>
</tr>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td></td>
</tr>
<tr>
<td>1/4 Section</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**
Figure 11

Land Use Cards, Second Design: Historical Index

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Source</td>
<td>SITE PROPER NAME</td>
</tr>
<tr>
<td>Range</td>
<td>Bureau of Land Management</td>
<td>Sacramento Office</td>
</tr>
<tr>
<td>Section</td>
<td>Historical Index, Land Status and Use Records</td>
<td></td>
</tr>
<tr>
<td>UTM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present Ownership/Mgmt.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

- Acres
- Serial File; Order Number
- Further Action; Remarks

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Source</td>
<td>SITE PROPER NAME</td>
</tr>
<tr>
<td>Range</td>
<td>Bureau of Land Management</td>
<td>Sacramento Office</td>
</tr>
<tr>
<td>Section</td>
<td>Historical Index, Land Status and Use Records</td>
<td></td>
</tr>
<tr>
<td>UTM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present Ownership/Mgmt.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

- Acres
- Serial File; Order Number
- Further Action; Remarks
This initial investigation using the Historical Index revealed many potential cabin sites in those townships where no information was contained on the GLO Survey Plats. At that stage of research, it was possible that many cabins were at one time in the Mendocino National Forest, but they were missed by the government surveyors. Since the requirements were to survey township and section lines, this is not surprising. Moreover, there were many surveys that did record such information. The GLO Survey Plats don't appear to contain all of the information.

The Historical Index was then researched fully for the site types listed above, and the original card format was adapted to accommodate the new types of information. Figure 11 shows an example. Unfortunately, the Historical Index was intended as a quick reference, so it leaves out the names of entrants and, occasionally, dates of original entry and other information. The Historical Index, then, was used as an organized beginning for extraction of the missing information from the Tract Books.

To sum up the research sequence so far, the first step was to investigate the GLO Survey Plats. The result was that entire townships, thought to have been settled in historic times, appeared empty of cabins, roads, fences, and so forth. Upon checking the Historical Index, many potential cabin sites were found, i.e., many HE Pats existed in blank areas on the GLO Survey Plats.

After going through the Historical Index for the entire project area, the Tract Books were used to fill in the missing information, e.g., names, date of original entry, etc. The result is a card file system with complete information for each particular land entry for the site types or entries listed above. Figure 12 shows a blank and completed card for a HE Pat, which includes information from both the Historical Index and the GLO Tract Book for the area.

Mining claims stand out as a group of land entries. Although the procedure for patenting a mining claim was similar to proving up a homestead, the preparation of a Mineral Survey Plat was also necessary. The mining claims were surveyed in detail by government employees, at the expense of the claimant. The plat usually shows the direc-
##### Figure 12

Land Use Cards, Third Design: Historical Index, Tract Books

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present Ownership/Mgmt.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOCATION**

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>See Below</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>17N</td>
<td>6W</td>
<td>24</td>
<td>5/15/11</td>
<td>HE Pat</td>
</tr>
</tbody>
</table>

**SOURCE**

Bureau of Land Management
Sacramento Office
Historical Index, Tract Books, Land Status and Use Records

**SITE PROPER NAME**

Geo. Wash. Westphiler

**TRINOMIAL**

<table>
<thead>
<tr>
<th>QUARTER SECTION</th>
<th>ONLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE</td>
<td>NW</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**NOTES**

H.R. # 44: Date 7/22/05

Date, Final Cert. 9/17/10

Acres 120

Serial File: 1982

Order Number: 1989

Further Action: 502005

Remarks

Other Description

216
tion of the vein of the claim (the "lode line"), the bounda-
ries of the claim, and any improvements that were required. 
Sometimes the MS Plats contain much more information about 
the mining settlement, and with much greater frequency than 
the GLO Survey Plats. Even given that most ME Pats are 
presently in private hands, these MS Plats give an idea of 
the extent of the operation and probably activities on 
adjacent lands now federally managed.

The cards prepared for mining claims follow the Mineral 
Survey Index prepared by the Bureau of Land Management. As 
Figure 13 shows, the MS Plats are listed by the particular 
claim name, within a given township. Figure 14 contains 
information from the Mineral Survey Plat, and Figure 15 
shows the card format developed to record information from 
the Historical Index for a mining claim.

The Tract Books usually show that the time span between 
the Mineral Claim or Mineral Entry and the granting of a 
final certificate of temporary patent is rarely longer than 
a year, usually six months. Since many improved claims 
would have had to be worked for some time to account for the 
extensive improvements show on the MS Plats, it is quite 
likely that the mines were worked for some time before the 
patenting process was begun. No time limit was required for 
entering or patenting a mining claim, so for the date of 
first operation or prospect of these claims, another source 
must be consulted. Despite the limitations on the data for 
ME Pats, the format provides an organized approach to 
sorting out the plethora of mining activity in any inten-
sively mined region.

The chronology involved in any patented claim involved 
three dates: date of initial entry; date of final proof of 
claim, when a final certificate was issued; and the patent 
date, when the parcel officially passed from public to 
private holding.

The date of first entry, recorded in the Tract Book, is 
the day when the claim was first filed in a District Land 
Office. It is possible that the entrant was active on the 
parcel before filing, especially in areas, such as the 
project area, where government surveys did not reach until 
the late 19th century. It is quite likely, however, that
Figure 13

Land Use Cards, Fourth Design:
BLM Mineral Survey Index

<table>
<thead>
<tr>
<th>Sacramento BLM Mineral Survey Index</th>
<th>Township</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey No.</td>
<td>Lot No.</td>
<td>Claim Name</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>3243</td>
<td>38,39,40</td>
<td>Consolidated Dollar Manganese</td>
</tr>
<tr>
<td>3244</td>
<td>38,41</td>
<td>Yolo Chrome Lode</td>
</tr>
<tr>
<td>3245</td>
<td>42, 43</td>
<td>Summit Consolidated Chrome Lode</td>
</tr>
</tbody>
</table>
Figure 14
Land Use Cards, Fifth Design:
Mineral Survey Plats

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>Range</td>
<td>Section</td>
</tr>
<tr>
<td>UTM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present Ownership/Mgmt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOTES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lot No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining District</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11N</td>
<td>SW</td>
<td>J</td>
</tr>
<tr>
<td>Township</td>
<td>Range</td>
<td>Section</td>
</tr>
<tr>
<td>UTM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present Ownership/Mgmt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOTES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lot No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patented</td>
<td>Yes</td>
<td>8, 1934</td>
</tr>
<tr>
<td>Survey Notes</td>
<td>199-35</td>
<td></td>
</tr>
<tr>
<td>Mining District</td>
<td>Napa Co.</td>
<td></td>
</tr>
</tbody>
</table>

6019 shows TUNNELS, MISCELLANEOUS BUILDINGS, CAGINS COOL HOUSE, STOP CONDENSER BLDG., ALL NW SEC. 3
Figure 15

Land Use Cards, Sixth Design:
Historical Index (Mining Claims)

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE</th>
<th>SITE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>8/8/34</td>
<td>ME Pat</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4 Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOURCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SITE PROPER NAME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento BLM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historical Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOTES</td>
<td>Survey No.</td>
<td>12NSW</td>
</tr>
<tr>
<td></td>
<td>Lot No.</td>
<td>973</td>
</tr>
<tr>
<td></td>
<td>Patented</td>
<td>1071439</td>
</tr>
<tr>
<td></td>
<td>Survey Notes</td>
<td>S 028100</td>
</tr>
<tr>
<td></td>
<td>Mining District</td>
<td></td>
</tr>
<tr>
<td>TRINOMIAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
those who had substantial improvements on their unsurveyed parcels would have established a Pre-emption Entry (recorded as a Cash Entry Patent).

When a claimant could show that the specifications of the land laws were fulfilled, the District Land Office issued a temporary deed, or final certificate. This date, quite often years before the actual patent or deed was issued, essentially establishes the date when the improvements, e.g., cabin, fence, etc., were standing and in current use.

The patent date is the time when the parcel officially passed out of the public domain, so it is somewhat important. As far as establishing the chronology of improvements, however, its value is dubious. Whenever possible, the date of issuance of the final certificate should be used to establish the date of historic remains.

The land use card files are arranged by township. They are ordered by township number first, then increasing by range from east to west across the project area. Each agency will be supplied with the cards relevant to their particular area. In the townships that overlap, each agency will receive the appropriate sections, with any doubtful entry cases duplicated.

The use of the card files is simple and direct. Dates, type of land entry, land use, names, acreages, location, and so forth are available for pre-field work and mapping of specific areas or regions. At present, the Mendocino National Forest is compiling the information on 7.5' quadrangle sheets. Once the available land entry information is plotted in this fashion, patterns of entry and probable historic land use are easily analyzed. The predictive nature of such a data base is especially relevant. Areas where there was no land entry can be initially assumed to have a low occurrence of historic remains. On the other hand, remains in areas where documentary evidence is unavailable assume greater importance.

Ultimately, the data base compiled from the GLO Survey Plats and the Land Status and Use Records of the Bureau of Land Management (Historical Index and Tract Books), is only
a good first step in the direction of compiling information that is site-specific and at the same time regional in character. The data need to be used, judged, added to, or discarded as is appropriate from further research in the field or archive. The assumptions that were made in determining which land entry types to record (there are several others), the relationships between the entry and the assumed land use pattern, and the utility of the data in conducting field surveys and evaluating sites that are uncovered are all open ended problems. Not only the data, but the land use cards files provide a framework to co-ordinate regional historic patterns with activities that were significant perhaps only on a local level. Yet these local patterns are a fundamental tool for analyzing the significance of historic remains and making critical management decisions.
Method of Analysis

The analysis of the Bureau of Land Management records was at once the simplest and the most time consuming and laborious task related to this project. Researchers reviewed the historical index, land entry and patent records. They prepared a 5"x8" card indicating the name of the person who entered or patented the land, date of the various transactions, number of acres, legal description of the parcel, and the type of entry. The cards were placed in file boxes and arranged according to township and range.

Holly Rogers, archeologist on the staff of the Mendocino National Forest, is currently compiling mylar overlays for each 7.5' quadrangle sheet covering the Mendocino. This allows the direct comparison of land entry information, topographical data, and known location of historic sites at once. Because the type of entry infers the type of land use subsequently undertaken, the maps comprise an important means of establishing general historic land use patterns throughout the project area. Besides these important graphic displays, the land entry card files presented with this report can be used to prepare more detailed maps for the entire project area because the file includes land entry data for every parcel that was ever privately owned in the project area.

The census data were subject to more elaborate analysis. Because there was not sufficient time to review all the census for the entire project area, it was decided to select six regional samples that roughly corresponded with some known historical patterns.

Several problems arose because the census districts did not necessarily correspond with the regional sample that we had selected. Moreover, in some cases the census district boundaries changed over time. Consequently, without substantial further research, it is not possible to determine the exact coincidence of the census district with the sample regions. We know, however, that there is a rough correlation because we compared the names in the census with historic maps indicating property ownership. In addition, we took census data from entire census district, thus assuring in most cases that some of the individuals enumerated were
outside the project area. By doing this, the analysis is not unnecessarily influence by skewed data.

The census data was also sampled temporally. It was decided to retrieve data from only the 1870 and 1900 censuses. The 1870 documents appeared to be the first census that enumerated significant numbers of people throughout the project area, although initial settlement had occurred in many places soon after the gold rush.

The second census year, 1900, was chosen because it was the only available census year prior to the establishment of Forest Service control, and because it allowed time for one generation to mature in the project area. (The 1890 census could not be used because it was destroyed by fire.) By analyzing these two documents, some of the changes that occurred over the 30 year span can be discerned.

Population census data was placed on a specially devised form to permit efficient use and review of the information (see Appendix C). The form has spaces for the page and household number conferred by the enumerator, and the name of the person enumerated. Age was indicated by a cohort code. Code 1 was used for all those between the ages of birth and nine years; code 2 was used for all those between the ages of 10 and 19; code 3 was used for all those between the ages of 20 and 29, and so forth.

Enumerators also recorded race according to their 19th century notions. While race is not a satisfactory way of making cultural and biological distincts, such information can be used in conjunction with place of origin data (described below) to make finer judgements about the persons enumerated. Census takers recognized four races, White (W), Black (B), Asian (A), and Indian (I); researchers checked the appropriate box on the form. Sex was also marked on the form.

For the purpose of this study there were six occupational categories, farmer (F), unskilled laborer (I), skilled or blue collar worker (B), white collar workers (W), service workers (S), and professionals (P). Categorization of specific occupation was not entirely satisfactory for it required researchers to make arbitrary distinctions that may
not have applied in the 19th century. For example, was a miner a skilled or an unskilled laborer? Was a saloon keeper a white collar or a service worker? And what was the 19th century man who described himself as a capitalist? Clearly, there is a need to devise better occupational categories to avoid as many of these pitfalls as possible. When necessary, clarifying information was typed after the person's name.

To the extent it was possible, the economic situation of the people enumerated was shown. In 1870 census takers indicated in dollar amounts the personal and real property owned by each person enumerated. Real (rl) and personal (ps) dollar amounts are indicated in hundreds of dollars. In other words, if someone owned $800 worth of real property, the number 8 was placed in the "rl" column. This information was not recorded in 1900, but it was indicated whether the enumerated person rented or owned his property. This was indicated on the form with an "r" or an "o".

Place of origin was determined by the birth information in the census. The general categories on the form are United States (US), California (CA), Latin America (LA), Northern Europe (NE), Southern Europe (SE), China (CH), Japan (JP), other Asian (AS), and any other country (OT). So that more precise information regarding immigration and ethnicity would be available, researchers indicated the country of birth after the person's name. In addition, for all those born in the United States, the two letter abbreviation for the state of birth was placed in the block under "US".

While the form proved to have its shortcomings, it was a very useful device for tabulating census data for comparative purposes. Tabulated data are displayed in three ways. First, a population graph showing the percentages of men and women in each age cohort. The graphs indicate in a general way the patterns of population growth and reproduction. With each graph is a number indicating the Crude Fertility Ratio which was computed by dividing the number of persons between the ages of birth and 19 by the number of women between the ages of 20 and 39. This computation gives a rough method of comparing relative fertility ratios from place to place and over time.
The full tabulated data are presented in tables showing the number and percentage of people in each of the categories described on the census forms. This table is useful for determining the relative number of different types of people in each region. For example, the relative number of farmers can be compared in terms of percentage for each region, or in terms of whole numbers. Likewise, the number and percentage of Chinese, or Indians can be compared from region to region and over time.

The third means of presentation, the Household Analysis Tables, provides a means of comparing different household, family and occupational categories. In these tables, two categorical types are correlated: household type, and occupation of the household head. There are five household types: No Family, Nuclear Family, Nuclear Family plus Others, Multiple Family, and Extended Family households. In No Family households there are no identifiable conjugal couples. A Nuclear Family includes only the conjugal couple and their offspring, if any. A Nuclear Family plus Others contains a conjugal couple, their offspring, and other unrelated occupants. Multiple Family households contain two or more nuclear families. Extended Family households contain a nuclear family plus other relatives.

Occupational identification follows the descriptive categories used on the census forms: Farmer, Unskilled Laborer, Skilled Laborer, White Collar, Service Worker, and Professional. For each correlative group (e.g., Nuclear Family headed by a Farmer), the number and percentage of the regional population living in such situations is given. In addition, the number of cases (households) is given. Like the other data displays, these tables can be compared from region to region and over time.

Researchers reviewed the agricultural and manufacturing censuses for 1870 and 1880, the only years that were available. The data are not explicitly analyzed, but are used in the text and presented in the report in Appendices B and D. Together, all of the data and the analysis provide a means for understanding the historical patterns of settlement and development in the project area.
CHAPTER XIII

POPULATION CHARACTERISTICS OF REGIONAL SAMPLES,
1870-1900

The American Frontier: A Comparative Model

Historians have debated the significance of the frontier in American history ever since Frederick Jackson Turner presented his provocative essay in 1893 (Turner 1893). He declared that the frontier had largely shaped the institutions and character of the United States. According to Turner, the salient features of the North American frontier experience were a vast expanse of sparsely settled and cheap lands, the continuous advancement of Euro-American settlers upon these lands, and the influence of the frontier experience upon those who sought to tame the wilderness.

Turner's vision of American frontier history was simplistic and ethnocentric. Among other errors, Turner found native American people to be barriers to civilization, a notion that has long since ceased to be in vogue among historians, anthropologists and other scholars, not to mention native people themselves. Nevertheless, with all of its faults, Turner's frontier thesis, as it came to be called, has remained one of the most provocative ideas in American history. It has inspired hundreds of subsequent historical works aimed at proving and disproving the frontier hypothesis. Efforts that have taught us a great deal about the history of United States' settlement patterns, but have left the general outlines of Turner's thesis intact, if not unscathed, and it remains in place to challenge historians, geographers and economists (Savage & Thompson 1979:3-24).

Perhaps Turner's main accomplishment was to inspire a great deal of comparative work on frontiers. These studies have compared American internal frontiers both in terms of types (farming, fur trapping, ranching, mining, etc.) and in terms of chronology. In addition, there have been important comparative world frontier studies that have broadened our understanding of what frontiers are about. As a result of
these studies there is now a wealth of data available to compare with that from the project area (Savage & Thompson 1979:3-24).

Perhaps the most promising field of frontier study -- and the field most useful to comparative cultural resource management studies -- is historical demography, the study of human populations in the past (Hudson 1979a:35-60; Hudson 1979b:11-32; Lefferts 1979:33-56). Demography is especially useful because there have been several studies done to provide meaningful baseline information to compare with newly derived data. Consequently, historic populations in the project area can be compared with historic populations elsewhere in the United States. Moreover, by taking a detailed look at two chronological segments in the project area (1870 and 1900), historic changes in the populations can be measured. Using the United States censuses for 1870 and 1900, we have shown in detail the population structure for selected areas in the project area, including age and sex ratios, ethnicity, occupational trends, economic status, and place of origin.

The general population structure is augmented by reconstruction and analysis of the household patterns. The household analysis may also be compared with broader regional and national patterns.

Perhaps the most broadly applicable model of frontier demography is Jack E. Eblen's "An Analysis of Nineteenth Century Frontier Populations" (Eblen 1965:399-413). Eblen studied the 1840, 1850, and 1860 United States decennial censuses for 88 counties in the trans-Mississippi West. Defining frontier counties as those with two to five inhabitants per square mile, Eblen used a computer to analyze the statistical data derived from the censuses, and he constructed three hypothetical county models: a frontier territory county; an agricultural county; and a county from the older United States. For each model Eblen presented data for age and sex ratios, showing the differences in population structure in each hypothetical county.

The Eblen models are subject to criticism because they average population trends and eliminate statistical anomalies. Moreover, he analyzes only the "white" population.
Thus Eblen creates a more homogeneous "average" population than may have existed in the 19th century United States. Nevertheless, Eblen's models indicate distinctive population characteristics for each hypothetical county type and demographic patterns implying that qualitative population changes occur over time. Significantly for this study, the population differences that Eblen noted can be expressed quantitatively and compared with data derived from project area census materials (see Figure 16). By comparing Eblen's analysis with demographic patterns in the project area, this study links the history of the project area to the broader concerns of historians of the United States, demographers and geographers, and provides a means for testing his conclusion that the frontier populations did not vary substantially from populations elsewhere in the United States.

Deeper analysis of the unpublished census returns in the project area provide a means for testing another of Eblen's conclusions, that frontier population movements were "familial" in nature (Eblen 1965:413). While this assertion is vague, other students of frontier populations have provided more detailed analysis of family structures in frontier environments (Laslett 1975:109-28; Williams 1969:40-65; Hudson 1979a:35-60). While each of these studies are concerned with particular areas and do not attempt to construct national models based on their findings, they all indicate the importance of the nuclear family to frontier settlement in the western United States. Reconstructing family and household patterns from the manuscript census returns for the project area in 1870 and 1900, this study tests the general historical thesis that the nuclear family was important to the settlement of frontier regions in the United States.

Economists have also found the United States frontier an intriguing topic for their investigations. In 1962, the economist Yasukichi Yasuba examined population trends on the American frontier between 1800 and 1860, attempting to explain why United States fertility ratios declined during the period. He associated declining fertilizing with the declining availability of easily accessible land that made possible the creation of additional rural households. This thesis was subsequently defended by the economists Colin Forster and G.S.L. Tucker (Forster & Tucker 1972). The
Figure 16
Population Graphs of Eben Models

United States, 1840-1860

Territories, 1840-1860

Average Agricultural County, 1840-1860
present study also develops data about fertility and land accessibility in the project area, therefore, the Yasuba thesis can be tested.
Analysis of Regional Samples

Because the size of the project area prohibits the analysis of all available data under the terms of the present contract, this study divides the project area into regions and takes historical statistical samples from each of them. This method developed several resulted that are particularly useful to cultural resource managers.

First, the data derived indicate a range of settlement types, demography, and social and economic patterns for the entire area. Furthermore, research indicated that each region had distinctive characteristics and dominant social and economic patterns. Therefore, overall patterns for the project area can be described, specific regional characteristics presented, and comparisons made within the project area. Moreover, the data can be compared with those developed independently elsewhere, as discussed above. The regions are shown on Map 32.

Region 1.

Region 1 is part of the western border of Colusa County along the upper reaches of Stony Creek. Dominant economic use of the land was agricultural. In the more fertile valley lands farmers cultivated cereal grains (principally wheat and barley), and raised some livestock. Apparently settlers made use of the neighboring hills and mountains for sheep and cattle grazing, although transhumant livestock patterns are difficult to document for the 19th century. The Agricultural censuses for 1870 and 1880 indicate some large herds of sheep, and it is reasonable to suppose that farmers took their flocks to the mountains for summer forage. The Manufacturing census show a small amount of lumbering activity, but overall it may be said that Region 1 was dominated by agriculture.

Analysis of the census data reveals a population structure with age and sex characteristics similar in some respects to Eblen's territorial county model (see Figure 17). The main difference between the population structures is that the great preponderance of males is found in the 30-39 year old cohort. This difference may indicate that the Colusa County sample was a maturing population a decade
Map 32

Population transects, 1870-1900
[Approx. Boundaries]

1 Colusa Co. Agricultural Frontier
2 Knoxville Mining Frontier
3 Lake Co. Recreation/Agricultural Frontier
4 Colusa/Glenn Counties Agricultural Frontier
5 Tehama County Interior Frontier
6 Mendocino County Interior Frontier
Figure 17
Population Graph, 1870
Region 1

Crude Fertility Ratio = 4.9
removed from the initial frontier stage. Colusa County women of child bearing age, between 20 and 29 years of age, were even more scarce than they were in the hypothetical territorial population, a demographic imbalance that is directly related to fertility ratios. The Colusa County crude fertility ratio was 4.9.

More specific information about Region 1 family and household patterns is found in the manuscript census returns (Population Schedules). These data are analyzed and displayed in Table 7. More than 80% of the sample population was classified by the census taker as "white." The remaining 19% of the population were California Indians. The largest group of non-Indians (45.5%) were born in the United States, while the second largest non-Indian cohort were born in California (28.2%). The remaining 6.6% of the inhabitants were born in northern Europe and Canada.

The occupational structure likewise presents a uniform appearance. More than 30% of the male work force were independent farmers of whom about one-fourth owned real property, according to the census. Nearly 50% of the male work force was composed of unskilled laborers, most of whom worked on the region's farms. The census indicates that part of the enumerated Indian population also worked for whites as field hands and washerwomen, following historic patterns long established in California (Hurtado in press). Finally, according to the census, 42 women in the region were "keeping house," the census taker's phrase indicating that women were wives and mothers in their homes.

A third method of elucidating historic social patterns is displayed in Table 8, Household Analysis, by occupational category. Not surprisingly, more than 70% of the region's population lived in households headed by farmers, followed by homes headed by laborers (19.9%). More than 78% of the population lived in Nuclear Family (42.1%) and Nuclear Family plus Others households (36.8%). These statistics indicate not only the strong role that nuclear families played in this region, but also show that a significant number of unattached males boarded in the homes of nuclear families. Another significant fact was that more than 20% of the region's population lived in No Family households. Most of these people were laboring men boarding in the homes.
### Table 7

**Region 1, 1870**

Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>N</th>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>74</td>
<td>45, 69, 15</td>
<td>171, 180, 20</td>
</tr>
<tr>
<td>80.3</td>
<td>0, 0</td>
<td>32.1, 49.3, 10.7</td>
<td>45.5, 28.2, 5.3</td>
</tr>
<tr>
<td>19.7</td>
<td>0, 0</td>
<td>5.0, 2.9</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Number of women keeping house = 42

- W = White
- B = Black
- A = Asian
- I = Indian
- F = Farmer
- L = Unskilled Laborer
- S = Service Worker
- P = Professional
- US = United States
- CA = California
- LA = Latin America
- NE = Northern Europe
- SE = Southern Europe
- CH = China
- JP = Japan
- AS = Other Asian
- OT = Other Country

236
### Table 8
Region 1, 1870

**Household Analysis**

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C N %</td>
<td>C N %</td>
<td>C N %</td>
<td>C N %</td>
<td>C N %</td>
<td>C N %</td>
<td>C N %</td>
</tr>
<tr>
<td><strong>Household Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Family</td>
<td>11 37</td>
<td>12.3</td>
<td>6 17</td>
<td>5.6</td>
<td>1 2 0.7</td>
<td>1 8 2.6</td>
<td>19 64 21.2</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>17 98</td>
<td>32.5</td>
<td>3 25</td>
<td>8.3</td>
<td>1 4 1.3</td>
<td></td>
<td>21 127 42.1</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>13 85</td>
<td>28.1</td>
<td>3 18</td>
<td>6.0</td>
<td>1 8 2.6</td>
<td></td>
<td>17 111 36.8</td>
</tr>
<tr>
<td>Multiple Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>41 220</td>
<td>72.9</td>
<td>12 60</td>
<td>19.9</td>
<td>2 12 3.9</td>
<td>1 8 2.6</td>
<td>57 302 100.0</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
%=Percentage of regional population in each category
of their employers, or living together. Finally, the average number of household inhabitants was comparatively large. All Nuclear Families averaged six or more inhabitants, and there were instances where as many as 11 people lived in Nuclear Family households.

Analysis of the same region's population in 1900 shows that several changes of importance took place in the intervening decades. Figure 18 shows age and sex ratios that are somewhat more balanced than the 1870 statistics. The excess males who were in their thirties in 1870 may still be seen as a remnant male population in their sixties, still larger than their female cohort and their younger male counterparts. Overall, the population in 1900 was still deficient in females of child-bearing age. The crude fertility ratio was about 3.5, indicating a significant drop in the fertility since 1870. There is an inexplicable anomaly in the 1900 population structure, a deficiency of female children from age birth to nine. The causes of this anomaly cannot be determined from the census data, but may have been the result of disease that for unknown reasons had a higher mortality rate for female than male children.

The sample population was overwhelmingly white, about two-thirds of whom were born in California; the rest were born in the United States (see Table 9). There was one Chinese man and only 15 other foreign born people who came from northern Europe and Canada. Only 19 California Indians remained in Region 1.

Occupational patterns had also changed somewhat over the years. Table 9 indicates that the number of Farmers, and their percentage of the total work force (47.1%) increased from the 1870 figures. The number and percentage of Unskilled Laborers (32.8%) decreased during the same period. The census shows that most Farmers owned their land while only a few rented acreage. There were 57 women "keeping house" in the region. The table shows that there are fewer Skilled Laborers, but more White Collar workers. The small number of Service and Professional workers remained about the same.

Table 10 illustrates some striking regional historical changes. About two-thirds of the population lived in
Figure 18
Population Graph, 1900
Region 1

Crude Fertility Ratio = 3.5
**Table 9**  
**Region 1, 1900**  
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>F</td>
<td>L</td>
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<tr>
<td>56</td>
<td>39</td>
<td>7</td>
</tr>
<tr>
<td>103</td>
<td>195</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.8</td>
<td>62.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.3</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>

Number of women keeping house= 57

W=White  
B=Black  
A=Asian  
I=Indian  
F=Farmer  
L=Unskilled Laborer  
B=Skilled Laborer  
W=White Collar  
S=Service Worker  
P=Professional  
US=United States  
CA=California  
LA=Latin America  
NE=Northern Europe  
SE=Southern Europe  
CH=China  
JP=Japan  
AS=Other Asian  
OT=Other Country
Table 10
Region 1, 1900
Household Analysis

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td>No Family</td>
<td>13</td>
<td>27</td>
<td>8.5</td>
<td>2</td>
<td>2</td>
<td>0.6</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>30</td>
<td>137</td>
<td>43.4</td>
<td>8</td>
<td>38</td>
<td>12.0</td>
<td>5</td>
</tr>
<tr>
<td>Nuclear Family Plus Others</td>
<td>6</td>
<td>29</td>
<td>9.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Family</td>
<td>1</td>
<td>4</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td>3</td>
<td>18</td>
<td>5.7</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>215</td>
<td>68.0</td>
<td>10</td>
<td>40</td>
<td>12.7</td>
<td>6</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
%=Percentage of regional population in each category
Nuclear Family households, up 25% from the 1870 census. No Family and No Family plus Others households contained about 12% each of the regional population. Less than 10% lived in Multiple Family (1.3%) and Extended Family households (7.6%). The percentage of people living in households headed by Farmers remained about the same as it had been in 1870, while there were fewer people living in Unskilled Laborer headed households. The percentage of people living in houses headed by Skilled Laborers, White Collar and Service Workers all increased. Overall, the largest change took place in the percentage of people who lived in the Nuclear Family plus Other category which decreased from 36.8% to 12%. This shift in living conditions was the most significant general demographic and social trend in the region. Across the board, between 1870 and 1900, all classes of people tended to move out of the households of others and into households of their own.

The trends indicated in the Region 1 households tend to confirm the findings of Eblen, Yasuba, Tucker and other scholars mentioned above. In other words, at least in the Colusa County agricultural area under study, general population trends resembled those in other frontier and agricultural areas in the United States; fertility rates declined over time; and the nuclear family appeared to be an important factor in the settlement process.

Region 2.

The economic patterns that shaped settlement processes in Region 2 offer a stark comparison with the patterns found in Region 1. Region 2 was characterized by quicksilver mining, the most important economic activity in the area. To be sure, there were farms in the region as well, but as the demographic analysis will show, quicksilver mining dominated Region 2 from 1870 to 1900.

Region 2 is composed of four townships in what is now the northeastern corner of Napa County (see Map 32). In 1870 this territory had been part of Lake County, but by 1900 boundary changes had placed it in Napa County. Sparsely populated, rugged country in the mountains, little of it has agricultural value, except for grazing.
The 1870 age and sex ratios represent the most distorted pattern found in any of the regions studied (see Figure 19). More than 80% of the population was male; 60% of the men were between the ages of 20 and 39. The crude fertility ratio, 1.4, indicates a comparatively low birth rate. Table 11 reveals that more than three quarters of the population were born in Northern Europe; the manuscript census indicated that more than 60% of the total population was born in Ireland. Most of these Irish men worked as miners in the various quicksilver mines in Region 2. A few of them were also skilled workers and mining engineers. Seventeen women were keeping house; 14 of them were Irish.

Household structures in Region 2 were also unique in the project area (see Table 12). More than one-half of the population lived in No Family households. The remainder were about evenly distributed in Nuclear Family and Nuclear Family plus Others households. There were no households headed by Farmers, Skilled Laborers, or Service Workers. Nearly 90% of the population lived in households headed by Unskilled Laborers, mostly miners. This category includes the No Family situation that 50% of the population lived in, three households with 78 people in them. These households seem to have been barracks arrangements housing 12, 26, and 40 men each. The average number of members per household type varied considerably from a low of 3.3 for Nuclear Families, to 21.8 for No Families.

The presence of a large Irish mining population in the Knoxville Mining District was surprising, particularly since one source indicated that Chinese formed the basic labor poor for the region (Goss 1958). It was possible, however, for particular mine superintendents to adopt racist postures, as was the case for the Redington Quicksilver Mining Company (see above Chapter IX).

There were no Chinese enumerated in the 1870 census, but it was thought that the 1900 census would reveal a larger Chinese population. Review of the 1900 census, however, indicated that there were only eight Chinese in Region 2. Consequently, it was decided to review the 1880 census to find the Chinese miners. Since we were looking specifically for Chinese quicksilver miners, only data pertaining
Figure 19
Population Graph, 1870
Region 2

Crude Fertility Ratio = 1.4
Table 11
Region 2, 1870
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>N</td>
<td>F L B W S P US CA LA NE SE CH JP AS OT</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>95 17 2 3 5 21 11 118</td>
<td>6</td>
</tr>
<tr>
<td>%</td>
<td>77.8 13.9 1.6 2.5 4.1 13.5 7.1 75.6</td>
<td></td>
</tr>
</tbody>
</table>

Number of women keeping house = 17

### Table 12
Region 2, 1870

#### Household Analysis

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer N</th>
<th>Unskilled Laborer N</th>
<th>Skilled Laborer N</th>
<th>White Collar Worker N</th>
<th>Professional Worker N</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C  N</td>
<td>C  N</td>
<td>C  N</td>
<td>C  N</td>
<td>C  N</td>
<td>C  N</td>
</tr>
<tr>
<td>No Family</td>
<td>3  78</td>
<td>50</td>
<td>1  9</td>
<td>5.8</td>
<td>4  87</td>
<td>55.8</td>
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<tr>
<td>Nuclear Family</td>
<td>7  22</td>
<td>14.7</td>
<td>1  4</td>
<td>2.6</td>
<td>2  7</td>
<td>4.5 10 33 21.8</td>
</tr>
<tr>
<td>Nuclear Family</td>
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<td>23.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
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<tr>
<td>Multiple Family</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Extended Family</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16 136</td>
<td>87.2</td>
<td>2  13</td>
<td>8.4</td>
<td>2  7</td>
<td>4.5 20 156 100</td>
</tr>
</tbody>
</table>

**C** = Number of households in each category  
**N** = Number of people in each category  
**%** = Percentage of regional population in each category
<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Irish</th>
<th>No. European</th>
<th>So. European</th>
<th>U.S.</th>
<th>Latin American</th>
<th>Other</th>
<th>California</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miners</td>
<td>42</td>
<td>19.3</td>
<td>46</td>
<td>21.1</td>
<td>19</td>
<td>8.7</td>
<td>4</td>
<td>1.8</td>
<td>5</td>
</tr>
<tr>
<td>Other Mine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>workers</td>
<td>13</td>
<td>6.0</td>
<td>9</td>
<td>4.1</td>
<td></td>
<td></td>
<td>9</td>
<td>4.1</td>
<td>2</td>
</tr>
<tr>
<td>Day Labor</td>
<td>7</td>
<td>3.2</td>
<td>3</td>
<td>1.4</td>
<td>2</td>
<td>0.9</td>
<td>10</td>
<td>4.6</td>
<td></td>
</tr>
<tr>
<td>Engineers</td>
<td>1</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>21.6</td>
<td>67</td>
<td>30.7</td>
<td>31</td>
<td>14.2</td>
<td>6</td>
<td>2.8</td>
<td>31</td>
</tr>
</tbody>
</table>
to the mine work force was gathered from the 1880 population schedules (see Table 13).

In 1880, there was a significant Chinese population in Region 2. In all, Chinese accounted for more than 20% of the mining work force; the census taker identified the majority of them as miners. There were more Irish miners than Chinese, however, and more than 40% of the miners were from the United States. Overall, miners composed 70% of the work force in the total mining population that also included two engineers, 22 day laborers, 36 mine workers, and a few other support workers. Chinese people remained an important part of the labor force in the mines for only a brief period. By 1900, the eight enumerated Chinese men in Region 2 were all Service Workers, cooks, servants, and laundymen.

The age and sex ratios for the 1900 census present a population structure that more nearly approximates Eblen's hypothetical models (see Figure 16). Nevertheless, there is a marked excess of men in their twenties, thirties, and forties, the cohort that represents the male work force in the mines. There was also an overabundance of men in their fifties and sixties, no doubt the remnant of the overwhelmingly male population of 1870. The crude fertility ratio for Region 2 had advanced only slightly from 1.4 to 1.5.

The general social and economic picture in Region 2 was more complex than it had been in 1870 (see Table 14). In 1900, the population was more than five times larger. This increase may have been due to radical changes in the census precinct boundaries due to altered county boundaries and other historic changes. Besides being larger, the population was more diverse. More than 50% of the working population were laborers, many of them farm laborers, although more than 16% of the work force still toiled in the mines in various capacities. More than 20% of the work force were farmers, a statistic that emphasizes the diversified nature of the region in 1900, because there had been no farmers enumerated in 1870. There were smaller increases in the number of Skilled, White Collar, Service and Professional people, although the relative number of skilled and professional people declined.
Figure 20
Population Graph, 1900
Region 2

Crude Fertility Ratio= 1.5
Table 14
Region 2, 1900
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>F</td>
<td>US</td>
</tr>
<tr>
<td>B</td>
<td>L</td>
<td>CA</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>LA</td>
</tr>
<tr>
<td>I</td>
<td>W</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OT</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of women keeping house = 117

W=White  B=Black  A=Asian  I=Indian  F=Farmer  L=Unskilled Laborer  S=Service Worker  P=Professional  US=United States  LA=Latin America  NE=Northern Europe  SE=Southern Europe  CH=China  JP=Japan  AS=Other Asian  OT=Other Country
<table>
<thead>
<tr>
<th>Household Type</th>
<th>Head of Household</th>
<th>C</th>
<th>N</th>
<th>%</th>
<th>C</th>
<th>N</th>
<th>%</th>
<th>C</th>
<th>N</th>
<th>%</th>
<th>C</th>
<th>N</th>
<th>%</th>
<th>C</th>
<th>N</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmer</td>
<td>15</td>
<td>67</td>
<td>8.0</td>
<td>28</td>
<td>53</td>
<td>6.3</td>
<td>3</td>
<td>4</td>
<td>0.5</td>
<td>8</td>
<td>26</td>
<td>3.1</td>
<td>3</td>
<td>12</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Unskilled Laborer</td>
<td>27</td>
<td>126</td>
<td>15.1</td>
<td>26</td>
<td>102</td>
<td>12.2</td>
<td>5</td>
<td>21</td>
<td>2.5</td>
<td>3</td>
<td>11</td>
<td>1.3</td>
<td>3</td>
<td>12</td>
<td>1.4</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Skilled Laborer</td>
<td>27</td>
<td>126</td>
<td>15.1</td>
<td>26</td>
<td>102</td>
<td>12.2</td>
<td>5</td>
<td>21</td>
<td>2.5</td>
<td>3</td>
<td>11</td>
<td>1.3</td>
<td>3</td>
<td>12</td>
<td>1.4</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>White Collar Worker</td>
<td>31</td>
<td>216</td>
<td>25.9</td>
<td>5</td>
<td>27</td>
<td>3.2</td>
<td>2</td>
<td>10</td>
<td>1.2</td>
<td>3</td>
<td>40</td>
<td>4.8</td>
<td>2</td>
<td>31</td>
<td>3.7</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Service Professional</td>
<td>12</td>
<td>72</td>
<td>8.6</td>
<td>8</td>
<td>6</td>
<td>0.9</td>
<td>5</td>
<td>43</td>
<td>5.1</td>
<td>5</td>
<td>17</td>
<td>2.0</td>
<td>178</td>
<td>835</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>85</td>
<td>481</td>
<td>57.6</td>
<td>59</td>
<td>182</td>
<td>21.8</td>
<td>10</td>
<td>35</td>
<td>4.2</td>
<td>14</td>
<td>77</td>
<td>9.2</td>
<td>5</td>
<td>43</td>
<td>5.1</td>
<td>5</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
% = Percentage of regional population in each category
According to the census taker, more than 98% of the total population was white, with only ten Chinese and one California Indian enumerated. More than 85% of the population was born in the United States, with California natives accounting for over 60% of the total. The overall numbers of Northern European and Irish born people declined sharply, and there was a small influx of Southern European immigrants, Italians and Portuguese.

The analysis of Region 2 households demonstrates other important changes (see Table 15). Eighty percent of the sample population lived in Nuclear Family, Nuclear Family plus Others, and Extended Family households, while the remainder lived in No Family situations. More than half of the enumerated people lived in households headed by farmes, and over 20% lived in Unskilled Laborer households. The largest correlative category was farmer headed Nuclear Family plus Others households (25.9%).

In general, the manuscript census shows that the Nuclear Family plus Others households were composed of comparatively small families with three or four boarders. This phenomenon is indicated by comparing the average number of inhabitants per household in each category (4.3 compared with 7.5). Although the average number of inhabitants is somewhat misleading because there were two hotels included in the Nuclear Family plus Others category, even when the hotel data are removed, the average number per household remains comparatively high (6.6).

The demographic data from the Knoxville district are unique in the project area because they represent the only area that developed along industrial lines. Even so, the industrial core was surrounded by an agricultural area that also shaped the social and economic world of the inhabitants. The small town of Knoxville provided some of the urban amenities and necessities that 19th century working men required (saloons, hotels, boarding houses, and eating places), yet the region remained basically rural and isolated.

Ethnically, the region was shaped by emigrants from widely scattered locales, Northern and Southern Europe, China, and the United States, with a scattering of
emigration from other places. Initially, the Irish were the dominant group, but they became less important as time went by. In 1900, only a few of the remaining Irish worked in the quicksilver mines, preferring instead to be farmers and farm workers. Germans and Italians supplanted the Irish in the mines. The Chinese also were important to the mining industry for a time, but their tenure in the mines apparently began in the 1870s and was finished by the 1880s.

Region 3.

Region 3 lies in Lake County, just north of Clear Lake. Settlement in this area was slightly delayed compared to other regions, but by the early 1870s, the area was characterized partly by agriculture and partly by a lively young resort industry.

Like many other parts of northern California, Region 3 has many mineral springs, hot, warm and cold. During the 19th century, mineral springs were thought to be ideal places for recreation. Moreover, many people believed that the springs had medicinal value. These beliefs and an ambitious promotional campaign by the Southern Pacific and other railroads, led to the extensive development of several mineral springs in the project area. In Region 3, especially, there were at least four such resorts, the most famous being Bartlett Springs. After the turn of the century and the development of the automobile, increased travel and recreational opportunities caused the decline of the health resort industry in California. Between the two census years of 1870 and 1900, however, the resorts flourished.

Comparing the population structure in Region 3 with Eblen's models shows that there are some characteristics that are similar (see Figure 21). There is the usual lack of women of childbearing age. By and large, the Region 3 population is comparatively larger than any of Eblen's models. The crude fertility ratio is very high, 5.75, indicating that there were many large families.
Figure 21
Population Graph, 1870
Region 3

Crude Fertility Ratio = 5.8
Further analysis shows more detail in the Region 3 population. According to the census materials all but two of the people enumerated were white (436). The two non-whites were California Indians. More than 70% of the labor force were farmers, while more than 18% were laborers. There were only a few Skilled, Service and Professional people in the sample population. Seventy-three women kept house, accounting for 16.6% of the sample population. Over 90% of the sample was born in the United States and California. The total foreign immigrant population amounted to only about 6%.

Analysis of household structure is shown in Table 17. Not surprisingly, more than 85% of the population lived in households headed by farmers. If farming dominated the economic landscape, the nuclear family was the dominant social unit. Near 80% of the people lived in Nuclear Family households.

In 1870 there did not appear to be any discernible influence on the population structure from the mineral springs that were so common in the area. At that early date the people of Region 3 were family farmers.

By 1900, some of the mineral spring resorts had been in operation for more than two decades, and the population in Region 3 was considerably different than it had been in 1870 (see Figure 22). The changes in population structure do not seem to have proceeded along the lines that Eblen outlined for agricultural counties. Instead, the population was older than Eblen's model populations, demonstrably sexually imbalanced, but in age cohorts that do not correspond with the 1870 population. For example, in 1870 the population aged 20 to 29 was approximately sexually balanced. By 1900, this cohort would have been aged 50 to 59 and we would expect that there would be somewhat more males than females because of the health risks associated with pregnancy and child-bearing. However, the 1900 census shows that there were six times as many males as females in their fifties, an imbalance that cannot be accounted for in terms of a normal female death rate. It is more likely that the differences can be explained in terms of a changing population, in and out migration. Another significant change was a much lower crude fertility ratio (2.9).
Table 16
Region 3, 1870
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>N</td>
<td>436</td>
<td>2</td>
</tr>
<tr>
<td>%</td>
<td>99.5</td>
<td>9</td>
</tr>
</tbody>
</table>

Number of women keeping house = 73

W=White  F=Farmer  S=Service Worker  LA=Latin America  JP=Japan
B=Black  L=Unskilled Laborer  P=Professional  NE=Northern Europe  AS=Other Asian
A=Asian  B=Skilled Laborer  US=United States  SE=Southern Europe  Country
I=Indian  W=White Collar  CA=California  CH=China  OT=Other Country

256
Table 17
Region 3, 1870
Household Analysis

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar Worker</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N %</td>
<td>C</td>
<td>N %</td>
<td>C</td>
<td>N %</td>
<td>C</td>
</tr>
<tr>
<td>Household Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Family</td>
<td>15</td>
<td>33 7.6</td>
<td>6</td>
<td>13 3.0</td>
<td>2</td>
<td>2 0.5</td>
<td>23</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>48</td>
<td>297 68.3</td>
<td>2</td>
<td>5 1.1</td>
<td>3</td>
<td>20 4.6</td>
<td>3</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>6</td>
<td>42 9.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plus Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>372 85.5</td>
<td>8</td>
<td>18 4.1</td>
<td>5</td>
<td>22 5.1</td>
<td>3</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
%=Percentage of regional population in each category
Figure 22
Population Graph, 1900
Region 3

Crude Fertility Ratio=2.9
### Table 18
**Region 3, 1900**

Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>N</td>
<td>293</td>
<td>7</td>
</tr>
<tr>
<td>%</td>
<td>97.9 7 3</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Number of women keeping house=45

- **W**=White
- **B**=Black
- **A**=Asian
- **I**=Indian
- **F**=Farmer
- **L**=Unskilled Laborer
- **B**=Skilled Laborer
- **W**=White Collar
- **S**=Service Worker
- **P**=Professional
- **US**=United States
- **CA**=California
- **LA**=Latin America
- **NE**=Northern Europe
- **SE**=Southern Europe
- **CH**=China
- **JP**=Japan
- **AS**=Other Asian
- **OT**=Other Country


### Table 19
#### Region 3, 1900

#### Household Analysis

<table>
<thead>
<tr>
<th>Head of Household Type</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td>No Family</td>
<td>21</td>
<td>24</td>
<td>8.0</td>
<td>2</td>
<td>2</td>
<td>.7</td>
<td>2</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>21</td>
<td>111</td>
<td>37.0</td>
<td>7</td>
<td>26</td>
<td>8.0</td>
<td>11</td>
</tr>
<tr>
<td>Nuclear Family Plus Others</td>
<td>5</td>
<td>25</td>
<td>8.3</td>
<td>2</td>
<td>9</td>
<td>3.0</td>
<td>7</td>
</tr>
<tr>
<td>Multiple Family</td>
<td>1</td>
<td>8</td>
<td>2.7</td>
<td>1</td>
<td>8</td>
<td>2.7</td>
<td>3</td>
</tr>
<tr>
<td>Extended Family</td>
<td>2</td>
<td>11</td>
<td>3.7</td>
<td>1</td>
<td>4</td>
<td>1.3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>49</td>
<td>171</td>
<td>57.0</td>
<td>9</td>
<td>26</td>
<td>8.7</td>
<td>11</td>
</tr>
</tbody>
</table>

C = Number of households in each category
N = Number of people in each category
% = Percentage of regional population in each category
Table 18 shows some other significant differences in the population structure of Region 3. According to the census taker, the population was still overwhelmingly white, and born in the United States and California. The percentage and number of Farmers was greatly reduced from 1870 levels. The relative number of all other categories increases, except Professionals. There were few women keeping house, 45 as compared with 73 in 1870. The significantly higher percentage of Service and White Collar workers probably reflects the influence of the resort developments.

More changes in the demographic and social makeup of the region are evident from the analysis of households (see Table 19). About 60% of the regional population lived in Nuclear Family arrangements, nearly 20% fewer than in 1870. The apparent reduction of nuclear families during the 30 year period was unique in the regions studied. All of the other family types showed gains, but the largest gain (nearly 10%) was in the No Family category. There were also fewer households headed by Farmers, down by nearly 29%. Except for Professionals, all other categories of household heads were up, with White Collar and Skilled Workers leading the way, another indication of the importance of the mineral springs development.

The largest and most elaborate resort was Bartlett Springs. The manuscript census lists 24 persons living in the resort's hotel, some of whom were apparently employees. Hotel residents included hotel manager, chambermaids, a masseur, a cook, and several other service workers. Other resort households were much less elaborate and appear to have been run as family businesses.

Region 3 analysis reveals settlement, social, and economic patterns that differ considerably from those in the first two regions. Between 1870 and 1900 farming because less important in the enumerated areas, and the Nuclear Family household structure also declined in importance. Still, the Nuclear Family household remained the majority household type in the area.
Region 4.

Region 4 consists of the Stony Creek drainage from approximately the Colusa/Glenn County line to Newville. The region was principally agricultural, but unlike the southern part of the Stony Creek area, it included a small town, Newville. In 1870, it was part of Colusa County, and in 1900, the region was included in Glenn County. Like Region 1, this area lies on the eastern border of the project area, encompassing valley farming lands and grazing ranges in the uplands to the west.

Predictably, the 1870 age and sex ratios in Region 4 were similar to those in neighboring Region 1 (see Figure 23). Compared with Eblen's models, the Region 4 population appears to be about ten years older, with the typical frontier overabundance of males in their thirties. The crude fertility ratio was similar for Regions 1 and 4, 4.9 compared with 5.1 respectively.

The tabular analysis of occupation and origin categories is likewise similar to Region 1 (see Table 20). The main difference in occupational categories was that in Region 4 there were more White Collar and Service Workers, probably because of the kinds of services offered in the small village of Newville (stores, saloons and the like). Forty-three women kept house in Region 4, just one more than in Region 1. According to the census taker, about three quarters of the enumerated population was white; the remainder were California Indians, except for one Chinese man. The racial ratios were also comparable to the Region 1 sample. About half of the non-Indian population was from the United States, nearly 40% from California, and about 10% from Northern Europe.

The household analysis indicates some subtle differences in the Region 1 and Region 4 populations (see Table 21). In both regions more than 70% of the people lived in households headed by farmers, but in Region 4 there were significantly fewer persons living in households headed by Unskilled Laborers. The difference was made up in the households headed by Skilled, White Collar and Service Worker headed households. This difference in the social situations that the non-farmer populations lived in probably
Figure 23
Population Graph, 1870
Region 4

Crude Fertility Ratio = 5.1
### Table 20

**Region 4, 1870**

**Categorical Analysis of Regional Population**

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W B A I</td>
<td>F L B W S P</td>
<td>US CA LA NE SE CH JP AS OT</td>
</tr>
<tr>
<td>N 242 1 74 42 58 13 4 12 2</td>
<td>120 97 24 1</td>
<td>1</td>
</tr>
<tr>
<td>% 76.3 .3 23.3 32.1 44.3 9.9 3.1 9.2 1.5</td>
<td>49.4 39.9 9.9 0.4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Number of women keeping house = 43

W=White  B=Black  A=Asian  I=Indian
F=Farmer  L=Unskilled Laborer  S=Service Worker  P=Professional
US=United States  CA=California  LA=Latin America  JP=Japan
NE=Northern Europe  SE=Southern Europe  CH=China  AS=Other Asian
OT=Other Country

264
### Table 21

**Region 4, 1870**

**Household Analysis**

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Type</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td>No Family</td>
<td>4</td>
<td>12</td>
<td>4.8</td>
<td>5</td>
<td>9</td>
<td>3.6</td>
<td>3</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>12</td>
<td>64</td>
<td>25.6</td>
<td>1</td>
<td>3</td>
<td>1.2</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family Plus Others</td>
<td>13</td>
<td>87</td>
<td>34.8</td>
<td>1</td>
<td>8</td>
<td>3.2</td>
<td>3</td>
</tr>
<tr>
<td>Multiple Family</td>
<td>2</td>
<td>14</td>
<td>5.6</td>
<td>2</td>
<td>14</td>
<td>5.6</td>
<td>2</td>
</tr>
</tbody>
</table>

- C = Number of households in each category
- N = Number of people in each category
- % = Percentage of regional population in each category
indicates the influence of Newville on the regional population. This influence also shows up in the household type data. More than half of the population lived in Nuclear Family Plus Others homes, with about 28% residing in Nuclear Family households. Most of the difference in this category seems to be in the homes of Skilled and White Collar headed households.

By 1900, the Region 4 population had matured so that its general structure appeared more like the Eblen model for the United States than any other region studies (see Figure 24). Some of the anomalies of frontier demography remain near the top of the age pyramid, an aging excess of males in their fifties and sixties. The Crude Fertility Ratio had fallen to 3.2, a reduction similar to the one found in neighboring Region 1.

The analysis of origin and occupational categories showed that in 30 years Region 4 had become more than 95% White, with the remainder about evenly divided between Asian (1.9%) and California Indian (2.6%). Unlike other Asian populations in the project area, these people were primarily Japanese. The proportion of Farmers had risen by about 7% (to 39.3%) of the working population. There were fewer Skilled and Unskilled Laborers, White Collar and Service Workers, but a few more Professionals. Nearly 90% of the total population was born in the United States, but more than half had been born in California. Emigrants from Northern Europe accounted for 4.5%, and Japanese made up 1.7% of the population of Region 4.

Analysis of Region 4 households shows that there had been several developments since 1870. First of all, there had been a slight drop in the relative number of Farmer headed households, a sharp increase in Unskilled Laborer households (up more than 10%), and proportional losses in all other worker households except Professionals. There had also been changes in the family types. There were 20% more people living in Nuclear Families than there had been in 1870. Most of the increase had apparently come from Nuclear Families Plus Others (down from 50.4% to 32.7%). This change apparently indicates that boarders were moving out of households and forming families of their own.

266
Figure 24
Population Graph, 1900
Region 4

Crude Fertility Ratio=3.2
Table 22
Region 4, 1900
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>F</td>
<td>US</td>
</tr>
<tr>
<td>B</td>
<td>L</td>
<td>CA</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>LA</td>
</tr>
<tr>
<td>I</td>
<td>W</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th>552</th>
<th>11</th>
<th>15</th>
<th>83</th>
<th>179</th>
<th>16</th>
<th>9</th>
<th>7</th>
<th>10</th>
<th>180</th>
<th>335</th>
<th>1</th>
<th>26</th>
<th>1</th>
<th>10</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>95.5</td>
<td>1.9</td>
<td>2.6</td>
<td>39.3</td>
<td>40.8</td>
<td>7.6</td>
<td>4.3</td>
<td>3.3</td>
<td>4.7</td>
<td>31.1</td>
<td>58.0</td>
<td>0.2</td>
<td>4.5</td>
<td>0.2</td>
<td>1.7</td>
<td>4.3</td>
</tr>
</tbody>
</table>

Number of women keeping house = 73
### Table 23
#### Region 4, 1900

**Household Analysis**

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar Worker</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td><strong>Household Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Family</td>
<td>15</td>
<td>28</td>
<td>4.9</td>
<td>13</td>
<td>27</td>
<td>4.7</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>42</td>
<td>202</td>
<td>35.3</td>
<td>7</td>
<td>31</td>
<td>5.4</td>
<td>5</td>
</tr>
<tr>
<td>Nuclear Family Plus Others</td>
<td>16</td>
<td>111</td>
<td>19.4</td>
<td>5</td>
<td>46</td>
<td>8.0</td>
<td>4</td>
</tr>
<tr>
<td>Multiple Family</td>
<td>2</td>
<td>21</td>
<td>3.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td>3</td>
<td>19</td>
<td>3.3</td>
<td>1</td>
<td>3</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>78</td>
<td>381</td>
<td>66.6</td>
<td>26</td>
<td>107</td>
<td>18.7</td>
<td>10</td>
</tr>
</tbody>
</table>

C=Number of households in each category  
N=Number of people in each category  
%=Percentage of regional population in each category
Overall, in Region 4 the same general trends appear that were apparent in Region 1. Perhaps the only difference can be attributed to the influence of Newville and other towns on population patterns in 1870, and these seem to have been temporary. It would be precipitous to over-emphasize the differences that show up in Regions 1 and 4, however, The populations are both comparatively small, and the border between the two areas was arbitrarily drawn by politicians who devised the census districts and decided to split the county. Still, it is tempting to perceive the differences in the two 1870 populations as indications of the isolation of both communities at the time. Isolation may have increased the importance of the town of Newville, making it more of a regional focus than it would have been in 1900 after transportation and communication had improved.

Region 5.

Region 5 is in the northeastern corner of the Mendocino National Forest, in Tehama County and the areas adjacent to the headwaters of Cottonwood Creek. Farming and grazing predominated, with fertile bottomlands being cultivated and the rugged mountains used for livestock grazing.

Region 5 age and sex ratios indicate a preponderance of males, but, unlike other regions, the relative number of men is large in the third and fourth cohorts, indicating a relatively young male population in 1870 (Figure 25). As elsewhere, females of childbearing age were in short supply. The Crude Fertility ratio (3.5) was not as high as it was in other rural samples from the frontier period, but general age and sex characteristics in Region 5 fit into the frontier population mold.

More than 98% of the population was white with 80% having been born in the United States and California (Table 24). Two California Indians appeared on the census rolls. For the most part, the work force was composed of farmers and laborers, but only one of the Indians was listed as a servant. The second enumerated Indian was apparently the wife of a white man. Nineteen white women (24.4%) of the labor force) were wives in the sample population. Clearly, Region 5 was a place dominated by a frontier farming population in 1870.
Figure 25
Population Graph, 1870
Region 5

Crude Fertility Ratio = 3.5
Table 24  
Region 5, 1870 
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>98.7</td>
<td>0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Number of women keeping house = 20

W=White  
B=Black  
A=Asian  
I=Indian  
F=Farmer  
L=Unskilled Laborer  
S=Service Worker  
LA=Latin America  
JP=Japan  
B=Skilled Laborer  
P=Professional  
US=United States  
AS=Other Asian  
I=Indian  
W=White Collar  
CA=California  
SE=Southern Europe  
CH=China  
OT=Other Country
### Table 25
**Region 5, 1870**

**Household Analysis**

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar Worker</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td>Household Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Family</td>
<td>5</td>
<td>14</td>
<td>8.8</td>
<td>2</td>
<td>4</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>7</td>
<td>41</td>
<td>25.6</td>
<td>1</td>
<td>3</td>
<td>1.9</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plus Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td>2</td>
<td>12</td>
<td>7.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>123</td>
<td>76.9</td>
<td>4</td>
<td>16</td>
<td>10.0</td>
<td>2</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
%=Percentage of regional population in each category

*1 Head Unemployed
Figure 26
Population Graph, 1900
Region 5

Crude Fertility Ratio = 3.2
Table 26  
Region 5, 1900  
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>99.6</td>
<td>0.4</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of women keeping house = 78

W = White, B = Black, A = Asian, I = Indian, F = Farmer, L = Unskilled Laborer, B = Skilled Laborer, W = White Collar, S = Service Worker, P = Professional, US = United States, CA = California, LA = Latin America, NE = Northern Europe, SE = Southern Europe, CH = China, JP = Japan, AS = Other Asian Country, OT = Other Country
## Table 27

### Region 5, 1900

#### Household Analysis

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar Worker</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>80</td>
<td>16.8</td>
<td>8</td>
<td>13</td>
<td>2.7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>167</td>
<td>35.0</td>
<td>10</td>
<td>44</td>
<td>9.2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>40</td>
<td>167</td>
<td>35.0</td>
<td>10</td>
<td>44</td>
<td>9.2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>10</td>
<td>76</td>
<td>15.9</td>
<td>1</td>
<td>3</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Plus Others</td>
<td>10</td>
<td>76</td>
<td>15.9</td>
<td>1</td>
<td>3</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Multiple Family</td>
<td>1</td>
<td>5</td>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Extended Family</td>
<td>7</td>
<td>47</td>
<td>9.9</td>
<td>1</td>
<td>7</td>
<td>1.5</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>92</td>
<td>375</td>
<td>78.7</td>
<td>20</td>
<td>67</td>
<td>14.0</td>
<td>3</td>
</tr>
</tbody>
</table>

C = Number of households in each category
N = Number of people in each category
% = Percentage of regional population in each category

*6 Heads Unemployed
The importance of farming is also evident in the regional household analysis (Table 25). More than three quarters of the population lived in farmer headed households. As usual, Nuclear Family and Nuclear Family Plus Others were more numerous than other household types. As in other frontier regions, many nuclear families took in boarders.

By 1900 the demography of Region 5 reflected the transition to a more mature population structure that had taken place during the preceding generation. The 1900 population was largely, more nearly balanced sexually, and somewhat older than it had been in 1870 (Figures 25, 26). The first three cohorts were nearly evenly balanced. Women in their 20s outnumbered men. But men in their 40s and 50s substantially outnumbered their female cohorts. The Crude Fertility Ratio (3.2) was only slightly lower than it had been in 1870. The overwhelming majority of the 1900 population was white; two blacks were the only exceptions recorded in the census rolls (Table 26). The vast majority of the population was native born American. Over 42% of the work force were farmers and ranchers, with 23% laborers. Region 5 remained a rural agricultural area in 1900.

Analysis of the 1900 household structure shows that nearly one-half of the population lived in Nuclear Family homes (Table 27). There was an 8% increase in No Family households, but this was partially offset by a 20% reduction in Nuclear Family Plus Others residences. Farmer headed households remained at about the same relative numbers as they had displayed in 1900. Overall, the Region 5 population history fits into the patterns described in other regions, although with minor variations.

Region 6.

Region 6 is in the northern end of Mendocino County. The population sample comprised part of fertile Round Valley and the surrounding mountains of the Mendocino National Forest to the east. The Round Valley Indian Reservation had an important influence on the regional settlement history.
Figure 27
Population Graph, 1870
Region 6

Crude Fertility Ratio = 5.3
Table 28  
Region 6, 1870  
Categorical Analysis of Regional Population

<table>
<thead>
<tr>
<th>Race</th>
<th>W</th>
<th>B</th>
<th>A</th>
<th>I</th>
<th>Occupation</th>
<th>F</th>
<th>L</th>
<th>B</th>
<th>W</th>
<th>S</th>
<th>P</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>US</td>
<td>CA</td>
<td>LA</td>
<td>NE</td>
<td>SE</td>
<td>CH</td>
<td>JP</td>
<td>AS</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>98.6</td>
<td>0.5</td>
<td>0.9</td>
<td></td>
<td>35.3</td>
<td>20.2</td>
<td>5.2</td>
<td>1.5</td>
<td>2.2</td>
<td>17.2</td>
<td>54.5</td>
<td>31.7</td>
</tr>
</tbody>
</table>

Number of women keeping house = 49

W=White  F=Farmer  S=Service Worker  LA=Latin America  JP=Japan  
B=Black  L=Unskilled Laborer  P=Professional  NE=Northern Europe  AS=Other Asian Country  
A=Asian  B=Skilled Laborer  US=United States  SE=Southern Europe  CH=China  
I=Indian  W=White Collar  CA=California  OT=Other Country
### Table 29
Region 6, 1870

**Household Analysis**

<table>
<thead>
<tr>
<th>Head of Household</th>
<th>Farmer</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar Worker</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
<td>N</td>
<td>%</td>
<td>C</td>
</tr>
<tr>
<td>No Family</td>
<td>43</td>
<td>77</td>
<td>17.3</td>
<td>29</td>
<td>45</td>
<td>10.1</td>
<td>8</td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>26</td>
<td>149</td>
<td>33.6</td>
<td>4</td>
<td>19</td>
<td>4.3</td>
<td>1</td>
</tr>
<tr>
<td>Nuclear Family Plus Others</td>
<td>8</td>
<td>48</td>
<td>10.8</td>
<td>1</td>
<td>5</td>
<td>1.1</td>
<td>1</td>
</tr>
<tr>
<td>Multiple Family</td>
<td>2</td>
<td>16</td>
<td>3.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 79 290 65.3 29 45 10.1 13 32 7.2 4 6 1.4 1 2 0.5 6 55 12.4 132 430 96.9*

C=Number of households in each category

N=Number of people in each category

% = Percentage of regional population in each category

*14 Heads Unemployed
Figure 28
Population Graph, 1900
Region 6

Crude Fertility Ratio = 3.5
### Table 30

**Region 6, 1900**

**Categorical Analysis of Regional Population**

<table>
<thead>
<tr>
<th>Race</th>
<th>Occupation</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>F</td>
<td>US</td>
</tr>
<tr>
<td>B</td>
<td>L</td>
<td>CA</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>LA</td>
</tr>
<tr>
<td>I</td>
<td>W</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OT</td>
</tr>
</tbody>
</table>

- **Race:** W=White, B=Black, A=Asian, I=Indian
- **Occupation:** F=Farmer, L=Unskilled Laborer, B=Skilled Laborer, W=White Collar
- **Origin:** US=United States, CA=California, LA=Latin America, NE=Northern Europe, SE=Southern Europe, CH=China, JP=Japan, AS=Other Asian, OT=Other Country

Number of women keeping house= 149

F=Farmer, L=Unskilled Laborer, B=Skilled Laborer, W=White Collar, S=Service Worker, P=Professional, US=United States, CA=California, LA=Latin America, NE=Northern Europe, SE=Southern Europe, CH=China, JP=Japan, AS=Other Asian, OT=Other Country
Table 31
Region 6, 1900

Household Analysis

<table>
<thead>
<tr>
<th>Head of Household Type</th>
<th>Household Type</th>
<th>Farm</th>
<th>Unskilled Laborer</th>
<th>Skilled Laborer</th>
<th>White Collar</th>
<th>Service Worker</th>
<th>Professional</th>
<th>Total</th>
</tr>
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<td>N</td>
<td>C</td>
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<td>C</td>
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<tr>
<td></td>
<td></td>
<td>31</td>
<td>90 9.7</td>
<td>16 32 3.5</td>
<td>3 7 0.8</td>
<td>1 1 0.1</td>
<td>2 9 1.0</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>No Family</td>
<td>36</td>
<td>173 18.7</td>
<td>37 173 18.7</td>
<td>13 78 8.4</td>
<td>4 13 1.4</td>
<td>1 3 0.3</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Nuclear Family</td>
<td>36</td>
<td>173 18.7</td>
<td>37 173 18.7</td>
<td>13 78 8.4</td>
<td>4 13 1.4</td>
<td>1 3 0.3</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Nuclear Family</td>
<td>18</td>
<td>138 14.9</td>
<td>3 21 2.3</td>
<td>2 15 1.6</td>
<td>1 19 2.1</td>
<td>3 16 1.7</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Nuclear Family</td>
<td>3</td>
<td>22 2.4</td>
<td>1 8 0.9</td>
<td>4 30 3.3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Multiple Family</td>
<td>6</td>
<td>32 3.5</td>
<td>1 5 0.5</td>
<td>4 30 3.3</td>
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<tr>
<td></td>
<td>Extended Family</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>94</td>
<td>455 49.2</td>
<td>58 239 25.9</td>
<td>16 85 9.2</td>
<td>6 28 3.0</td>
<td>3 23 2.5</td>
<td>5.3</td>
</tr>
</tbody>
</table>

C=Number of households in each category
N=Number of people in each category
%=Percentage of regional population in each category
*14 Heads Unemployed
First established in 1856 as a farm attached to the Nome Lackee Agency, Round Valley subsequently became a reservation. The army founded Camp Wright to protect Indians and settlers in the valley. Settlers established the town of Covelo to serve the needs of the civilian, military and reservation communities.

Although the presence of the reservation was important to the settlement of the region, census records do not directly show the influence of the reservation Indians because they were enumerated on the reservation in a separate census district. Nevertheless, it is likely that Indians participated in the labor force and interacted with their white neighbors in other ways that are not reflected by information in the census rolls (Carranco and Beard 1981).

The age and sex ratios in Region 6 fall into the familiar patterns seen in other agricultural frontiers. In 1870, young men dominated the population, there were few young women, and the Crude Fertility Ratio was high (Figure 27). Most of the enumerated population was white and had been born in the United States (Table 28). Most immigrants were born in Northern Europe. More than one-third of the labor force were farmers and ranchers, with 20% listed as laborers. The high (17.2%) proportion of professionals is misleading, since soldiers from Fort Wright were identified as Professionals so that they would stand out in the analysis as a distinct subgroup.

Analysis of household structure shows that more than 65% of the population lived in farmer headed households, and that about 50% lived in Nuclear Family and Nuclear Family Plus Others situations (Table 29). Because of the soldiers in Round Valley, nearly 12% of the population lived in Professional, No Family households, reflecting, of course, the barracks living arrangements common in military life. Despite the existence of Fort Wright and the reservation in Region 6, it was obviously an agricultural frontier with a population structure reminiscent of similar areas.

In 1876 the military withdrew from Fort Wright, which was transferred to the Department of the Interior for the use of the Office of Indian Affairs (Frazer 1965:34). Consequently, in 1900, the fort no longer existed. The
Round Valley Indian Reservation remained in operation, with Covelo on its southern flank. Like other regions, the Region 6 population tended to become more evenly balanced in age and sex, but males still were a majority in all but the first cohort. Of all the regional population samples, this one most nearly approximates the structure that Eblen described for the United States (Figure 16). The population was still overwhelmingly white and native born. No Indians were enumerated in 1900, but 4 blacks appeared on the census rolls (Figure 28). The number of ranchers increased, but the proportion of farmers and ranchers in the labor force declined. At the same time, the number and percentage of laborers increased substantially. All other occupational categories remained comparatively small (Tables 30, 31).

Household analysis indicated that the number of people living in Nuclear Family and Nuclear Family Plus Others situations had increased. Unskilled headed Nuclear Families showed the largest proportional increase (18.7%). No Family households declined considerably because of the withdrawal of the soldiers. Farmer headed Nuclear Family Plus Others households gained more than 4% over their share of the 1870 population, indicating an increased number of boarders. Overall, Region 6 remained an agricultural area, although the proximity of the reservation and the town of Covelo no doubt influenced its population history.
Summary and Conclusions

Comparative analysis of the regional samples and broader population patterns outside the project area indicate several trends that should be taken into consideration by future cultural resource managers. First, the project area as a whole is composed of several regions with rather different population and settlement patterns. Even though the boundaries for the regional samples were arbitrarily drawn, distinct population and settlement histories were revealed in areas only a few miles apart. Clear patterns of ethnicity, country of origin, immigration, and occupation appeared in each region. Even in the two regions that were most similar, Regions 1 and 4, there were subtle differences in occupational patterns that may have been due to the influence of Newville on the surrounding area. In regions with sharply different patterns of economic development, places where mining and resorts were important, analysis showed results starkly different from areas that were dominated by agriculture.

In the early phases of settlement illustrated by the 1870 census, the Nuclear Family household was comparatively less important than it was in 1900, with the exception of Region 3, the area where mineral springs resorts became important. In Region 3 the proportion of the population living in Nuclear Family households decreased partly because of the existence of a large hotel where 8% of the sample population lived. Extended Families accounted for 5% of the total population so the apparent decrease in Nuclear Family households becomes less important if these two factors are taken into account. The Region 3 exception aside, in all other sample populations there was a trend for people to move out of No Family and Nuclear Family Plus Others, and to create Nuclear Familily households of their own.

Part of the move was made possible by changing age and sex ratios throughout the project area. In 1870 all of the sample populations showe the skewed shape that was common in frontier areas throughout the United States. In short, there were too many males and too few females of child-bearing age in 1870. By 1900 this anomaly had been partially corrected in most places, partly by the high birth rates exhibited in the early years by the Crude Fertility
Ratios, and partly by migration of new groups to the area. Still, by 1900, all of the sample populations showed some of the historic effects of the frontier experience.

When the project area data is compared with other places in the United States several similarities show up. First, the large, young male populations in the project area resembled the populations structures illustrated in the Eblen models, especially in areas that were dominated by agriculture. This suggests that the agriculture frontier processes, the creation of family farms, and the emphasis on the Nuclear Family households were part of a common United States tradition that ran broad and deep in our history. Similarly, the characteristic high birth rates on American agricultural frontiers declined after the second generation of settlement in the project area. This pattern fits with the one described by Yasuba who theorized that the cause of declining fertility rates was the disappearance of easily accessible land.

The main difference in these two patterns is shown in Region 2 where quicksilver mining was paramount. There was a superabundance of young males; the Nuclear Family played a smaller role than anywhere else in the project area. By 1900, Nuclear Families comprised a minority of the population; there were more people living in Nuclear Family Plus Others, indicating the continuing role of the household as a place to put up boarders in Region 2. Even so, the typical pattern of declining birth rates was found in Region 2 between 1870 and 1900, but this may have been because of the increase in farming within the region.

In the end, the demographic analysis of the sample populations showed that the history of the project area was both similar to and different from the generalized historical models postulated by other scholars. By examining the sample regional populations in the project area, distinct trends stand out. The utility of these trends for predictive purposes will be discussed in Chapter XV, below.
CHAPTER XIV
HISTORICAL SITE TYPES

General Definition of Historical Site Types

From the analysis of population characteristics, land entry data, and other records it is clear that there have been many different historic uses of the project area lands. Research also indicates that there were dominant use types in the several regions investigated, as well as the project area as a whole. Still, it must be recognized that in all regions multiple uses were made of the land. Consequently, in any given area there can be several different site types that cultural resource investigators must take into account. This chapter briefly describes the major site types associated with historic land uses. Since this report was compiled without benefit of an on-the-ground survey or an intensive analysis of agency site records, the site types have been developed using some site records, other historical overviews (Rand 1981), and historical accounts. The site type descriptions given here are intended to alert researchers to the kinds of resources that may be found in the field and to aid in their identification.
Land Entry and Use

The initial uses that settlers made of the land are indicated by the type of land entry that they made. Therefore, researchers can get a preliminary indication about potential site types by looking at the Land Entry Card Files and maps made from this data base. There are two cautions that must be observed when using the files and maps. First, these records show only the land use when entry was made. They are not direct indicators of previous or subsequent use, even though some general predictions can be made. For instance, a Pre-emption Entry was probably occupied as a homestead prior to government survey. Or a Cash Entry Patent, originally a Homestead Entry and commuted under the land laws, may have been subsequently used for purposes other than as a farmstead. Moreover, in many cases land use changed significantly over time. For example, a family farm in 1870 could have been converted to a mineral springs resort by 1900. In 1850, the same place may have been an Indian rancheria. Researcher should be in mind that historic land use was a dynamic process.

The second caution has to do with the reliability of the records themselves. It has been written that the land entry processes were shot through with fraud. Although the occurrence of fraud in California land matters is well documented, it has not been quantified or mapped. In other words, we do not know how frequent fraud was or where it occurred in particular detail, even though some work has been done to clarify the fraudulent surveys performed in California (Uzes 1977:173-193). The problems that possible fraud present to the researcher are obvious. The name on the patent may have been falsified. The patentee may have falsely sworn that he had used his land for agriculture in order to obtain a homestead entry, when in fact he had been cutting timber for sale. Without intensive patent-specific research, it is impossible to estimate how much fraud, if any, occurred in the project area.

Cautions aside, there are three types of land entry and patent that indicate agricultural use: the Homestead Entry, the Pre-emption Entry, and the Stockraising Homestead Entry. The homestead laws required that the entryman live on, improve, and farm the property he was acquiring. This
usually meant that he built a small cabin, perhaps a barn or other outbuildings, fences, and so forth. He likely cleared some of the land to put in crops or pasture. Often the initial improvements were crude and intended to satisfy only basic living requirements and the conditions set by law. Later, the homesteader might tear down his first improvements, convert them to other uses, and build more substantial living quarters and outbuildings.

Stockraising Homestead Entries indicate that the claimant was intending to graze animals. The improvements, valued at no less than $1.25 per acre, would include water troughs, storage facilities for winter feed, or perhaps small cabins for seasonal occupancy.

The Pre-emption Entry was also an agricultural use type, but it depended on past use, rather than a promise of future use. Pre-emptors entered the land by claiming that they had live on, improved, and farmed the land before the time of government survey. Therefore, at the time of entry, the claimant may have already established a substantial farmstead. Agricultural site types will be described in more detail in "Example of Dominant Site Types," below.

Cash Entry Patents under the Timber and Stone Act indicated the purchaser's intention to use the land to cut timber or to quarry stone. These lands were declared unfit for cultivation, but it is possible that farms were later established after timber had been cut and the land was cleared. Site types associated with this type of entry are likely to be similar to those described for timber operations in "Examples of Site Types," below.

Finally, there were Mineral Entries and Patents issued by the General Land Office, indicating past mining activity and the intention of the claimant to continue. Mineral Entry Patents required proof of improvement and mineralization on the property, as well as verification by government survey of both of these qualifications (see above Chapter XII, "Description of Data Base"). There were many kinds of mining in the project area, including quicksilver, chromium, manganese, and some gold. Each of these minerals were mined during different intervals throughout the historic period, leaving remains of various ages and type,
depending upon the methods employed. Occasionally, the
Mineral Entries and Patents may not indicate the type of
mineral the claimant intended to mine, but frequently the
company name includes the mineral, e.g., the Redington
Quicksilver Mining Company, Yolo Chrome Lode, etc.
Examples of Dominant Site Types

Agriculture.

Agriculture was practiced throughout the project area. Since potential resources vary with the kind of crops and livestock that a particular farm specialized in, several site types will be discussed below. On the eastern edge of the project area, in the Stony Creek, Antelope, and Bear valleys, there were large farms where grains, vegetables and livestock were raised. Orchards were also promoted, since fruit was an important cash crop. These operations were likely to include farmhouses, perhaps two story homes with basements, although smaller homes were also likely to have been present. The large operations likely included numerous outbuildings, barns, sheds, and the like for keeping draft animals and equipment. On the big farms there were bunk houses for the laborers who hired on in peak seasons of the year (Gates 1967).

The specific layout of project area farms and ranches depended on the type of crop or livestock specialized in, and predilections of the builder. Construction of houses varied greatly, depending upon when they were built, the economic resources of the builder, and any architectural styles peculiar to a given ethnic group (Jordan 1978). In general, most of the homes seen in the drawings of the 19th century county histories are balloon frame buildings with either clapboard or board and batten exteriors (Halsted 1904). Some surviving examples of northern California farmhouse architecture may be seen in Gebhard (Gebhard et al. 1976).

The barn and outbuilding architecture was more prosaic than house architecture, and, like other vernacular forms, subject to the ethnic background and idiosyncrasies of the builder. Barns elsewhere in northern California were built of vertically arranged, rough redwood planks. This style may occur on the eastern slope of the Coast Range, but the materials were most likely to have been obtained locally.

In large barns there were lofts for hay storage. The interior arrangement of space depended on the intended use. Sometimes horse stalls lined the barn's interior walls,
leaving the center free for equipment storage. This arrangement could be reversed, with stalls in the center and alleys along the side for storage and access. Some barn interiors were not subdivided at all, leaving a spacious cavity to be used as the farmer saw fit. Barns that were associated with sheep ranching sometimes had a small room with a board floor for shearing. In short, the potential for barn types, and specialization within types is quite large. Roofs were usually wooden shingles or shakes, perhaps later replaced with corrugated iron, a favorite roofing material around the turn of the century. Barns sometimes had stone and rubble foundations, but often were constructed by setting large posts in the ground.

Other outbuildings, offices, bunk houses, tool sheds, and so forth, were probably simple vernacular structures built of milled lumber. In other parts of northern California it was common to construct such buildings with redwood boards, vertically arranged, with a narrow wood batten to cover intervening spaces, a building style usually referred to as board and batten. Even though redwood was used as a construction material in the Mother Lode areas of California, it is more likely that local sawmills supplied the needs of those building within the project area due to transportation difficulties.

Interiors of buildings were finished and subdivided according to the needs of the builder. Roofs were probably shingle; foundations were likely of native stone or rubble, perhaps replaced and repaired later with cement.

In the late 19th century, it was common for farms to be equipped with windmills and water tanks which supplied water for irrigation and domestic use. Of course, until the advent of indoor plumbing, all 19th century farms were equipped with the ubiquitous outhouse privy.

The elaborate farmsteads described above were only one kind of potential site to be found in the project area. Other places were often established for seasonal use, e.g., temporary sheep and cattle camps. These places may have been improved with a simple cabin, a small barn or a shed for the convenience of the herders. Temporary camps are likely to be found in the higher elevations that would have
provided forge for grazing animals during the summer months. Meadows were inviting places to establish such camps. The possibility of survival of such structures is low. The Forest Service usually destroyed abandoned buildings because they were fire hazards (Moore 1980:86). The importance of the few remaining structures in the project area is increased by this policy. Management of these resources is a distinct need (Goddall & Friedman 1981).

Sometimes streams were dammed to create stock watering ponds. Spring development was common in the higher grazing lands, where log troughs, arranged singly or in a tiered fashion, would collect the small output of the springs scattered about the ranges.

Descriptions of range practices invariably refer to salting practices while grazing cattle. Quite often logs were used to hold salt for stock as well as to trap the limited flow of mountain springs (Boynton 1982).

To generalize, one would expect to find remains of seasonal livestock camps near areas where there was available forage and water. Level ground would have been favored for camp sites. Improvements could have included a cabin, corral, shed and perhaps a developed water supply. More primitive camps may have consisted of hardly more than a rustic fireplace built on the ground.

Timber.

Timber cutting was not as important to the economy of the project area as agriculture was in the 19th century. Nevertheless, there were a number of timber operations throughout the forest. Early operations probably relied on skid roads to transport felled logs to the mill sites. Skid roads were dirt or built of logs. The log roads were built in two different ways. Some loggers laid logs side by side and end to end to make parallel tracks or a chute arrangement. Logs would then stay on course when pulled by teams of horses or oxen. Other timbermen preferred to lay short logs close together and perpendicular to the direction of the road, making a kind of corduroy road (Abbott 1981:216-218).
In the 1880s, steam donkeys, (portable steam engines) and narrow gauge logging railroads came into prominence. Another form of log transportation was the flume, filled with flowing water, which carried the logs down out of the forest to a destination at a railhead or mill. Flumes and steam donkeys were not used in the project area. However, the Prather Lumber Company operated a narrow gauge railroad beginning in the 1920s (see Chapter VII), and the occurrence of an isolated steam engine for mill power should not be discounted.

Lumber mills were also associated with logging in the project area, but the area was not extensively logged until after World War II. Before then many mills were in existence, but they were small, moveable affairs. Such mills cut for local consumption, since transportation difficulties made it too expensive to ship large amounts of lumber out of the project area. These small outfits were skidded to a new location when nearby timber resources were exhausted.

Larger mills had more elaborate layouts with mill ponds, logging decks with railroad connections, permanent structures built on foundations, and multiple saws. Buildings associated with such operations were cook houses, bunk houses, offices, and other structures to serve the labor force and carry on the business of logging. The Prather Mill was such a structure (see Chapter VII above). The Manson mill was built with log foundations. Rocks were used for the steam engine pad and for development of a nearby spring. The layout of the mill area is still apparent today, although the wooden structures are all gone (Yatsko 1977:4-5, Appendix C).

There were smaller operations associated with the timber resources of the project area. These were the dominant form of resource use, including tanbarking, cordwood cutting, and picket and shake making. These activities were seasonal and occurred in temporary camps constructed near the trees that were to be cut. Tanbarking was associated with the tan oak. The workers removed the bark from the tan oak trees, and it was shipped in pieces by mule train or wagon to tanneries where it was used in the manufacture of leather. The logs were left to rot in the forest (Rawitsch 1981).
Shake and picket makers used cedar, redwood, oak and sugar pine. On the Mendocino National Forest, sugar pine was favored for shake and cedar was used extensively for posts. Some of the finished articles were shipped out of the area, but most of the products were used locally. For example, pickets were used by shepherders as drift fences, or the shake could be used as roofing for a mountain cabin (Boynton 1982).

The camps for all types of wood cutting were probably primitive and not unlike temporary livestock camps described above. The work was done in the camps, which were not necessarily specialized to one particular activity. One farmer grazed his cattle while he made posts (Butler 1980:9-10). Location of such a camp would probably be in areas where the needed tree type grew. The General Land Office Survey Plats may help locate stands of trees, since it was the duty of the surveyor to report general observations about timber location, condition, and amount. It was also quite often the case that large trees were noted on the GLO Plats in order to provide a better reckoning for the legal lines and corners the surveyors were establishing.

The physical evidence for these sites varies considerably. Shake or picket making sites would include high-stumped trees and piles of rejects (Boynton 1982). Mill sites would vary from little or no discernible physical remains (for a mill that was constantly moved about) to an involved site, such as the Manson Mill (Yatsko 1977:Appendix A).

Recreation.

In some parts of the project area, recreation was an important economic activity, especially the mineral springs resorts. The developed springs, like Bartlett Springs, were substantial enterprises. Usually resorts had a number of springs available, more or less developed. Centered around the springs, recreation itself was often subject to modification by the entrepreneurs who sought to profit from their developments. Spring operators sometimes built elaborate networks of hotels and bathhouses, so that 19th century bathers could enjoy the mineral waters in various ways, publicly or privately. Some resorts bottled their waters
for sale on the grounds and for export. Promoted as wilderness retreats some resorts also advertised hunting and fishing, built trails for nature hikes, and generally made use of all the advantages that the rural environment had to offer.

To accommodate guests, mineral springs resorts were equipped with hotels, quite often large structures which included restaurants and other necessary facilities. Not all guests stayed in the hotels, however. Some stayed in small guest cabins or tents erected on wooden platforms. Refuse from all these activities was dumped in the area of these developments, which may include areas on lands currently under federal management.

The mineral springs resorts were the most elaborate recreational facilities, but they were not the only site of relaxation in the project area. Perhaps more widespread were hunting, fishing, hiking, and other summer use campsites, such as berry-picking (Moore 1980:41). While these activities occurred widely, they are difficult to document since all that was required for a temporary camp was a small piece of level ground, a bit of running water, and a little firewood. It is possible that some of these camps have vanished without a trace. Campsites that were used on a regular basis may have caused enough modification to the environment to be detected today. Such camps may be characterized by fire rings, a log or two for sitting, scattered trash, and, perhaps, crude tables. Copper City, a site dating to the turn of the century, but used as a packing station since the 1930s, is one such example. On Snow Mountain, there are also some campsites that date to 1919, including remnants of stoves, corrals, storage shelves, and so forth (Likins 1980:1).

Summer homes and cabins provided a more permanent form of recreational use in the Mendocino National Forest area. Nationally, homesites were extensively promoted by the Forest Service. Many individuals took advantage of the special use permit system that allowed them to rent small areas in the national forest for a nominal annual fee. The structures varied from simple one room cabins to larger houses of several rooms, perhaps with an outbuilding or two. Cabins and homes are more likely to be located near roads,
not only to facilitate their use, but to transport building materials during their construction.

Mining.

There have been several kinds of mining in the project area. Quicksilver was the most important mining in terms of economic impact on some parts of the project area. Miners extracted quicksilver-bearing cinnabar ore from the earth by hard-rock mining methods. Tunnels were often used to penetrate to the lower levels of ore bodies, but, as with the Sulphur Bank Mine, gases would sometimes force the use of open cuts to avoid the poisonous fumes. The mines themselves were characterized by adits (tunnel entrances), drifts (underground horizontal tunnels), stopes (underground rooms created by ore removal), other underground workings, and aboveground debris. The large piles of leftover waste associated with mines were classed into two broad categories: tailings were the waste from the actual ore processing; waste-rock was the worthless rock left over from extraction of the valuable ore.

Aboveground facilities could be quite elaborate, including residences, blacksmith and other shops, stores, meeting halls, etc. Usually the mill housed the retorts and was the largest building in the vicinity. Retorts were associated with quicksilver ore refining. The retort is a device used to heat cinnabar so that the mercury would be boiled off from the gangue or waste. The gaseous mercury was collected by a water-cooled condenser and fed into flasks. Retorts ranged from very simple devices (e.g., small metal containers that were placed over an open fire) to more elaborate and larger devices built upon solid (brick) foundations, and sometimes equipped with motors to turn a drum containing the ore so that it would be evenly heated. The ore-dressing process was originally defined by the capacity of a single oven for each firing. The cycle of loading, firing, and removing the mercury was called a charge. Eventually, the larger quicksilver mines developed reduction systems that processed large amounts of ore without having to stop after each charge. Such systems were dubbed "continuous," but a continuous system was eventually any variety of process that didn't require single, repetitive charging.
Offices, living quarters, mess halls, and other ancillary structures were part of the largest quicksilver mining complexes, like the Redington Mine in Knoxville. But much smaller operations could be undertaken as seasonal work on a farm that happened to contain a cinnabar deposit.

Mineral deposits of secondary importance were chrome, manganese, gold and copper. These operations were also lode type mines that required tunneling, or, in some cases, the excavation of an open pit to remove the ore. Consequently, the mine sites have some of the same characteristics, adits, drifts, and, especially, aboveground tailings and waste-rock piles. Aside from gold, ores for these minerals were not completely processed on site. The technique adopted was to concentrate the ores, but the final processing was almost always done elsewhere. Even the large mill of the Rustless Mining Corporation was essentially a concentration facility. The other known operations in the project area were small, and may have been associated with an office, cabin, and perhaps a bunkhouse and mess hall.

Gold was not an important mineral resource in the project area, but there were no doubt many placer operations in the mountains where prospectors sought new ore deposits. Placer mines do not require tunnels or excavations, and they are usually found along present or former streambeds.

The gold-bearing gravels or dirt were washed with water, using either a pan, rocker (cradle), or sluicebox to catch the heavy gold as the waste was washed away with the flow. Ditches or flumes were dug to supply water to drier areas. Ditches also functioned as sluices, and "ground sluicing" was a common method for mining poorer areas or prospecting when there was no capital for more involved construction. When the gravels stopped producing gold, the miner moved on, taking his equipment with him. The remnants of such activity would be a campsite, fire ring, trash pit, perhaps a section of flume or ditch, and other features not unlike those associated with other temporary sites.
Public Management.

With the creation of the Forest Reserve in 1907, the federal government assumed a direct role in managing resources in the project area. Forest Service administrators and rangers set about constructing the buildings, trails and other appurtenances that would be necessary for them to carry out their tasks.

The ranger station, the place where rangers lived and worked, is the most obvious Forest Service Building. At first they were little more than camps, with tents the only shelter. Subsequently, the Forest Service built permanent stations with living quarters for the rangers. Often these structures were built by the rangers themselves, guided by government plans. Since early patrols of the forest took place on horseback, stables, corrals and pastures were part of the early ranger station scene.

In addition to the permanent ranger station, there were outlying camps that the rangers used on their patrols. These camps, like other temporary camps, probably contained the predictable features, fire rings, trash pits, perhaps a privy, a table, some logs for benches, perhaps a fenced pasture for horses and pack animals. The most likely places for these camps would be on trails between ranger stations and lookoutst, where adequate forage and water were available for pack animals. Telephone lines likewise followed trails through the forest whenever possible, with telephone boxes ("Iron Mikes") at appropriate intervals (Bonyton 1982; see Chapter XI).

Fire protection was a major activity of the Forest Service in the first years of management of the Stony Creek Forest Reserve, and it remains so today. To discover fires at an early stage and to suppress them before they became dangerous, the Forest Service erected numerous fire lookouts. Usually located on mountain tops or on a promontory with a view of the entire countryside, they were often built on stilts or topped trees to given the ranger a better view of the landscape.
CHAPTER XV
USING THE MODEL AND ASSOCIATED DATA

The predictive model and associated data included in the card files and appendices provide a sound basis for making predictive statements about historic resources in the project area. This chapter provides guidance on the use of the model and data so that future researchers can make full use of this study. The chapter is divided into two categories, "General Land Use" and "Site-Specific Research." The former studies includes any kind of project for which it is necessary to determine the nature and kind of historic resources in a comparatively large area, e.g., a section or more. The latter studies are designed to identify particular resources that are discovered in the process of field survey work.
General Land Use Study

The United States Forest Service and the Bureau of Land Management commonly undertake projects affecting thousands of acres of land, projects that require the identification of historic resources. For projects of this type, the Predictive Model should be used in the following way:

Step 1 -- Refer to the historical overview for general settlement patterns on National Forest and Bureau of Land Management Lands.

Step 2 -- Refer to the Land Entry Card Files for specific initial use in the proposed project area.

Step 3 -- Refer to the analysis of regional samples (Chapter XIII of this report) for historical land use and population trends.

Step 4 -- Refer to Site Type description (Chapter XIV) for potential site types associated with the proposed project area.

Step 5 -- Assess need for further cultural resource study.

Depending upon the location of the proposed project area and the nature of the historic resources, more refined questions should be asked of the data provided with this study. For example, it may become necessary to develop more detailed information on ethnicity. In that case, the names of patentees in the Land Use Entry Card Files will provide some clues. Better information can be derived from the raw census data included in the appendices, if the project area incorporates one of the sample regions analyzed in this study. If so, researchers can determine ethnicity by using the census data on "race" and place of origin, as well as the names of enumerated persons. Any of the data categories addressed in either the Land Entry Card Files or the census can be recast and re-manipulated in order to address particular project needs.
Site-Specific Research

In the course of carrying out general land use studies, or in conjunction with non-cultural resource management activities, specific historic sites are sometimes found. The Predictive Model and associated data can help the researcher to identify the site if the following steps are taken:

Step 1 -- Refer to the historical overview for general settlement patterns on National Forest and Bureau of Land Management lands.

Step 2 -- Locate the historic site by township, range and section.

Step 3 -- Refer to the Land Entry Card Files to determine initial land use and name of patentee.

Step 4 -- Refer to analysis of regional samples (Chapter XIII) for historical land use and population trends.

Step 5 -- Refer to population, agricultural and manufactures census data included in Appendices C, D, and E to determine specific historic use data for the site.

Step 6 -- Refer to Site Type descriptions (Chapter XIV) for potential site types.

Step 7 -- Make preliminary identification of site from data.

Step 8 -- Assess need for further cultural resource study.

The land entry records cover the entire Bureau of Land Management and Forest Service project area, but the census data cover only the portions outlined for sampling purposes. Moreover, the population census data cover only 1870 and 1900, while the agriculture and manufactures censuses are complete for the sample areas for 1860, 1870 and 1880. Consequently, research has been completed for only a small
portion of the study area within the confines of the record groups chosen for this study. If archeological work is contemplated for any site -- including prehistoric sites -- the following historic records should be reviewed to complete the site-specific research:

Step 1 -- Complete title research in the office of the appropriate County Recorder.

Step 2 -- Review all appropriate Forest Service and Bureau of Land Management land use records for the site.

Step 3 -- Review probate records for previous property owners, when appropriate.

Step 4 -- Assess need for further historical research.

The directions for using the Predictive Model, of course, cannot take into account every conceivable circumstance. Given the wealth of data and the analysis provided herein, researchers will no doubt find many ways to use this report. The suggested uses here are given to indicate how the model can be used for two common problems (i.e., general land use and site-specific research) that cultural resource managers face.
CHAPTER XVI

ASSESSMENT OF SITE SIGNIFICANCE

This discussion of site significance is divided into two parts. The first part discusses historic site significance primarily from an historical perspective. The second part is concerned with the specific problems of evaluating sites in the field, and it focuses attention on the interplay between the physical resource and the historic record. Both parts were written by historians experienced in resource management. An historical archeologist was consulted to outline the specific technical concerns posed by survey and excavation. Taken together, these discussions form a comprehensive approach to significance assessment.
Significance Criteria

The general criteria of the National Register of Historic Places guide historians and archeologists in making significance assessments concerning particular historic resources. According to 36 CFR 60.6, the quality of significance in American history, architecture, archeology and culture is present in districts, sites, buildings and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or,

C. that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or,

D. that have yielded, or may be likely to yield, information important in prehistory or history.

The basic problem facing cultural resource managers will be to assess the significance of thousands of potential historic resources -- sites, ruins and intact structures -- few of which will be associated with important historical figures, or possess demonstrable architectural values outlined above.

Many of them can be "associated with events that have made a significant contribution to the broad patterns of our history." If one takes a wide social historical perspective, almost everything falls into that category. A narrow (did-George-Washington-sleep-here) approach would yield very
few significant historic sites. Consequently, criteria A & B are difficult to apply in an area like the one presently under study.

Criterion C is equally difficult to use. This section identifies resources that represent "the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity ..." This category appears to be reserved for unique resources and is too narrow to use to define regional patterns.

The criterion that can be most uniformly applied to the historic resources in the project area is item D, research or information potential. The Predictive Model and associated data will assist researchers to make judgements about research potential and other criteria with which to assess historic significance. Standing structures and ruins should be evaluated by historians familiar with architectural history, and, in the case of engineering features, the history of science and technology. They can evaluate whether the structure is significant by architectural or technological criteria. Unless the structure is deemed to be insignificant -- e.g., a water ditch dug in 1972 to irrigate an illicit marijuana field -- sufficient oral and archival research should be undertaken to determine its historic significance. Because standing structures may also contain archeological components that are significant, they should be evaluated by a trained archeologist.

For historic sites, significance assessment should be an interdisciplinary effort. The perspectives, occasionally opposing, of both historians and archeologists are necessary to complete efficient and reliable resource management. Archeologists in the field must assess the physical integrity of sites and make judgements about archeological research potential. A qualified historian should also observe the site in the field and assist in proper identification through oral history and archival searches, as necessary. This point is stressed: Historical research, performed by unqualified personnel, is inefficient and not cost-effective. Historical research is not a casual methodology, nor does cursory acquaintance with archival materials enable an individual to contribute useful and effective information to the resource management process. A qualified
historian should assess historical significance, which is a judgement based on research potential, as well as other significance criteria.

**Historical Research Potential.**

Historical research potential should be judged on the basis of published, archival, and oral sources that can elucidate the site's history. If there are substantive pertinent documentary and oral sources, and a lack of published material on the site or site-type, e.g., Irish quicksilver miners' living quarters, the site should be regarded as having high historical research potential worthy of further investigation. On the other hand, if there are scant oral and documentary resources, research potential should be judged on the basis of the ability of archeological investigation to reveal information addressing substantive historical research questions, as well as purely archeological concerns. The excavation of a 19th century homestead privy could yield information that sheds light on basic historical questions. At the same time, such a study could reveal technical information of strictly archeological interest. For example, can privy deposits be used to establish the age of a site? Can privy deposits supply information about diet and disease? Sites that have been well studied from an historical perspective, or that are merely representative of activities that are very well documented, e.g., a placer mining site, should not be considered significant for their research potential, unless they can somehow be shown to be unique, or that have purely archeological research potential.

**Historic Resource Management.**

From an historical perspective, the most significant sites are those that can illustrate particular frontier settlement processes, broad historical land use patterns, and that elucidate historic community relationships. For these reasons, it is important to study sites in a framework that permits these concerns to be addressed. This can be accomplished by initiating a programmatic approach for the management of historic resources. The data presented in this report suggest two possible programmatic research approaches. A regional program investigating dominant site
types for each region is an obvious possibility, e.g., quicksilver mining in Region 4. If such a study were undertaken, an archeological survey would be made to locate mining and associated sites in the region along with an historical survey to locate the oral and documentary sources. The information derived from this investigation could then be used to judge the resources by National Register Criteria, and historical and archeological research potential could be assessed. Subsequently, an intensive study -- historical and archeological -- of selected significant sites could be undertaken.

A second programmatic approach is to devise a comparative program that would study particular site types in all regions where they occur, e.g., homesteads in all regions. In the comparative program, historians and archeologists would initially survey sites and the oral and documentary resources, ultimately selecting significant sites with research potential. Selected sites would then undergo intensive historical and archeological study.

The programmatic approaches outlined above are not mutually exclusive. A combination of these approaches could be undertaken to take full advantage of the research potential inherent in the project area's historic resources.

Whatever approach for future cultural resource management is used, care should be taken to select sites that are significant and that have sufficient historical and archeological research potential to reward the effort that will be put into their investigation. A clear outline of research goals and methods should be stated so that sites capable of attaining those goals are selected. Such "research designs" concerning historic resources will not be effective, however, unless the interplay of historian and archeologist is stressed.
Evaluation of the Physical Resource

The essential duties of resource management agencies include location, identification, and evaluation of physical resources under their jurisdiction. The History Overview and the Predictive Model above, along with the extensive Land Entry Card Files and Appendices, provide a good start toward location of sites and the identification of patterns concerning social structures and land use throughout the project area.

Actual evaluation of physical resources is a much harder problem because of the lack of a consensus among workers who assess historic sites and their specific information potential. A good deal of analysis has been completed that is an outgrowth of prehistoric concerns (e.g., Glassow 1977; Raab & Klinger 1977). The direct application to historic sites has been largely limited to structural/functional analysis (South 1979). Both approaches are difficult to apply to most of the historic sites in the present project area because the theory best fits only an "ideal" site. That is, either the historic sites do not conform to prehistoric structures, or they do not satisfy the involved analysis of the ideal site that South requires. Research questions that are proposed involving historic sites need to be structured with an idea in mind of the available historic records, in order to afford an interplay between the historical as well as the archeological information or data.

Historic sites can be fascinating representations of former inhabitation of the land. Within the bounds of a defined site, the various features, above and below ground, can provide information for reconstructing patterns and chronologies of a particular place. Sub-surface remains, such as foundations, cellars, privys, and dumps are particularly revealing features that, once compiled on a map, present the basic design for former occupancy.

Other questions may also be proposed, e.g., do the artifacts present contribute to a knowledge of rural transportation networks? Caution should be exercised that the answers to such questions lie within the scope of both the artifacts and the available historic records that are used to elucidate the meaning of physical remains from bygone
material culture. A balance must be obtained between purely archeological concerns and purely historical concerns in order to obtain the most effective judgements of significance.

The basic approach to actual site identification, not considering prediction, is the ground survey. The Predictive Model does not purport in any way to preclude survey. However, consideration of appropriate records by a qualified historian can greatly enhance the efficiency of ground surveys by providing more effective pre-field work.

The information potential of historic sites depends on the research concerns or proposed research questions coined before (and modified during) intensive archival investigation or field excavation. For historic sites, an important consideration is the transitional process by which occupied sites become archeological sites, i.e., from buildings, to ruins, to sites. Each stage of this process offers information in different physical forms. The relationship of this process to the historic record is direct. The available evidence may show the decay of the physical resource in question, e.g., a series of photographs through time, showing the construction, habitation, and abandonment of a building.

Historic records are themselves subject to loss. Obviously, in the case of oral history, people die. Secondly, the types of historic records associated with hinterland communities, e.g., photograph collections, written memoirs, etc., are quite often lost. The attempts during the current project to locate documentary information, supposedly compiled by the agencies themselves, have often led to naught but a suggestion that the records were discarded. Information is available from both artifactual and archival resources, both of which can be equally degraded through time. The interplay between these two groups of information is an important consideration in establishing research questions, which in turn outline information potential.

The particular concerns of the researcher when dealing with information potential cannot extend to all forms of data collectible from a particular site. If the pursuit of information is to result in realistic and useful information
for constructing the lifeways of, for example, the inhabi-
tant of a seasonal grazing cabin, the collection of sherds
of various kinds may not be useful. Moreover, collection of
all sherds at all times is impossible, so a sampling tech-
nique must be devised. Again, the interplay between the
available historic documentation and the physical resources
is essential. Excavation can propose or refine archival
research. Conversely, evaluation of historic remains is
quite often done with the available documentation of a
period's production of material goods. The analysis of the
documentation, along with some preliminary gathering of
artifacts in the field, can guide the formation of a sam-
ping method. Data collection may, therefore, be directed
not only to gathering some pieces of everything, but with an
idea in mind of how the artifacts are to be analyzed.

The integrity of a site that is uncovered during field
survey determines its usefulness for information gathering
in two ways. An intact site, subject only to natural pro-
cesses of decay, can reveal with much greater ease the
original type of occupation, use, and, perhaps, some chro-
nology of inhabitation. A disturbed site is more difficult
to appraise because the type of disturbance is often
unknown. Quite often disturbance of a site accelerates the
process of site disintegration.

The issue of integrity must also involve sub-surface
remains. Indeed, the only remains on a site may be sub-
surface, e.g., pit privys, cabin foundations, buried trash,
etc. Sub-surface historic remains are subject to different
types of decay or information loss, but they are not free of
disturbance. For example, in recent years bottle-hunting
has become quite popular, resulting in near destruction of
many historic resources. Obviously, the judgement of an
experienced archeologist is required in these circumstances.

Once location and a preliminary evaluation of integrity
has been established for an historic resource, then atten-
tion centers around the concern of the historical importance
of the site. Again, it is the interplay between historical
and archeological methodologies that is important. It may
be, as in the case of Copper City on the Mendocino National
Forest, that the integrity of the site is so disturbed that
little is to be learned from further field work, especially
after documentation was produced that indicated that the majority of the remains were post-1930. Or the case might arise that intensive field excavation reveals data that is insufficient to construct patterns beyond that which is already known from research in available historic records.

An important problem that is faced by most federal agencies is the checkerboard character of their holdings. Linear features are especially difficult to evaluate in this regard. For example, in the case of the quicksilver mining districts, the roads and trails that were built across the project area were of tremendous historic importance to the isolated areas they served, yet they remain in pieces throughout the federally managed areas. These remaining pieces of important local transportation networks need to be assessed in terms of their local importance.

The result of any assessment of significance for a physical resource means that management of the resource is necessary. Such mitigation procedures are particular to a given case, and, as such, cannot be specified in this report. In some cases, preservation may be sufficient, in others, due to the ongoing degradation of the resource, some form of intensive data retrieval may be necessary. However, the framework for the mitigation procedure should have already been outlined by the assessment of significance. Data collection is then more effective and responsive to the historical significance arguments already proposed.
CHAPTER XVII
CONCLUSIONS AND RECOMMENDATIONS

This study was designed to provide predictive information about historic resources to federal land managers. Furthermore, it was conceived as an attempt to place the study of historic resources in the broad context of important historic questions about the nature of frontier history and settlement. While this study cannot be considered definitive, it does point to some new directions that can be taken in the study of historic resources.

Information has been sampled from two immense historic record groups: the General Land Office Land Entry Records, and the equally voluminous Population, Manufactures, and Agriculture Schedules of the United States Bureau of the Census. For the former, the entire project area was studied; the sampling was accomplished by recording those land entries linked to specific land uses. The census records were sampled by the selection of historic regions within or near the project area that represent historical frontier activities: agriculture, mining, recreation, and timber/grazing areas.

By employing the sampling technique used in this study, historians can undertake studies of very large areas that make use of the great breadth of historical sources related to population and land use. This method is a way to transcend the general statements of the historical overview without resorting to site specific research for every parcel in the project area.

In focusing on some of the major questions currently being asked by historians, demographers, economists and social scientists, this study contributes to the overall state of knowledge for frontier studies. Moreover, it provides an analysis that is amenable to comparative study. To be sure, this is a first attempt and many refinements will be needed to fully realize the potential inherent in this approach to the study of historic resources in the cultural resources management framework. It is our hope that additional studies along these lines will make historical overviews and predictive models increasingly useful to cultural
resource managers, scholars from all disciplines, and to the public.

The Predictive Model and associated data show that different places in the project area developed at different paces and for different reasons. While the present study does not fully define regional boundaries or characteristics, it clearly demonstrates that distinct regions existed. By 1900, there were regional variations in economic patterns, settlement, ethnicity, family and household structure, and so on. These variable patterns may indicate different historic resources potentials in the several regions. Regional variations should be taken into account in any future cultural resource investigations affecting historic resources.

Despite regional differences, the Predictive Model indicates that there was widespread historic activity throughout the project area during the 19th century. In fact, it may be fairly stated that there was comparatively little land that was not put to some purpose, from actual settlement, to seasonal grazing, to hydroelectric development. With a plethora of historic activities and potential site types, cultural resource investigators should pay particular attention to the problem of significance assessment. As outlined in Chapter XVI, significance of historic sites should be established by a combined historical and archeological effort. To fully address this problem, an archeological survey should be undertaken to establish site locations and integrity. The combined analysis of historical sources and the survey will determine historical and archeological significance peculiar to a given site.

This study has outlined a wealth of historical research sources that can be analyzed with profit to further study historic resources in the project area. Many published and unpublished documents were reviewed, but the usefulness of historic research has not been exhausted. Any future study should take into account not only the research already completed, but the thousands of pertinent documents and oral sources that remain to be reviewed and analyzed. The Bibliographic Essay, Appendix A, details the best approaches.

Because of the regional character of the project area and the variety of sources available for the study of
historic resources, it is recommended that further study be undertaken to refine historic regional boundaries. After the boundaries are defined, a programmatic approach to future historic research should be devised for each region that will take into account regional variations and provide additional material to continue the comparative analysis begun in this study. A programmatic study could be administered so that a series of research projects could be phased to first address areas with imminent impacts pending. The implementation of phased programmatic studies should provide the best protection for significant resources, and be timely and cost-effective.

In the event that a specific site is to be impacted outside the purview of proposed programmatic study, it is recommended that sufficient study be undertaken to properly identify and assess the significance of resources, as outlined in Chapter XV.

One of the prime difficulties involved in this study has been the lack of useable inventories for the historical files of the United States Forest Service, files that remain in both the Supervisor's Office in Willows and the Regional Office in San Francisco. The utility of even cursory inventories cannot be overemphasized for further effective work, especially in the records at Willows. Some inventories have already been prepared for the Ranger District historical files, and these greatly aided research and use of these materials. Moreover, memoranda and letters uncovered while sampling the historical files revealed many important other documents pertinent to forest history, which were never located. An intensive archival program to find and inventory all of these historical materials is necessary to promote effective future research.

Finally, it should be emphasized that this report provides a sound basis for future work necessary to identify and protect significant historic resources. The recommendations are designed to assure that cultural resource management proceeds and an orderly and cost-effective manner. Further, it is our hope that the study of historic resources on Mendocino National Forest and Bureau of Land Management lands will illuminate the past of the project area, California, and the nation.
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APPENDIX A

BIBLIOGRAPHIC ESSAY

Any discussion of source materials relevant to the project area at hand must begin with a statement of the immense available material. There's a lot out there, folks. A list of important items or collections that were not used is also in order.

To begin with, photograph collections were not extensively used in the preparation of this report, a very important deficiency. The few photographs included in the text are illustrations of the research conclusions, even though they do represent a limited notion of what is available.

There are numbers of photograph collections that would be useful. The most important twentieth century collection for the Mendocino National Forest is in the Supervisor's Office in Willows. The Regional Office of the Forest Service in San Francisco also stores a region-wide collection of photographs. County historical societies often develop good photograph collections from the donations they receive over time from local residents, who are interested in preserving their family photographs. Almost every good research library in northern California has a photograph collection, so the use of photographs is an entire, discrete task in itself.

Oral history has been used only in transcript form. Because of the extensive interviewing program carried out by the staff of the Mendocino National Forest, it was not as vital to conduct interviews. This was not an easy decision to make, since interviewing is great fun. But time constraints made repetition of interviews last on the list of priorities.
Libraries

The libraries visited during the course of research were all of the facilities known for good collections of useful information. Whenever it was possible, repeat visits were made. Some of the more interesting places were the Forest History Society Library in Santa Cruz, the Bancroft Library and the Forestry Library (Mulford Hall) on the campus of U.C., Berkeley, and the Government Publications Section and the California Room in the California State Library in Sacramento. All of these institutions hold good general collections, including maps, books, and periodicals. However, each library also contained some specialty items that are well worth discussion here.

The Forestry Library in Mulford Hall has materials from the now defunct libraries of the California Range and Experiment Station and the Regional Library of the Forest Service (California Region). These materials, which include a great number of unpublished or informally published government documents, are a wealth of information. All of these materials have been catalogued, and they are readily accessible. Just remember, if you go to this library, that the "old stuff" is on the top floor of the stacks. As far as the Bancroft is concerned, the collections there are extremely useful also, but I found, for this project, that not as much relevant information was as easily obtainable as at other, more specialized facilities.

The Forest History Society Library at Santa Cruz is a very important place for those who conduct any research in the history of forestry. Although the collections attempt to cover the national development of forestry in the United States, the collections contain much that is directly pertinent to the experience of the California Region of the United States Forest Service. Moreover, the Forest History Society publishes a quarterly that contains outstanding articles on the history of forestry or related issues, such as the development of fire control practices in California.

The California State Library is a truly amazing research facility. The general collections, even though somewhat burgled or otherwise abused, contain many important reference works and texts from the nineteenth century. The
holdings of the California Room and the Government Publications Section, however, are the jewels.

The California Room in the California State Library is well known for its holdings, which include maps, books (e.g., county histories), letters, periodicals, census records, newspapers, manuscripts, photographs, and so forth. Their microfilm collections of newspapers is one of the best in the state, and they also hold many of the original, bound volumes of newspapers.

The Government Publications Section of the State Library has an excellent collection of federal and state (of California) documents. Since the California State Library was begun before 1900, many of the documents pertain to nineteenth or early twentieth century concerns. For example, the collection of United States Geological Survey publications is fairly complete. The USGS Water-Supply Papers are a very good source for the early history of irrigation in California. This section also holds the published reports from many state agencies, including the Reports of the State Mineralogist, issued by the California State Mining Bureau and its successor agency the California Division of Mines and Geology beginning in 1880. These Report(s) are a definitive resource for investigation of mining or other mineral related industrial activity in California.

Forest history is not a main theme of GPS in the State Library, but their collections do include some interesting informal publications, e.g., a pretty good run of California Ranger. This periodical is a good source for daily operating information for the California Region of the United States Forest Service. Other items of interest include the collection of maps for the California Region published by the Forest Service between ca. 1905 and 1945. These maps record useful bits and pieces concerning the early history of recreation or placename information. Maps published by the federal government are also held in this section, as well as many other pamphlets, reports, guides, etc. by the Forest Service, the General Land Office, and the Bureau of Land Management. This collection is occasionally difficult to use because of differences in cataloguing methods (compared to a traditional library card catalog), but the extra effort is usually rewarding.
Archives

Archives are also an important source of information for research purposes, but they differ from libraries both in terms of what they collect and how they arrange their collections for the use of researchers. It is common parlance to denote all library or archival work as "archival work." This is simply incorrect, and it betrays a degree of ignorance. The research time necessary for working in archives is much longer than for library work because the nature and use of the materials in an archive are wholly different.

The archives that were used to some degree in this research effort were the California State Archives in Sacramento and the Water Resources Center Archives on the campus of U.C, Berkeley.

The California State Archives has immense holdings. For this report, I used the Records of Incorporation to good advantage. The California Public Utilities Commission papers contain many documents pertinent to the history of hydroelectric power, including maps, tables, records of mergers (e.g., for the Pacific Gas & Electric Company), and some detailed proceedings of the commission itself, which was earlier known as the California State Railroad Commission.

The Water Resources Center Archives is a lesser-known research facility. The Water Resources Center, based in Davis, California, is a substantial organization that publishes reports, bibliographies, funds research, etc., all of which are directed toward the development of water resources. The documents I found there were unpublished letters and reports that dealt with the early proposal to use Clear Lake as part of a reservoir chain for supplying San Francisco with water. There were also some other documents that concerned Scott Dam located in Gravelly Valley. The cataloguing is not as complete as at the Forestry Library, but I have found much unexpected information on a variety of subjects.

The last archive that deserves mention is the Federal Records Center at San Bruno. There are numerous documents
in the collections pertinent to the history of the Forest Service in California. Especially important in regard to this present study are the files of land title abstracts that record a chain of title from the original private owner to the Forest Service, if the agency acquired a particular parcel in its lands acquisition program. Also, the original Tract Books, compiled by the General Land Office, are stored there. It may be necessary to consult these original documents, since the microfilmed copies we used during this research project were sometimes inadequate for further details.
Historical Files

The Historical Files held in the Supervisor's Office of the Mendocino National Forest in Willows and the Regional Office of the Forest Service in San Francisco deserve special mention here and much further attention from the Forest Service.

The Historical Files at the Supervisor's Office in Willows are a collection of documents, card files, photograph files, map books, roll maps, reports, and other miscellany. Aside from the Supervisor's Office Historical Files, each Ranger District holds a small amount of material (usually not more than a single filing cabinet). Other than the Historical Files in the Ranger District Offices, these materials have not been inventoried, and their use for the overview was severely limited. Again, the sheer amount of documentation is entirely unwieldly when no inventories exist. Serious consideration should be given to the preparation of inventories by contract, if staff time is not available. The task of locating, identifying, and evaluating historic resources is seriously impeded by the lack of even simple, alphabetical lists of the contents of the archive boxes, file cabinets, map cabinets, and card files that comprise the Historical Files in Willows.

The Regional Office also has Historical Files. They amount in this case to only one file cabinet, but they are also uninventoried. I found, in the course of looking through the files, a group of interesting and important documents pertaining to the staffing and operation of the CCC camps in California. Such information is also available at the National Archives in Washington, D.C., but why not use what is available locally first? It is a much better management policy to be aware of useful materials close to the center of decision-making for a particular region, such as California or an individual national forest.
General Land Office Records

The information source for the Land Entry data we compiled from the General Land Office Tract Books was the state office of the Bureau of Land Management in Sacramento. The Land Status and Use Records Section is set up primarily for those interested in filing claims for gold or leases for other minerals on the public domain (currently federally owned lands). This section also holds Patent Records, microfilms of the original Tract Books, and the Historical Index that was so helpful at the outset of the land entry research. Moreover, the staff is experienced at interpreting the various administrative idiosyncracies that are found throughout the Tract Books and the other records mentioned above.

In the same office is the section that manages the General Land Office Survey Plats and Notes. These materials can be of great use, especially the Mineral Survey Plats. Quite often the MS Plats record information in much greater detail than the township plats that are more commonly used as sources for information on historic sites.
County Historical Societies

County historical societies maintain archives that can contain much information of use. Both the Lake County Historical Society and the Mendocino County Historical Society have excellent facilities for use by researchers. Their holdings range in value and organization. The Mauldin Notebooks, in the Lake County Historical Society's collections, are a useful, but sometimes limited, source of information on the history of Lake County. The full use of the collections of the county historical societies will involve considerable research time. Precise research goals are important to the approach that should be taken when using these facilities.

Any list or discussion of repositories of important historical information is necessarily incomplete. However, the worker who begins with the facilities mentioned above will find that the missing information or locations will become apparent before long. In fact, this entire report is a guide for further work, and no attempt was made to provide complete and definitive answers to all of the problems that researchers will come upon in the course of their work.