MANAGEMENT GUIDE

SHASTA AND TRINITY UNITS

Whiskeytown-Shasta-Trinity National Recreation Area

Shasta-Trinity National Forest
2014

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This copy of the NRA Guide is Version 2.12.2014

TABLE OF CONTENTS

NATIONAL RECREATION AREA
Management Guide

Chapter 1
INTRODUCTION

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Chapter 1 — Introduction

PURPOSE OF THE GUIDE

This document, informally referred to as the "NRA Guide," was developed as a management guide for the Shasta and Trinity Units of the Whiskeytown-Shasta-Trinity National Recreation Area (NRA). These two units, located in Shasta and Trinity Counties, California, are part of the Shasta-Trinity National Forest. The third unit of the NRA, Whiskeytown, is located outside the National Forest and is administered by the National Park Service and will not be addressed in this document.

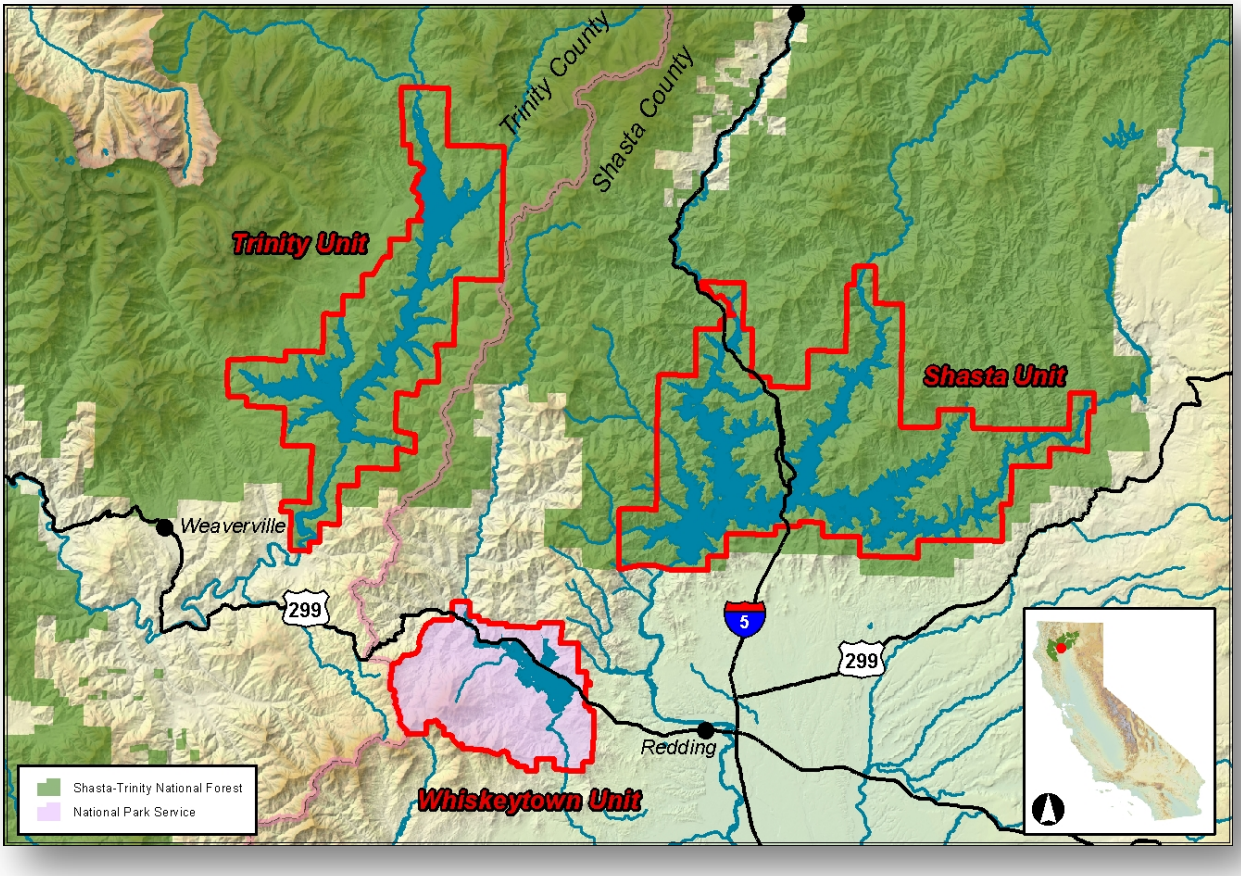


Figure 1-1. Whsikeytown-Shasta-Trinity National Recreation Area

The Whiskeytown-Shasta-Trinity National Recreation Area was established on November 8, 1965 with the signing of Public Law 89-336 (NRA Legislation) by President Lyndon Johnson.

The primary purposes of the National Recreation Area are (1) public outdoor recreation benefits and (2) the conservation of scenic, scientific, historic, and other values which contribute to public enjoyment of the recreation resources. Natural resources will be managed, utilized and disposed of to the extent that the Forest Service determines such uses are compatible with and do not significantly impair recreation and scenic, scientific, historic, or other values contributing to public enjoyment. (NRA Legislation Section 4)

The legislation provides that administration of the NRA be carried out under separate management plans, and that these plans are to be reviewed and revised periodically. The NRA Guide provides a general framework to guide NRA management, and by which to evaluate and gauge the appropriate NRA management efforts and analysis. It provides a collection of information which describes the area and the resources, desired conditions and opportunities to move toward those conditions. The NRA Guide describes management practices and administrative actions which interpret and implement goals, objectives, standards and direction related to the creating legislation, regulations and policy, and the Forest Land and Resource Management Plan (Forest Plan or LRMP). It provides a framework to work with others, including the public, partners, and cooperators, with the goal to balance often diverse public interests without compromising natural resources. The NRA Guide provides for consistent and fair decisions where there is discretion under existing laws, regulations, and policy.

This guide is not a decision document or an assessment under the National Environmental Policy Act (NEPA), and does not implement site-specific projects. The guide could provide proposals to change, add, or delete management direction in the Forest Land and Management Plan (subject to NEPA).

The management guide is the product of multiple disciplines working together which includes biologists, recreation planners, botanists, archaeologists, geologists, permit administrators, and other resource specialists. A systematic approach to analyze and evaluate current conditions with opportunities and management practices that would facilitate meeting goals and objectives as described in the Forest Land and Resource Management Plan was used. The team then documented these findings for this report.

NRA Guide Organization

Chapter One of the NRA Guide, summarizes the history of the NRA, relationships to other sources of direction, and identifies other agencies and their roles in the management of the NRA. Chapter Two provides insight into the various resources and programs within the NRA. Each resource/program area includes the **history** which has produced the current **setting** and **management policies** and criteria. Chapter Three presents the desired future condition. When differences between the Shasta Unit and the Trinity Unit are significant, sub-headings provide clarity. The Appendices provide supporting documents and references.

DESCRIPTION OF THE NRA

Shasta Unit

The Shasta Unit of the NRA lies in the north central portion of Northern California, at the juncture of the Klamath Mountain range and the northern edge of the Sacramento Valley. The Unit encompasses approximately 123,100 acres including Shasta Lake. Shasta Lake is the largest man-made reservoir in California. When full (at an elevation of 1067 feet), the lake covers approximately 30,000 surface acres and 365 miles of shoreline with four major arms and myriad of coves and bays.

Each of its four arms, the Sacramento, McCloud, Squaw and Pit, has a distinctive character. The Sacramento Arm is the busiest and most developed. Interstate 5 provides easy access to most of the area. Shasta Dam, at

the bottom of this arm, is one of the largest concrete structures ever built. Above the McCloud Arm tower grey limestone mountains; the Squaw Creek Arm of the lake is rugged and remote. Gravel beaches and numerous fingers reach out into the channel making it one of the lake's many popular house boating areas. The Pit is the longest arm of the lake. From its confluence with the Sacramento Arm, near Shasta Dam, it stretches nearly 30 miles east to its upper end at the base of Pit Reservoir # 7. Near the upper end of the arm, the channel becomes very narrow and the canyon walls are extremely steep. The lower part of the Pit is a wide basin with grand vistas.

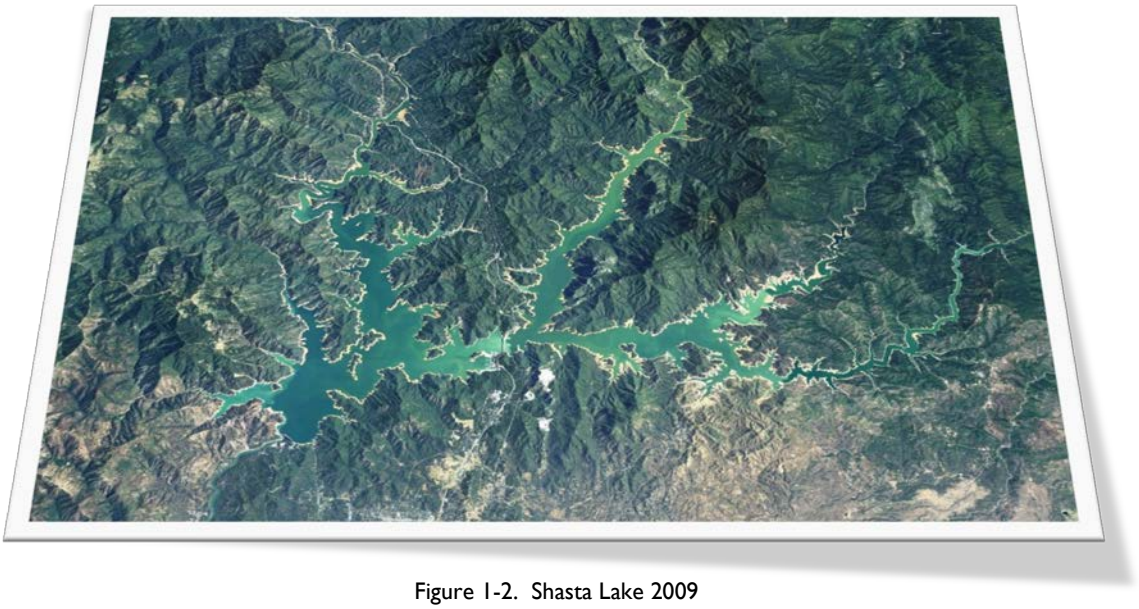


Figure 1-2. Shasta Lake 2009

Due to downstream demands on water, Shasta Lake annually experiences large fluctuations in water levels. In normal water years the lake will be nearest full pool in May and drawdown to 80-100 feet below full pool by October.

The hot, dry summer characteristic of the Shasta Unit is a major attraction for water-oriented recreationists including houseboating, waterskiing/water sports and fishing. The Unit also provides many opportunities for land-based activities such as camping, picnicking, wildlife viewing, hiking, hunting and mountain biking. Daytime high temperatures commonly exceed 100 degrees during the peak recreation season (May-September). Nights are nominally cool and in the low 60 degree range. Total precipitation, mostly in the form of rain, varies from 30 inches along the southern edge to 70 inches in the upper Sacramento and McCloud arms. Approximately 85 percent of this precipitation falls between November 1 and April 30.

The City of Redding and its associated communities lie 10-20 miles south of the Unit boundary. This Unit is bisected by Interstate 5, which provides easy access for major urban populations to the north and south.

Trinity Unit

The Trinity Unit lies 20 miles due west of the Shasta Unit in the Klamath Mountains, just east of the Trinity Alps Wilderness. The Unit encompasses approximately 79,020 acres including Trinity Lake and Lewiston Lake. Trinity Lake is among the bigger reservoirs in California with about 17,722 surface acres when full (at an elevation of 2370 feet) and 147 miles of shoreline.

The northern part of the lake is distinctly different from the southern and western parts, and can be divided into three "subareas:" Stuart Fork Arm, North Lake Area and Main Stem. The Stuart Fork Arm is the hub of most of the activity on the lake. It extends to the west and is fed by the Stuart Fork and the East Fork of the Stuart Fork of the Trinity River. Numerous campgrounds, picnic areas, beaches, boat ramps, resorts and

marinas line its shores. The North Lake Area is less active but provides a variety of services, supplies, facilities and recreation activities. Here you will find public campgrounds and a wide open expanse of water excellent for waterskiing/water sports. The Main Stem of the lake stretches from the dam north for about 12 miles. Here there are many smaller secluded tree-lined inlets and coves off the main channel.

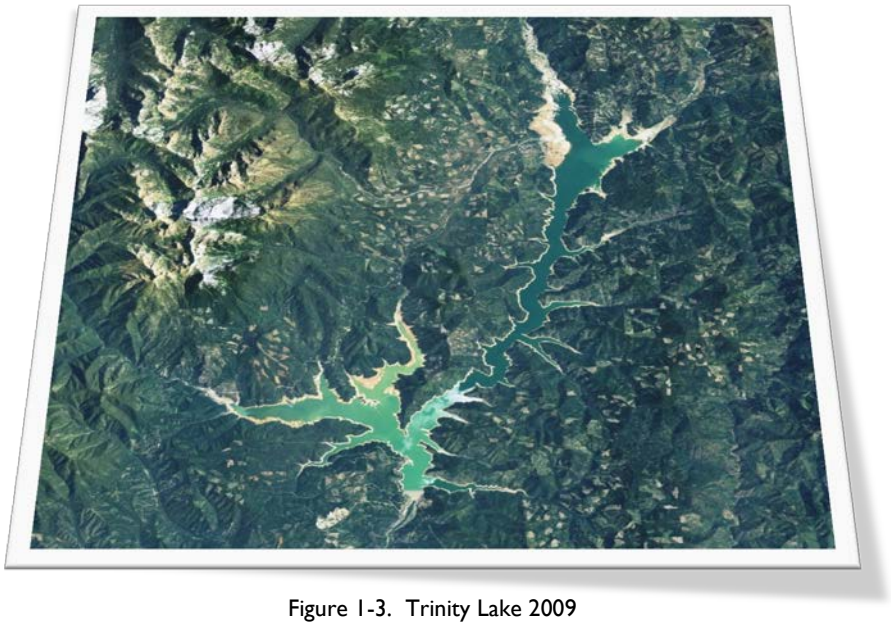


Figure 1-3. Trinity Lake 2009

Lewiston Lake is just downstream from Trinity Dam and serves as an after-bay for re-regulation of releases from the Trinity power plant. This 759-acre lake is 5 miles long with a rich and diverse 15-mile shoreline. Always kept at full capacity, the water here is much colder than in Trinity Lake. Because of the narrow width of the lake, the need for boater safety, and to ensure a quality fishing experience, the speed limit for boating is 10 miles per hour. Marshy areas near the center of the lake provide for excellent wildlife and bird watching opportunities.

Landscapes of this unit are mostly semi-mature to mature, highly dissected, moderate to steep, mountainous terrain. Most developable lands are found adjacent to the western shorelines.

Though the Trinity Unit has a period without rain each summer, the somewhat higher elevations and a degree of coastal influence combine to moderate the hotter temperatures found in the Central Valley. Temperatures during the summer period are pleasant for most types of outdoor recreation activity, with daytime highs normally averaging in the high 80s. Nighttime temperatures are cool, dropping to the 40s and 50s. Gentle winds prevail during the recreation season.

Although fishing, waterskiing/water sports and houseboating dominate the lake recreation spotlight; the cooler temperatures and higher elevations promote many other activities, such as; camping, wildlife viewing, hiking, hunting, automobile touring, photography, and picnicking. The primary recreation season is much shorter in the Trinity Unit (June-August). Trinity Lake also annually experiences large fluctuations in water levels. In normal water years the lake will be nearest full pool in May and drawdown to 80-100 feet below full pool by October.

Winter outdoor recreation is generally severely restricted. Snow may cover the area from mid-December until mid-March with depths up to two feet. March winds are quite strong, limiting otherwise favorable use-periods. Minimum winter temperatures fall near 0 degrees Fahrenheit, with daytime readings near freezing.

Although most precipitation occurs as rain, a significant amount is also contributed by snow. Eighty percent of the 40 to 50 inches of precipitation falls between November 1 and April 30.

Main access to the Unit is provided by State Highway 299 to Weaverville, then via Highway 3 which parallels the Unit along its west side. Most users from Southern California and the San Francisco Bay Area travel Interstate 5 to Redding, followed by a one-hour, 45-mile drive to Weaverville. Some users from the coastal areas of Eureka and Crescent City travel Highway 299 from the coast, a two-to three-hour trip.

Table 1-1
Reservoir Statistics [a]

	Shasta	Trinity	Lewiston
Dam location	T33N, R5W, Section 15	T34N, R8W, Section 15	T34N, R8W, Section 8
Original construction	1938-1945	1957-1962	1960-1963
Dam type	Concrete gravity	Earth	Earth
Structural height (feet)	602	538	91
Height above streambed (feet)	487	465	81
Storage capacity (acre-feet)	4,552,000	2,448,000	14,660
Reservoir area at full pool [b] (acre)	29,500	17,722	759
Full pool elevation (feet)	1067	2370	1874.5
Length of shoreline (miles)	About 400	147	15
Drainage area (sq. mi.)	6421	692	25.6

Notes:

[a] Information obtained from the Bureau of Reclamation at Shasta Dam.

[b] Full pool is the volume of water in a reservoir when the reservoir is fully used for all project purposes, including flood control.

NRA HISTORY

1. Central Valley Project

The story of Shasta Dam extends as far back as 1873 when President Ulysses S. Grant commissioned the U.S. Corps of Engineers to investigate irrigation needs of northern California and make a congressional report of their findings. Further investigation and planning by the State of California culminated in the "State Water Plan," an overall approach for water development within the Central Valley basin. To implement the plan, the California Legislature passed the Central Valley Project Act of 1933, which authorized the project.

In the dust bowl depression era, many people migrated to California and needed reliable water supply and conveyance systems. But in the midst of the Great Depression, revenue bonds were unmarketable so no funding could be found to begin construction of the Central Valley Project (CVP). President Franklin

Roosevelt approved the Central Valley Project on December 2, 1935, and the federal government took over the CVP as a public works project to provide jobs.

Federal and state project planners envisioned Shasta Dam as the key to the Central Valley Project. Shasta would perform several duties for the project including water storage (for irrigation and salinity control in the Delta), flood control (to protect communities along the Sacramento River, long afflicted by flood waters), and power generation. During the winter, the reservoir would be controlled primarily for flood control then for storing and releasing water to meet the estimated demands of irrigation, navigation, salinity control and power generation during the balance of the year (BOR 1944).

Flooding (2-27-40) in Redding prior to completion of Shasta Dam

On March 25, 1936, the United States and the California Water Project Authority executed a cooperative agreement to coordinate the CVP and the California State Water Project.

At a ceremony on September 12, 1937, Reclamation Commissioner John C. Page officially named the dam Shasta, after Mount Shasta, citing the geographic and historic significance of the name.

Work on Shasta Dam began in September 1938, storage of water in the reservoir started in December 1943, and construction was completed in June 1945. Gates, valves, and other items of finish work, deferred during World War II, were completed following the war and the project was placed in full operation in April 1949. Reclamation formally dedicated Shasta Dam as the key structure of the Central Valley Project on June 17, 1950.

Filling of the reservoir necessitated relocation a number of existing utilities including portions of U.S. Highway 99 (Interstate 5) and the Southern Pacific Railroad main line to Portland, Oregon (Figure 1-4). 15 miles of new highway was constructed and 30 miles of railroad.

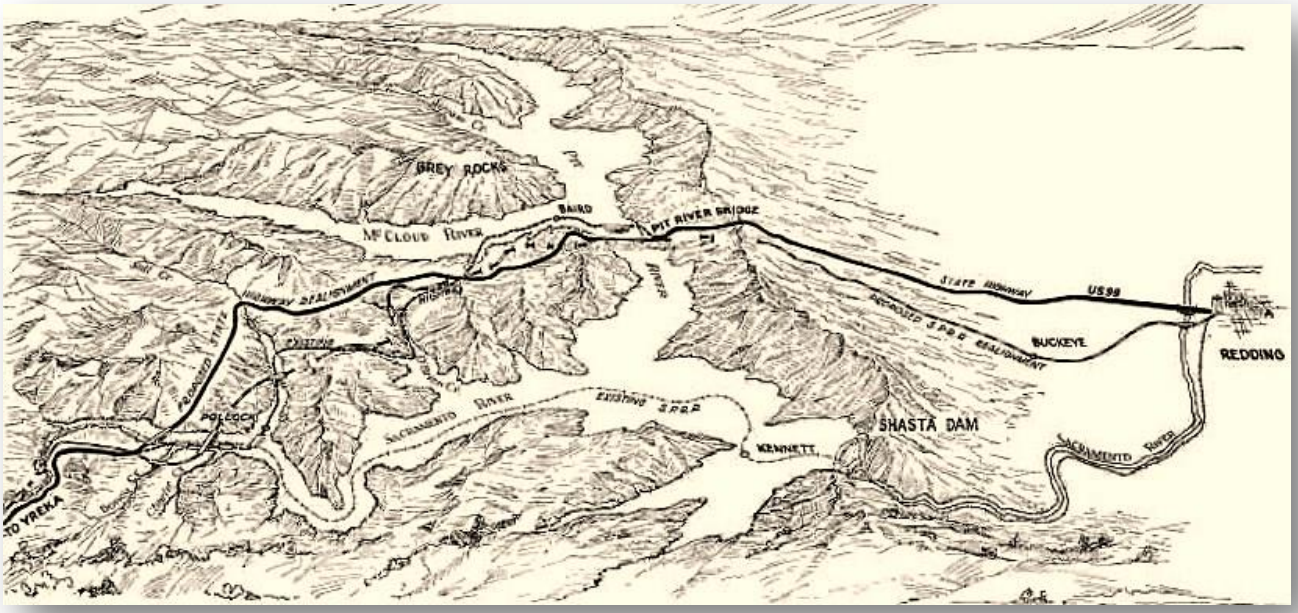


Figure 1-4. Map showing relocation of State Highway (U.S. 99) and Southern Pacific Railroad.
Source: California Highways and Public Works (Purcell 1939).

In addition to its original purpose of providing water supply, flood control and power, the CVP's purposes were modified by the 1992 Central Valley Project Improvement Act to also include fish and wildlife protection, restoration, and enhancement. Reclamation currently operates Shasta Dam and Shasta Lake to provide flood damage reduction, irrigation water supply, municipal and industrial water supply, hydroelectric power, fish and wildlife conservation and restoration, and maintenance of navigation flows. Reclamation operates Shasta Dam in accordance with guidelines provided by the U.S. Army Corps of Engineers for flood damage reduction, as per an agreement between the two entities.

The CVP continued expanding in California after completion of the Project's initial features. The Trinity River Division (TRD) was part of this expansion. On January 2, 1953, the TRD received authorization as part of the CVP and Trinity Dam contractors started work in 1956. At the time of final completion in 1961, Trinity Dam stood as the highest embankment dam in the world until the California State Water Project's Oroville Dam superseded it. The fundamental purposes of Trinity Reservoir are irrigation and power production. Lewiston Dam was constructed during 1961-63. Lewiston Reservoir serves as a diversion pool for Trinity Reservoir and also produces power.

The Central Valley Project is a complex operation of interrelated divisions. The Shasta Division is probably the least complicated division in the Central Valley Project. Shasta Dam stores Sacramento River water for releases to the south. The dam provides a flood control barrier on the river to protect inhabited areas downstream. When in operation, Shasta Powerplant uses part of the releases for hydroelectric power. Whereas, the Trinity River Division which diverts water from one river basin to another (Klamath River Basin to Sacramento River Basin), is more involved. Trinity Dam stores water from the Trinity River in Trinity Lake. Water is released through Trinity Powerplant. Downstream, Lewiston Dam diverts water from the Trinity River, through the Lewiston Powerplant, into Clear Creek Tunnel for the eleven-mile trip through the Trinity Mountains. Water enters Whiskeytown Lake through Judge Francis Carr Powerhouse. Some of the water diverts from the lake into the Clear Creek Unit South Main Aqueduct to irrigate lands in the Clear Creek Unit. The rest flows through the Spring Creek Power Conduit and Powerplant into Keswick Reservoir in the Shasta Division.

The CVP is the largest surface water storage and delivery system in California, covering 29 of 58 counties in the State. Shasta Reservoir accounts for approximately 40 percent of the total storage capacity of the CVP and provides for over half of the total annual water supplies delivered by the CVP. CVP water is used to irrigate about 3 million acres of farmland and supplies water to more than 2.5 million people and businesses through more than 250 long-term water contractors in the Central Valley, Tulare Lake basin, and San Francisco Bay Area. The CVP also provides flood damage reduction, navigation, power, recreation, and water quality benefits. (BOR 2011b)

At certain times of the year, operations of Shasta Reservoir are driven by water supply needs of the CVP contractors. The CVP provides water to settlement contractors in the Sacramento Valley, exchange contractors in the San Joaquin Valley, agricultural and M&I water service contractors in both the Sacramento and San Joaquin Valleys, and wildlife refuges both north and south of the Delta. At the beginning of each year, Reclamation evaluates hydrologic conditions throughout California and uses this information to forecast CVP operations, and to estimate the amount of water to be made available to the Federal water service contractors for the year. …Releases from Shasta Dam are often made for flood management. Releases for flood management either occur in the fall, beginning in early October, to reach the prescribed vacant flood space, or to evacuate space during or after a storm event to maintain the prescribed vacant flood space in the reservoir. (BOR 2013)

From 1962 to 1979, CVP diversions delivered nearly 90 percent of the Trinity River annual water yield (above Lewiston) into the Sacramento River for urban and agricultural use. After 1979, river releases were increased…, thereby increasing the available flow in the Trinity River by as much as 70 percent. The 2000 Record of Decision for the Trinity River Restoration Program established an annual release volume based on water year types. The schedule is revised each year based on water year type. As the operator of the TRD, Reclamation is responsible for establishing the water year type each spring. (BOR and TCRCD 2007)

In June 2013, the *Draft Environmental Impact Statement* for the *Shasta Lake Water Resources Investigation* was released. Reclamation is proposing to expand the capacity of Shasta Lake by raising Shasta Dam to improve operational flexibility of the Sacramento-San Joaquin Delta watershed system, and increase water supply reliability and anadromous fish populations in the upper Sacramento River.

2. Management Timeline

Table 1-2
NRA Management Timeline

Year	Event
Late 1920's	A report by the State of California recommended that the Kennett site be developed initially.
1937	Construction on Shasta Dam begins.
1938	"Land Use Study of the Kennett Area" was completed and suggested the following land use plan for the reservoir area. Primary use—"All lands above the flood line should be considered watershed lands, and should be fully protected as such. Many supplemental uses, however, can be realized from the land without damaging the watershed values. These resources should be utilized to their fullest practicable extent, under controlled public management." Supplemental uses—Timber, mining, domestic grazing, wildlife, and recreation.
1945	The Shasta Project completed.
	National Park Service initially administered the recreation features at Shasta Lake.

Year	Event
1948	Administrative responsibility was transferred by Congress to the Shasta National Forest. The Act of March 19, 1948 (Public Law 449) added all the federal lands in the Shasta Lake area to the Shasta National Forest and made them subject to all the laws and regulations applicable to National Forests and provided that lands within the flow lines of the reservoir continue to be administered by Reclamation.
1952	Shasta Lake filled for the first time.
1954	Shasta National Forest and Trinity National Forest were consolidated into the Shasta-Trinity NF.
1955	The Trinity Division of the Central Valley Project, including Trinity, Lewiston and Whiskeytown Dams and Reservoirs, authorized by Congress (PL386). Because much of the Trinity-Lewiston division was located on the Shasta-Trinity National Forest, the Forest Service was an active participant in the planning of that project, especially concerning its potential recreation use.
1956	Congress added the Lewiston Reservoir area to the Trinity National Forest and transferred administrative responsibility to the Forest Service.
1962	The Trinity Division of the Central Valley Project was completed.
	Upon completion of Whiskeytown Reservoir, the National Park Service assumed interim administration of that unit, also under a memorandum of agreement with the Bureau of Reclamation.
	Legislation was then introduced in Congress to authorize the establishment of a Whiskeytown National Recreation Area.
	The Secretary of Interior proposed deferment of action on the Whiskeytown bill and other similar legislation, pending a study to be made by the Departments of Agriculture and Interior, of the entire complex of reservoirs.
1963	The study was undertaken by a task force composed of representatives of the several Federal departments, the State of California, and the respective counties, under the leadership of the Bureau of Outdoor Recreation. The report recommended the establishment of a National Recreation Area composed of three units – Shasta, Trinity-Lewiston, and Whiskeytown – as the most logical way to obtain the desired objective of maximum sustained recreation benefits. Although the task force itself did not make recommendations as to administration of the three units, an agreement between the Secretaries of Agriculture and Interior, suggesting the present arrangement, was made a part of the report. At the same time, Reclamation's primary responsibilities for irrigation, water supply, power, flood control and other purposes for which the four reservoirs were constructed as part of the Central Valley System would continue unaffected.
1965	Legislation was subsequently introduced to the Congress and on November 8, 1965, President Lyndon Johnson signed the Act (Public Law 89-336) "to establish the Whiskeytown-Shasta-Trinity National Recreation Area in the State of California...." The legislation also extended the boundaries of the Shasta-Trinity National Forest to include in National Forest status all public lands of the United States and all lands to be acquired or reserved for use in connection with the Shasta, Clair Engle, or Lewiston Reservoirs of the Central Valley Project which had not formerly been added to the Forest.
~1967	The legislation required that the respective counties enact zoning ordinances so that use/development would proceed in a manner consistent with the purposes of the NRA. Zoning ordinances in both Shasta and Trinity Counties were enacted in accordance with the regulations (CFR) and were approved by the Secretary of Agriculture.
1997	Public Law 105-44 enacted. The Act states, "the reservoir created by Trinity Dam in the Central Valley project, California, and designated as 'Clair Engle Lake' by Public Law 88-662 (78 Stat. 1093) is hereby redesignated as 'Trinity Lake'."
2009	The Shasta and Trinity Units of the NRA continue to be administered by the Forest Service and the Whiskeytown Unit continues to be administered by the National Park Service.

3. NRA Legislation

The goals of the NRA, as expressed in the Law, were "...to provide, in a manner coordinated with the other purposes of the Central Valley Project, for the public outdoor recreation use and enjoyment of the Whiskeytown, Shasta, Clair Engle [Trinity], and Lewiston reservoirs and surrounding lands...by present and future generations and the conservation of scenic, scientific, historic, and other values contributing to public enjoyment of such lands and waters...." The legislation also provided that administration of the NRA "...be carried out under ...management plans which each Secretary [i.e., Secretary of Agriculture and Secretary of Interior]...shall prepare and...from time to time revise...."

Appendix A contains the complete text of Public Law 89-336.

4. NRA Guide -- Previous and Related Management Plans

Planning for Shasta Lake and the lands that would surround it began before construction of the dam was completed. In 1938 the "Land Use Study of the Kennett Area" was published by the Forest Service. Subsequent planning documents ("precursors" of the NRA Guide) include:

- *A Report on the Development of a Land Management Plan for the Shasta Reservoir Lands under Bureau Jurisdiction*. Bureau of Reclamation, 1947.
- *Shasta Lake Recreational Area, Master Plan Development Outline 1947, Revised June 1, 1948*. National Park Service, 1948.
- *Proposed Trinity and Lewiston Reservoirs. Project Report on Recreational Potentialities*. National Park Service, 1951.
- *Shasta Lake Recreation Area Development Plan*. Forest Service, 1953.
- *Public Use Plan, Trinity River Planning Project*. Forest Service, 1956.
- *Shasta Lake Recreation Area Development Plan, Revision of September 1, 1958*. Forest Service.
- *Management Plan for Trinity-Lewiston Lakes*. Forest Service & Bureau of Reclamation, 1964.
- *Master Plan for Trinity-Lewiston Lakes*. Forest Service & Trinity County, 1965.
- *Master Plan for the Shasta Lake Recreational Area*. Forest Service & Shasta County, 1965.
- *Master Coordination Plan for Whiskeytown-Shasta-Trinity National Recreation Area*. Forest Service & National Park Service, 1971.
- EIS and Land Use Plan for the Shasta and Clair Engle-Lewiston Units of the Whiskeytown-Shasta-Trinity National Recreation Area. Forest Service 1976.
- *Operation and Development Plan for the Shasta and Clair Engle-Lewiston Units of the Whiskeytown-Shasta-Trinity National Recreation Area*. Forest Service, 1982.
- EIS and Management Plan, Shasta and Trinity Units. Forest Service, 1988.
- *Management Guide, Shasta and Trinity Units*. Forest Service, 1996.

The initial land use plan for the Shasta and Trinity Units, implemented in 1967, guided the management of the area for nine years. During those years the volume and type of recreation use in the NRA expanded considerably. In addition, the National Environmental Policy Act (NEPA) of 1969 and related federal regulations made it mandatory to conduct and document an environmental analysis when proposing a major federal action. Consequently, in 1976, a revised plan and an environmental impact statement (EIS) documenting the analysis of alternatives were published. The 1976 Plan called for periodic review of management direction and revision, as needed, in response to changing conditions and public needs.

The first scheduled review in 1982 produced only minor adjustments to the 1976 Plan. The 1987 review of the plan resulted in the decision to conduct a new analysis and prepare a new EIS. The results of the EIS and the new plan were released in 1988. These documents guided management activities in the NRA up to June 1995, when the Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan) and EIS were completed.

The Forest Plan provides direction for management of the entire Forest including the NRA, and is programmatic in nature. The NRA Guide relies on the Forest Plan for a broad umbrella of direction and is incorporated by reference into the Forest Plan. Since the 1996 plan was implemented, there have been changes in environmental conditions, public concern, and recreation use patterns. Updating the guide responds to these changes, providing better management of the resources in the NRA and continues implementation of the management direction in the Forest Plan.

Any proposed projects, site-specific developments, or major activities within the NRA require analysis of potential impacts and appropriate documentation of the analysis, in compliance with NEPA. Management of the NRA is also subject to the Code of Federal Regulations (CFR), the Forest Service Manual (FSM), and applicable state laws and county ordinances (such as boating regulations, health and safety codes, and zoning of private lands). The terms and conditions found in special use permits also play a key role in management of the NRA.

RELATIONSHIP WITH OTHER SOURCES OF DIRECTION

1. Code of Federal Regulations

The Code of Federal Regulations (CFR) is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government. It is divided into 50 titles that represent broad areas subject to Federal regulation. Each volume of the CFR is updated once each calendar year and is issued on a quarterly basis.

The general authority of the Secretary of Agriculture to prescribe regulations derives from 5 U.S.C. 301. The basic authority of the Secretary to issue regulations regarding occupancy and use of the National Forest System is the Organic Administration Act of June 4, 1897 (16 U.S.C. 551). Numerous statutes direct the Secretary to issue regulations for specific purposes, for example, the National Forest Management Act (16 U.S.C. 1600 et. seq.), the Federal Lands Policy and Management Act of 1976 (43 U.S.C. 1701 et. seq.), and the Wilderness Act (16 U.S.C. 1131 et. seq.).

Forest Service rules and regulations appear in Title 36, Chapter II, Parts 200-299. Regulations unique to the Whiskeytown-Shasta-Trinity National Recreation Area are found in Title 36 Part 292, and Title 43 Sections 3109.3, 3501.1 and 3583 (CFR revised as of October 1, 2009). Appendix B contains a copy of 36 CFR 292 Subpart B -- Whiskeytown-Shasta-Trinity National Recreation Area.

2. Forest Service Manuals and Handbooks

The Forest Service Directive System consists of the Forest Service Manual (FSM) and Handbooks (FSHs), which codify the agency's policy, practice, and procedure. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest

Service employees. The system sets forth legal authorities, management objectives, policies, responsibilities, delegations, standards, procedures, and other instructions. The Forest Service Manual (FSM) contains legal authorities, goals, objectives, policies, responsibilities, instructions, and the necessary guidance to plan and execute assigned programs and activities. Forest Service Handbooks (FSH) are directives that provide instructions and guidance on how to proceed with a specialized phase of a program or activity. Handbooks either are based on a part of the Manual or they incorporate external directives.

Regulations of other Federal agencies that pertain to Forest Service activities are quoted or referred to in the relevant titles, chapters, and sections of the Forest Service Manual or in Forest Service Handbooks.

2.1 Interagency Agreements

Service-wide agreements with various international entities, Federal agencies, State agencies, county agencies, local agencies, businesses, and non-profit organizations can be found in the appropriate chapters of Title 1500 External Relation of the FSM.

Some examples of current agreements are:

- Memorandums of Agreement for cross-designation of law enforcement personnel between the USDA and various agencies
- Memorandum of Understanding between USDA Forest Service and USDI Fish and Wildlife Service for migratory bird conservation
- Master Interagency Agreement for water resource related projects of the Bureau of Reclamation within or adjacent to National Forest System Lands
- Interagency Agreement on coordinated approach to fish and wildlife management

2.2 Special Use Permit Terms and Conditions

Several acts of Congress authorize occupancy and use of National Forest System lands and interests in lands administered by the Forest Service. The applicable statutory authority determines the appropriate special use authorization.

Title 36, Code of Federal Regulations, Part 251, Subpart B (36 CFR part 251, subpart B), is the principal authority for screening special use proposals, filing and processing special use applications, and preparing authorizations. 36 CFR 251.56 contains the types of standard terms and conditions that each special use authorization must contain.

The Special Uses Handbook FSH 2709.11 lists the mandatory terms and conditions which must be included in all authorizations for a particular type of use. It also contains information on the standard national forms and supplemental terms and conditions to be used to issue authorizations for all use activities requiring an authorization.

3. Forest Land and Resource Management Plan

The Forest Plan sets forth in detail the direction for managing the land and resources of the Shasta-Trinity National Forest. It establishes a general framework to guide forest staff when they propose, analyze, and decide upon projects and activities. The plan includes descriptions of the desired conditions toward which management of the land and resources of the plan area is to be directed. Desired conditions are descriptions of the ecological, economic, and social attributes that characterize or exemplify the desired outcome of land management. The Forest Plan was developed from extensive analysis, public involvement and evaluation addressed in the accompanying Final Environmental Impact Statement.

The Forest Plan either supersedes existing plans or incorporates them by reference. The NRA management guide is incorporated by reference into the Forest Plan.

4. Forest Service and Bureau of Reclamation Agreements and MOUs

With the filling/creation of Shasta Lake, control of the Shasta Lake Recreational Area was vested in the Department of the Interior, through the Bureau of Reclamation and the National Park Service (NPS). In 1945, the first cooperative agreement (Memorandum of Agreement (MOA)) for the planning, development and management of recreational facilities at Shasta Reservoir for public use and enjoyment was signed by Reclamation and NPS. In accordance with the MOA, Reclamation retained control over the flow and utilization of the reservoir waters, access to, jurisdiction over, and responsibility for Shasta dam and appurtenant works and NPS took responsibility for the planning, development and management of the recreational resources (NPS 1947). Three years later, the Shasta Lake area was added to the Shasta National Forest by Public Law 449 of March 19, 1948 and the Forest Service took over administration of the lake area from NPS on July 1, 1948. During this year, the first Cooperative Agreement between the Forest Service and Bureau of Reclamation was developed for the administration of the Shasta Lake area. In the years additional agreements were developed for the Shasta Lake area as well as the Trinity and Lewiston Reservoir areas. These included:

- Memorandum of Understanding between the Bureau of Reclamation, United States Department of the Interior, and the Forest Service, United States Department of Agriculture. Pertaining to the Development and Administration of Recreational Facilities at Bureau of Reclamation Reservoirs that are Wholly or Substantially within the Boundaries of National Forests. 1948.
    - "On areas within national forests withdrawn for reclamation purposes, but not in actual use in connection with reclamation works, the Service will administer the lands as ordinary national forest lands."
- Memorandum of Agreement between the Bureau of Reclamation and the Forest Service Concerning the Shasta Lake Area, California. 1949.
- Memorandum of Understanding between the Bureau of Reclamation United States Department of the Interior and the Forest Service, United States Department of Agriculture with Reference to Trinity and Lewiston Reservoirs, Trinity River Diversion, Central Valley Project. 1959.
- Memorandum of Understanding between the Bureau of Reclamation and the Forest Service for the Construction, Operation and Maintenance of a Visitor Center at Trinity Reservoir. 1963.
- Memorandum of Understanding between the Bureau of Reclamation and the Forest Service for Management of Trinity and Lewiston Reservoir Areas. 1964.
    - "The Service will...mange the shorelands for access to the waters and for maintenance of public health and safety, the protection of public property, the conservation of scenery and natural, historic and archaeological objects, and provide for public use and enjoyment of the dame and of the reservoir water areas...."
- Amendment No. 1 to Memorandum of Understanding between the Bureau of Reclamation and the Forest Service for management of Trinity and Lewiston Reservoir areas. 1964.

The Public Use Plan for the Trinity River Planning Project (FS 1956) includes this information on Reclamation policy:

> Bureau policy notes that since watershed management is one of the primary functions of the Forest Service, and since the multiple-use policy of the Forest Service includes recreation, it follows that the recreational use of reservoirs and their shorelands within or adjacent to National Forests be

> managed by the Forest Service....The relationship between the Forest Service and the Bureau of Reclamation pertaining to the administration of recreation facilities at Reclamation reservoirs is formalized in an inter-bureau agreement in January 1948.
>
> The Bureau of Reclamation is not authorized to acquire lands for recreational purposes. It is their standard practice, however, to obtain control, through withdrawal or acquisition, of the land within a distance of 300 feet horizontal from the shores of its conservation reservoirs. Where private land must be purchased for this purpose, it is customary to acquire to the nearest sectional or subsectional division line. If the land owner desires to retain as much of his land as possible, the Bureau will acquire to a meander line approximating the 300 foot horizontal distance from the reservoir. The area is referred to in this report as the "300-foot buffer" or "300-foot strip."

When the NRA was created, the NRA Legislation specified that the "Whiskeytown unit shall be administered by the Secretary of the Interior; and the Shasta and Clair Engle-Lewiston [now known as Shasta, Trinity and Lewiston] units shall be administered by the Secretary of Agriculture, except that lands or waters needed or used for the operation of the Central Valley project shall continue to be administered by the Secretary of the Interior to the extent he determines to be required for such operation. The two Secretaries shall coordinate their planning and administration of the respective units in such manner as to provide integrated management policies for the recreation area as a whole for the purposes of this Act in order to bring about uniformity to the fullest extent feasible in the administration and use of the recreation area."

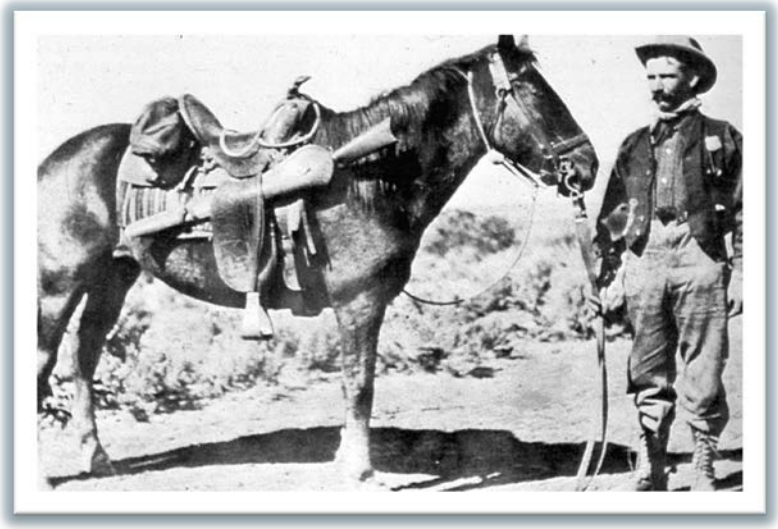
Coordinated administration continued through interagency agreements including:

- Memorandum of Understanding between the United States Forest Service, Department of Agriculture and the Bureau of Reclamation, Department of Interior (concerning overall operation responsibilities for Government lands around Shasta Dam.). 1971.
- Memorandum of Agreement between the Bureau of Reclamation U.S. Department of the Interior and the Forest Service, U.S. Department of Agriculture Pertaining to the Coordination of Administration of the National Recreation Area with the Administration of the Central Valley Project. 1986.
- Master Interagency Agreement Number 86-SIE-004 Between the Bureau of Reclamation, U.S. Department of the Interior and the Forest Service, U.S. Department of Agriculture Concerning Water Resources Related Projects of the Bureau of Reclamation within or adjacent to National Forest System Lands. (Supersedes January 1948 MOU and April 1974 MOA). FSM 1531.53a. Effective date: September 13, 2001. Date signed: 1987.
- Amendment No. 1 to Memorandum of Agreement between the Bureau of Reclamation U.S. Department of the Interior and the Forest Service, U.S. Department of Agriculture Pertaining to the Coordination of Administration of the National Recreation Area with the Administration of the Central Valley Project. 1992.

5. Other Documents

Copies of the following documents are included in Appendix C.

- Notice of Establishment and Description of Boundaries in Whiskeytown-Shasta-Trinity National Recreation Area. Federal Register, Volume 31, No. 133, Tuesday, July 12, 1966.
- Washington Office Direction. Memorandum from Deputy Chief Nelson dated March 23, 1966.
- Office of General Counsel letter dated September 24, 1981.



Forest Ranger on patrol.

LAW ENFORCEMENT AND JURISDICTIONS

All national forest system land in the NRA is held by the United States in proprietorial status. As such, it is subject to the legislative jurisdiction of both the United States and the state and local governments. Prohibitions with respect to the NRA can be adopted by the Forest Service under the procedures applicable to Title 36, Code of Federal Regulations, part 261, Subparts B and C, respectively, if needed. In the event of conflict with state and local law, these prohibitions would take precedence on National Forest land; also on the lakes themselves (Office of General Counsel opinion documented in a letter dated September 24, 1981. Copy provided in Appendix C).

With proprietary jurisdiction, the government is said to have taken over none of the state's obligations for law enforcement. In other words, state and local law enforcement officers still handle calls for service as if the land were privately owned, without regard to the property's ownership. In light of that, the Property Clause of the United States Constitution gives Congress the authority to make and enforce all necessary rules and regulations to protect federal property, including property that is held in proprietary jurisdiction status. These laws are found in the Code of Federal Regulations.

Given the proprietary jurisdiction, law enforcement in the NRA is the responsibility of numerous agencies, which include the Shasta County Sheriff's Department, California Highway Patrol, California Department of Fish and Wildlife, US Fish and Wildlife, Union Pacific Railroad Company, Alcohol Beverage Control, California Department of Forestry and Fire Protection (Cal Fire), and the Forest Service.

The responsibilities of many of these agencies are interwoven with those of the Forest Service either directly or by means of an agreement. The Forest Service's program focuses on Federal laws and resource related activities. These include wildland fire investigation, timber theft, mining claims disputes, occupancy trespasses, sanitation, fire, and various other resource related crimes. State and local law enforcement agencies generally have the same authorities and responsibilities on National Forest System lands as they do elsewhere in their respective jurisdictions (16 U.S.C. §480). It is Forest Service policy to assist county and state officials in securing compliance with all applicable state and local laws within the NRA and to rely primarily on these laws for protection of the health, welfare and safety of the public. On the lake surface the Shasta and Trinity

County Boating Units respectively, take primary responsibility for enforcement of state and local laws and ordinances. These include violations such as driving/boating while intoxicated, vehicle and boat registration laws, state boating laws, assault and battery, and enforcement of state and county speed ordinances.

Title 36, CFR, part 261, subpart A contains general prohibitions that apply throughout the National Forest System and National Forest administrative sites and offices. 36 CFR 261, subpart B contains prohibitions in areas designated by an order, and 36 CFR 261, subpart C contains prohibitions that apply to certain areas within a Region.

McCloud River at the Baird Fish Hatchery, U.S. Bureau of Fisheries.

OTHER MANAGEMENT AGENCIES – ROLES AND AUTHORITIES

1. Federal

1.1 Bureau of Reclamation

1.1.1 Jurisdiction within the NRA

The NRA Legislation also extended the boundaries of the Shasta-Trinity National Forest to include in National Forest status "all public lands of the United States and all lands of the United States heretofore or hereafter acquired or reserved for use in connection with the Shasta, Clair Engle, or Lewiston Reservoirs of the Central Valley project within the exterior boundaries of the Shasta and Trinity National Forests which have not heretofore been added to and made a part of such forests, and all lands of the United States acquired for the purposes of the recreation area in the Shasta or Clair Engle-Lewiston units are hereby added to and made a part of the respective national forests within which they are situated : *Provided*, That lands within the flow lines of any reservoir operated and maintained by the Department of the Interior or otherwise needed or used for the operation of the Central Valley project shall continue to be administered by the Secretary of the Interior to the extent he determines to be required for such operation." (Also see PL 80-449, section.1)

"Reclamation's core mission is to deliver water and generate power to meet its contractual obligations. Therefore, one of its top priorities is to provide western communities with clean, reliable sources of water and power. Reclamation also must carry out its other trust and stewardship responsibilities, one of which is the non-consumptive use of water and associated land resources to provide the public with safe and enjoyable outdoor recreation experiences. The valuable social and economic benefits that recreation provides can easily be integrated into the core water and power services" (Lovejoy and Brown 2004). The Central Valley Project did not include recreation as a primary use of the project although Reclamation recognizes recreation as a secondary use.

For flood control, Reclamation operates the facility in accordance with guidelines provided by the United States Army Corps of Engineers.

> A storage space of up to 1.3 MAF is kept available for flood control purposes in Shasta Reservoir in accordance with the Shasta Dam and Lake Flood Control Diagram, as prescribed by USACE. Under the diagram, flood storage space requirements increase from zero on October 1 to 1.3 MAF on December 1 and are maintained until December 23. From December 23 to June 15, the required flood storage space varies according to accumulation of seasonal inflow. This variable space allows water to be stored for conservation purposes, unless it is required for flood damage reduction purposes based on basin wetness parameters and the level of seasonal inflow. …[A] goal of existing operations is to have vacant flood storage space in excess of flood control requirements in the flood season and then fill the pool to the maximum extent possible for water supply and other needs in the remainder of the year (BOR 2011a).

1.1.2 Enforcement within the NRA

Public conduct on Reclamation facilities, lands, and waterbodies administered by other Federal agencies under statute or other authority will be governed by the regulations of those agencies rather than this part 423 (*public conduct on Bureau of Reclamation facilities, lands, and waterbodies*). However, Reclamation retains the right to take necessary actions to safeguard the security and safety of the public and such Reclamation facilities, lands and waterbodies (43 CFR 423.3(d)).

From an operational standpoint, one of the key interactions between Reclamation and the Forest Service is to protect the capacity of the reservoir itself. The 1986 MOA states that the Forest Service will administer all waters and waterways within the Shasta and Trinity Units for recreation and resource management provided that such administration does not adversely affect the water storage capacity. Generally the Forest Service is not allowed to add material of any kind below the full pool water elevation unless an equal amount of material is removed. Historically an unofficial "bank" has been monitored, and if mutually agreed upon, there are instances when the Forest Service is allowed to draw from this "bank" to add soil or other materials below full pool.

Another significant relationship the Forest Service has had with Reclamation includes various proposals throughout history to raise Shasta Dam. Currently, Reclamation is again exploring the feasibility of raising the dam to increase the reservoir capacity to promote increased survival of anadromous fish in the upper Sacramento River as well as increased water supply reliability. A range of 6.5 to 18.5 feet in elevation change is being considered, which will avoid the need for a realignment of the Union Pacific rail line, or replacement of the Pit River Bridge on Interstate 5. The draft Environmental Impact Report was released to the public in 2013.

1.2 Army Corps of Engineers

1.2.1 Jurisdiction within the NRA

The Clean Water Act gives jurisdiction over certain water bodies to the Army Corps of Engineers (Corps). Section 404 of the Clean Water Act requires the Corps to regulate most discharges of dredge or fill material into waters of the United States, including wetlands.

The phrase "*discharges of dredge or fill material*" essentially includes all land disturbing activities accomplished via use of mechanized equipment. "*Waters of the U. S.*" includes most waterways (i.e., intermittent or perennial rivers, streams, creeks, tributaries), water bodies (i.e., lakes, ponds), and wetlands. The landward regulatory limit for non-tidal waters (in the absence of adjacent wetlands) is the *ordinary high water mark*. The ordinary high water mark is the line on the shores established by the fluctuations of water.

"Wetlands" are areas characterized by growth of wetland vegetation (bulrush, cattails, rushes, sedges, willows, pickleweed, andiodine bush) where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands generally include swamps, marshes, bogs, and similar areas.

1.2.2 Enforcement within the NRA

The Regulatory Program of the Corps administers and enforces Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Under Section 10, a Corps permit is required for work or structures in, over or under navigable waters of the United States. Under Section 404, a Corps permit is required for the discharge of dredged or fill material into waters of the United States.

Any person, firm, or agency (including Federal, state, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers. Permits, licenses, variances, or similar authorization may also be required by other Federal, state and local statutes.

The 404 permit program is administered jointly by EPA and the U.S. Army Corps of Engineers. The Corps handles the actual issuance of permits (both individual and general); it also determines whether a particular plot of land is a wetland or water of the United States. The Corps has primary responsibility for ensuring compliance with permit conditions, although EPA also plays a role in compliance and enforcement.

When a project is undertaken in a regulated area without a permit, or when a project does not comply with permit terms and conditions, the Corps may take enforcement action. When a violation is confirmed, the Corps seeks to resolve the case in various ways, depending on the circumstances.

The EPA has independent enforcement authority for violations involving fill in wetlands and other waters under the Clean Water Act. Accordingly, some cases are referred to EPA for enforcement action. This happens for less than ten percent of enforcement cases.

1.3 United States Fish and Wildlife Service

1.3.1 Jurisdiction within the NRA

The United States Fish and Wildlife Service (USFWS) administers federal laws and programs for conserving, protecting, and enhancing fish and wildlife and for research related to this role. The agency has statutory responsibilities for the protection of migratory birds, eagles, threatened and endangered plants and animals and their critical habitats, and other important fish and wildlife resources.

As directed by Executive Order 13186, the Forest Service has developed a Memorandum of Understanding (MOU) with USFWS to promote the conservation of migratory bird populations.

The Livingston Stone National Fish Hatchery is located just downstream of Shasta Dam and is operated by USFWS. The hatchery, opened in February 1998, is operated as a winter-run Chinook spawning and rearing facility.

Endangered Species Act of 1973

USFWS has regulatory jurisdiction over all species listed under the federal Endangered Species Act (ESA), other than anadromous salmonids, which fall under the jurisdiction of the National Marine Fisheries Service. The ESA generally prohibits the "taking" of a species listed as Endangered or Threatened (16 USC 1532, 50 CFR 17.3). Under ESA, the "take" of a Threatened or Endangered species occurs when an intentional or negligent act or omission results in any of the following actions: "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" includes acts that result in death or injury to wildlife. Such acts may include significant habitat modification or degradation if it results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Section 7 of the ESA, as amended, requires federal agencies to evaluate their actions with respect to any species that is proposed for listing or is listed as Endangered or Threatened. Section 7 requires federal agencies, in consultation with the Secretary of the Interior, insure that any action authorized, funded or carried out by an agency is not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species.

The Forest Service must consult with USFWS on any prospective action at the request of, and in cooperation with, a prospective permit applicant, when the applicant has reason to believe that a listed species may be present in the project area and that the action may affect the species.

The Secretaries of the Interior and Commerce must develop and implement recovery plans for the conservation and survival of endangered and threatened species, unless such a plan would not promote the conservation of the species.

1.3.2 Enforcement within the NRA

FSM 1530 contains the following interagency agreements between the Forest Service and USFWS:

- Interagency Agreement on Coordinated Approach to Fish and Wildlife Management signed in 1983 with a Supplement on Spotted Owl signed in 1987.
- Memorandum of Understanding for Migratory Bird Conservation signed in 2001.

The 1983 agreement states that USFWS has responsibilities for conserving, protecting, and enhancing fish and wildlife and for research related to this role, and the Forest Service has responsibilities for the administration and management of the National Forest System lands and its resources, including management of fish and wildlife habitats; fish and wildlife habitat research; and cooperative forestry programs on State and private lands.

The 1983 agreement also states that both agencies will cooperate in law enforcement efforts related to the transportation of fish and wildlife taken in violation of State, National, or foreign laws, and other unlawful activities on lands managed under the jurisdiction of the USFWS and Forest Service.

USFWS may appoint forest officers as Federal game wardens through interagency agreement.

Forest Service activities involving the possession, transport, or taking of federally listed wildlife, fish, and plants may only occur with a permit obtained from the Wildlife Permit Office, USFWS and/or under agreements with the State.

2. State

The laws of the State and local ordinances, not in conflict with federal law, apply within the NRA.

2.1 California Department of Fish and Wildlife

2.1.1 Jurisdiction within the NRA

The California Department of Fish and Wildlife (CDFW) was established under the laws of the State of California as trustee for the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. They oversee the restoration and recovery of species listed by the California Endangered Species Act as threatened and endangered.

CDFW has been rearing and stocking fish in the inland waters of California since the late 1800s when new legislation required the restoration and preservation of fish in state waters. This legislation called for the newly formed California State Fish and Game Commission to establish "fish breederies" to stock and supply streams, lakes, and bays with both foreign and domestic fish. In the early 1900s, CDFW assumed responsibility for the state for stocking hatchery trout into California lakes and rivers. Since 1945, CDFW has assumed responsibility for the rearing and stocking of both inland and anadromous fish species at 21 hatcheries and planting bases located throughout the state.

The Trinity River Fish Hatchery, located immediately downstream from Lewiston Dam, is operated by CDFW. The hatchery was constructed and operated to help mitigate for lost production of habitats upstream from the Trinity River Division.

Forest Service policy (FSM 2603) is to maintain partnerships with State fish and wildlife agencies in habitat management efforts, and to recognize the State wildlife and fish agencies as responsible for the management of animals (e.g., deer herds, upland and migratory game) and the Forest Service as responsible for the management of habitat.

Section 5 of the NRA Legislation addresses hunting and fishing within the NRA. "Each Secretary shall permit hunting and fishing on lands and waters under his jurisdiction within the recreation area in accordance with the applicable laws of the State of California and of the United States: *Provided*, That each Secretary may designate zones where, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment not compatible with hunting or fishing. Regulations prescribing any such restrictions shall be issued after consultation with the California Department of Fish and Wildlife."

Hunting, fishing, and trapping of fish and wildlife and associated practices on National Forest System lands are subject to State fish and wildlife laws and regulations, unless one or both of the following apply: (1) State fish and wildlife laws and regulations conflict with Federal laws; or (2) State laws and regulations would permit activities that conflict with land and resource management responsibilities of the Forest Service or that are inconsistent with direction in forest plans (FSM 2643.1).

As stated in Public Law 89-336, the Secretary of Agriculture may, after consulting with CDFW, designate zones were, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment not compatible with hunting or fishing.

CDFW also has jurisdictional authority over wetland resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. CDFW must be notified when any person, business, state or local government agency, or public utility proposes an activity that will:

- Divert, obstruct, or change the natural flow or the bed, channel, or bank of any river stream or lake;
- Use material from a streambed; or

- Result in the disposal or deposition of debris, waste, or other material where it can pass into any river, stream, or lake.

If CDFW determines that the activity could substantially adversely affect an existing fish and wildlife resource, a Lake or Streambed Alteration Agreement is required.

Forest Service, Region 5, policy (R5 Supplement No. 2600-96-1) is to recognize and obtain CDFW agreements and permits including streambed alteration permits where such agreements and permits are required by State law and where the requirement is not preempted by Federal law and does not conflict with the performance of a Federal function.

2.1.2 Enforcement within the NRA

The Forest Service recognizes that the primary responsibility for fish and wildlife law enforcement on National Forest System lands rests with the States (FSM 1561). CDFW Wardens have statewide jurisdiction and their primary function is to enforce Fish and Game code. The Forest Service may assist in enforcement of State fish and wildlife laws on National Forest System lands. Forest officers can be lawfully appointed as deputy game wardens under the laws of any State with full power to enforce the State laws and regulations relating to fur-bearing and game animals, birds and fish (36 CFR 241.1). Federal law and regulations allow for direct Forest Service involvement in enforcing State fish and game laws on or affecting National Forest System lands or users.

2.2 California State Parks Division of Boating and Waterways

California Boating Law applies to the operation of vessels on all waters within territorial limits, including coastal waters. California law, in general, does not replace the United States Coast Guard and other federal regulations in force on federally navigable waters, but is in general conformity with these laws.

The Federal Boating Act of 1958 set forth legal requirements governing most aspects of pleasure boating in U.S. navigable waters. It shifted the responsibility of numbering undocumented vessels from the federal government (U.S. Coast Guard) to the states and amended earlier acts regarding accident procedures and penalties.

In 1959, under the authority of the Federal Boating Act, the California Legislature added Chapter 5 to Division 3 of the Harbors and Navigation Code, establishing a comprehensive set of laws governing the equipment and operation of recreational vessels on all waters of the State. A system of reporting boating accidents was also initiated.

The Federal Boating Safety Act of 1971 was aimed at recreational boating and entrusted states and territories with ensuring minimum registration requirements set by the federal government. Among these requirements are navigation rules, vessel numbering, safety equipment, lights and day shapes, pollution rules, and distress assistance.

The Division of Boating and Waterways (DBW) is responsible for reviewing, updating, and adopting State boating regulations to enhance boating safety, to reflect changes in Federal boating law, to maintain uniformity among Federal and State laws, and to implement legislatively mandated programs.

Local government entities may also adopt certain boating regulations, or ordinances, for waterways in their areas. These ordinances can pertain only to time-of-day restrictions, speed zones, special-use areas, and sanitation and pollution control. DBW works with local agencies in the development of their regulations and recommends model local ordinances to maintain uniformity among boating ordinances.

Generally, every sail-powered vessel over eight feet in length and every motor-driven vessel (regardless of length) that is not documented by the U.S. Coast Guard and which is used or on the waters of this state, is

subject to registration by the Department of Motor Vehicles (DMV). DMV issues the vessel registration number (CF number).

2.3 California Department of Transportation

The State is responsible for planning, designing, constructing, and perpetuating public highways of the State highway system for the safety and benefit of the using public. Two routes which are part of the State highway system pass through the NRA, Interstate 5 in the Shasta Unit and State Route 3 in the Trinity Unit. Each of these routes has an associated right-of-way, either conveyed by easement or permit.

The California Streets and Highways Code, Section 90, gives the Department of Transportation (Caltrans) full possession and control of all state highways and all property and rights in property acquired for state highway purposes. Sections 660 to 734 grant the authority to Caltrans to permit improvements and other activities on the States highway system rights-of-way by others. Individuals, contractors, corporations, utilities, cities, counties, and other government agencies proposing to conduct any activity within, under, or over the State highway right-of-way may need an encroachment permit.

2.4 Regional Water Quality Control Board

2.4.1 Jurisdiction within the NRA

The Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), better known as the Clean Water Act (CWA), is the primary Federal statute regulating the protection, restoration and maintenance of the "chemical, physical and biological integrity of the Nation's waters." CWA was enacted in 1972 in response to nationwide water pollution issues and was amended in 1977 and 1987. CWA established national programs for the prevention, reduction and elimination of pollution in navigable water and groundwater. The heart of the Clean Water Act is found in the prohibition contained in Section 301: it is illegal to discharge pollutants (into the Nation's waters) except in compliance with a permit.

To achieve its objectives, CWA authorizes EPA and the States to regulate, implement and enforce compliance with guidelines and standards to control the direct and indirect discharge of pollutants into U.S. waters. A pollutant can be practically anything some examples include dredged spoil, solid waste, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and agricultural waste discharged into water.

There are two major exceptions to the Section 301 prohibition, and both are implemented through permitting programs. The first is the National Pollutant Discharge Elimination System, or "NPDES," permit program. The second major exception is the Section 404 "dredge and fill" permit program administered by the Army Corps of Engineers in cooperation with EPA. (See discussion above in section 1.5 for Corps permit program.)

The following are some of the requirements of the CWA by section:

- Section 208 requires that states develop programs to identify and control non-point sources of pollution, including runoff.
- Section 303 requires states to establish and enforce water quality standards to protect and enhance beneficial uses of water for such purposes as recreation and fisheries. (see "Basin Plan" prepared by each RWQCB)
- Section 313(a) requires that federal agencies observe state and local water quality regulations.
- Section 401 requires that state water quality standards not be violated through the discharge of pollutants into waters of the United Sates, including wetlands. Section 401(a)(l) requires any applicant for a federal permit (i.e., Section 404 permit) provide certification from the state in which the

discharge originates that such discharge will comply with applicable water quality provisions (i.e., Section 303 provisions).

- Section 402 requires the EPA Administrator to develop the National Pollutant Discharge Elimination System (NPDES) to issue permits for pollutant discharges to waters of the United States. (Although the CWA grants EPA oversight authority for Section 402 permitting, nearly every state now administers its own NPDES permit program under a delegation of authority from EPA.).

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (Regional Boards) are State regulatory boards within the California Environmental Protection Agency. They are the principal state agencies with primary responsibility for the coordination and control of water quality. The Shasta Unit is within the area managed by the Central Valley Regional Board and the Trinity Unit is within the North Coast Regional Board.

The Regional Boards issue permits which govern and restrict the amount of pollutants that can be discharged into the ground or a water body. National Pollutant Discharge Elimination System permits, also referred to as Waste Discharge Requirements, are issued to regulate the discharge of pollutants to surfaces waters. All persons discharging or proposing to discharge pollutants from a point source into any waters of the state are required to apply for and have a permit under the NPDES to discharge. The State has two NPDES permit programs, one for wastewater and one for storm water.

Under the storm water program, all construction activities with one acre or more of soil disturbance or projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity. The General Permit also requires the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution are described. There may be other permits or requirements in addition to the General Permit. For example, a streambed alteration agreement from the Department of Fish and Wildlife and/or Clean Water Act Section 404 permit administered by the U. S. Army Corp. of Engineers.

A Regional Board may waive the requirements to submit a report of waste discharge and to obtain waste discharge requirements as to a specific discharge or specific type of discharge, if the Regional Board determines that the waiver is consistent with any applicable water quality control plan and such waiver is in the public interest. In 2010, the Central Valley Regional Board adopted Resolution R5-2010-0022 which established a conditional waiver of waste discharge requirements for discharges related to timber harvest activities in the Central Valley Region. This Waiver will expire on March 31, 2015, unless terminated or renewed by the Regional Board. In 2004, the North Coast Regional Board adopted Order No. R1-2010-0029 which established a categorical waiver for nonpoint source discharges related to certain Federal land management activities on National Forest System lands in the North Coast Region. This Waiver will expire on June 10, 2015 unless renewed by the Regional Water Board.

Section 303 of the CWA requires states to adopt water quality standards which "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." To meet this mandate, the Regional Boards prepare and adopt water quality control plans (Basin Plans). Basin Plans consist of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. Since beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control (40 CFR 131).

2.4.2 Enforcement within the NRA

California Regional Water Quality Control Boards are statutorily charged with protecting water quality within the State. California Water Code requires Regional Boards to (among other things) enforce permits and other water quality standards.

2.5 California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for fire protection and stewardship of over 31 million acres of California's privately-owned wildlands. In addition, CAL FIRE provides varied emergency services in 36 of the State's 58 counties via contracts with local governments.

The "State Responsibility Area" (SRA) is the area in which CAL FIRE is responsible for wildland fire protection under California Public Resources Code. While the federal forest agencies are responsible for providing wildland fire protection for federal lands as designated by Congressional action and Federal policy ("Federal Responsibility Area" (FRA)). SRA lands and FRA lands are intermingled or adjacent in some areas, and wildland fires on these intermingled or adjacent lands present a threat to the lands of the other. To provide a level of wildland fire protection for the intermingled lands "equivalent" to similar lands protected directly by the State or the Federal Agencies, the intermingled and adjacent lands have been divided into practical "Direct Protection Areas" (DPAs) regardless of statutory responsibility. The Federal Agencies and the State have agreed upon the DPAs in which each assumes the responsibility of maintaining a wildland fire protection system. A portion of the CAL FIRE's DPA falls within the Shasta Unit of the NRA. They also investigate all structure fires which originate within the Congressional boundary of the National Forest lands.

The California Forest Practice Act was adopted in 1973, resulting in a comprehensive process in which CAL FIRE oversees enforcement of California's forest practice regulations. Under the Act, Timber Harvesting Plans (THPs) are submitted to CAL FIRE for commercial timber harvesting on all non-federal timberlands. CAL FIRE oversees THPs on private property within the Forest boundary.

2.6 California Highway Patrol

"State and local law enforcement agencies generally have the same authorities and responsibilities on National Forest System lands as they do elsewhere in their respective jurisdictions (16 U.S.C. 480)." (FSM 5360)

State traffic laws apply to the roads and trails located on National Forest System lands and are enforced by State and local authorities. Forest Service law enforcement personnel may also enforce State traffic laws through: (1) State peace officer authority granted them via State statute, (2) deputation or other special law enforcement commission of the State or county in which they are employed, (3) authority under 18 U.S.C. 13, Assimilated Crimes Act, and/or (4) 36 CFR 261, Subpart B, Closure Orders. (FSM 5330)

2.7 Department of Alcoholic Beverage Control

The mission of the Department of Alcoholic Beverage Control (ABC) is to administer the provisions of the Alcoholic Beverage Control Act. ABC has the exclusive power, in accordance with laws enacted, to license and regulate the manufacture, importation and sale of alcoholic beverages in the State. It also has the power for good cause to deny, suspend or revoke any specific alcoholic beverage license. (California Constitution, Article XX, Section 22). ABC Investigators are peace officers under Section 830.2 of the California Penal Code and are empowered to investigate and make arrests for violations of the Business and Professions Code that occur on or about licensed premises. Investigators are further empowered to enforce any penal provisions of the law any place in the State.

2.8 Resource Conservation Districts

Conservation Districts emerged during the 1930s as a way to prevent the soil erosion problems of the Dust Bowl from recurring. Formed as independent local liaisons between the federal government and landowners,

conservation districts have always worked closely with the USDA Natural Resources Conservation Service (formerly the Soil Conservation Service).

In California, Resource Conservation Districts (RCDs) are "special districts" organized under the state Public Resources Code, Division 9. Each district has a locally elected or appointed volunteer board of directors made up of landowners in that district. RCDs are empowered to conserve resources within their districts by implementing projects on public and private lands and to educate landowners and the public about resource conservation. RCDs address a wide variety of conservation issues such as water and air quality, wildlife habitat restoration, soil erosion control and conservation education.

RCDs have no regulatory power and must meet their goals for the natural resources in their community through voluntary approaches. As a local government entity, RCDs can work with any local, state or federal agency through cooperative agreements. California now has 103 Resource Conservation Districts, most of which are funded largely through grants. In the Shasta Lake and upper Sacramento River vicinity, districts include the Western Shasta County RCD and the Tehama County RCD. To the east are the Fall River and Pit River RCDs, and to the west and north are the Trinity County and Shasta Valley RCDs.

2.9 Mosquito Abatement Districts

Legislation authorizing the organization of mosquito abatement districts was passed in1915. This law was incorporated into the California Health and Safety Code and is still the legal authority under which mosquito control work is done today. This law also gave districts reliable funding through local property tax rates that could be adjusted, as necessary, to provide the adequate resources needed to protect the public's health. Shasta Mosquito and Vector Control District encompasses approximately 387 square miles including the incorporated cities of Anderson, Redding, and the City of Shasta Lake.

Districts are regulated by U.S. Environmental Protection Agency (EPA) standards and interact with the following:

- The Centers for Disease Control and Prevention (CDC)
- American Association of Pesticide Safety Educators
- The National Pesticide Telecommunications Network
- American Mosquito Control Association
- Vector Control Joint Powers Agency

3. County

3.1 Sheriff Department

"State and local law enforcement agencies generally have the same authorities and responsibilities on National Forest System lands as they do elsewhere in their respective jurisdictions (16 U.S.C. 480)." (FSM 5360) County Sheriffs take primary responsibility for enforcement of local and State laws for protecting persons and their property.

State traffic laws apply to the roads and trails located on National Forest System lands and are enforced by State and local authorities. Forest Service law enforcement personnel may also enforce State traffic laws.

County Sheriffs also enforce the boating regulations on Shasta, Trinity and Lewiston lakes. Pursuant to the authority granted by Section 660 of the Harbors and Navigation Code, Shasta County and Trinity County each have ordinances governing the use of boats or vessels on the waters within their jurisdiction. The ordinances pertain to time-of-day restrictions, speed zones, special use areas, and sanitation and pollution control.

The Shasta County Sheriff's Department, Boating Safety Unit, maintains lake patrol boats and deputies on Shasta Lake. Medical aid is provided by Shasta County fire departments and private ambulance companies (including both land and air ambulance services) based in the Redding area.

The Trinity County Sheriff's Department maintains a boat and deputies on Trinity Lake. Doctors and hospitals are available in Weaverville. Land-based ambulance service is available in Trinity Center, Lewiston, and Weaverville. Helicopter ambulance service is available from Redding.

3.2 Planning Department and Planning Commission

The State delegates most local land use and development decisions to cities and counties. State law requires that each incorporated city and county adopt "a comprehensive, long-term general plan for [its] physical development." This general plan is the foundation for community decisions that will affect the future location of housing, business, industry, roads, parks, and other land uses, protect the public from noise and other environmental hazards, and conserve natural resources. Each community's elected legislative body, upon recommendation of their planning commission, implements its general plan through its zoning, subdivision, and other ordinances.

There is no requirement that adjoining cities or counties have identical, or even similar, plans and ordinances. Each city and each county adopts its own general plan and development regulations. In turn, each is solely responsible for the planning decisions made within its jurisdiction.

The General Plan and zoning are not the same. A general plan is a set of long-term goals and policies that the community uses to guide development decisions. Although the plan establishes standards for the location and density of land uses, it does not directly regulate land use. Zoning, on the other hand, is regulatory. Under the zoning ordinance, development must comply with specific, enforceable standards such as minimum lot size, maximum building height, minimum building setback, and a list of allowable uses. Zoning is applied lot-by-lot, whereas the general plan has a community-wide perspective.

Zoning is adopted by ordinance and carries the weight of local law. Land may be put only to those uses allowed by the zoning designation assigned to it.

In most communities, the city council or board of supervisors appoints one or more groups to consider planning issues. Shasta and Trinity counties both have Planning Commissions which consider general plan and specific plan amendments, zone changes, major subdivisions, conditional use permits, and variances.

Both counties also have Planning Departments that provide support of the Planning Commission and other planning related boards and commissions and are responsible for the maintenance and implementation of the General Plan, Zoning Ordinance and Subdivision Ordinances. They also process development applications and permit requests for land divisions, use permits, General Plan amendments, zone changes, and variances.

3.2.1 Jurisdiction within the NRA

Included in the NRA Legislation was the provision that local zoning ordinances, conforming to standards contained in the regulations, would be established so that use/development would proceed in a manner consistent with the purposes of the NRA. Zoning standards were developed jointly by the Secretary of Agriculture and Secretary of Interior and published in the Code of Federal Regulations (originally in 36 CFR 251 and currently located in 36 CFR 292).

The NRA Legislation also specified that "following issuance of such regulations, each Secretary shall approve any zoning ordinance or any amendment to an approved zoning ordinance submitted to him that conforms to the standards contained in the regulations in effect at the time of adoption of the ordinance or amendment. Such approval shall remain effective for so long as such ordinance or amendment remains in effect as approved."

"Both Secretaries of Agriculture and Interior must be given written notice of any variance granted inside, or any exception made to, the application of a zoning ordinance or amendment thereof approved by him. Contemplated County approval of applied for variances or exceptions to approved ordinances should be held in abeyance pending: (1) Notice to the appropriate Secretary stating particulars and the County's recommendations, and (2) Receipt by the County of a written rejection or approval of the proposed variance or exception." (NPS and FS 1971)

The Shasta County Zoning Ordinance includes the "National Recreation Area, Shasta Unit (NRA-S) District." This district was created solely for use within the Shasta unit of the Whiskeytown-Shasta-Trinity National Recreation Area.

The Trinity County Zoning Ordinance includes the "Recreation Development (R-D-1) District" applicable to the Trinity Unit of the Whiskeytown-Shasta-Trinity National Recreation Area.

3.3 Public Health Department

Public Health Officers inspect commercial facilities and enforce the public health laws, rules and regulations. The State Health Code is customarily enforced by county or state officials in conjunction with related county or state ordinances.

County permit and inspection programs involve sewage disposal, individual wells, solid waste, hazardous material storage and disclosure, underground tanks, food service facilities, public drinking water systems, swimming pools, housing and institutions, and medical waste management.

3.4 Road Department

The NRA contains a number of county roads. Each of these routes has an associated right-of-way, either conveyed by easement or permit.

The County (Shasta or Trinity) Road Departments are responsible for improvement and maintenance of the county roads and bridges within the NRA.

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NATIONAL RECREATION AREA
Management Guide

Chapter 2
RESOURCE AREAS

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Chapter 2 — RESOURCE AREAS

Forest Service Fire Patrol.

FIRE AND FUELS

1. Historical Overview

"Natural and human-caused fires have been a source of disturbance to vegetation for thousands of years, influencing the development of plant characteristics and vegetative patterns on the landscape. Fires started naturally by lightning strikes and spread by hot dry winds could quickly burn large tracts of land. Naturally caused fires occurred frequently due to annual weather patterns and seasonal climatic extremes and would have kept the accumulation of woody debris and brush to a minimum. Frequent, low-intensity fires burn out quickly, preserving large trees, and maintaining diverse, multi-story forests. Mixed conifer forests are typical of short-interval, low-intensity surface fires." (FS 2005)

"Native people of the Klamath Mountains used fire in many ways: (1) to promote production of plants for food (e.g., acorns, berries, roots) and fiber (e.g., basket materials); (2) for ceremonial purposes; and (3) to improve hunting conditions. Though native ignitions appear to have been widespread, we do not know the extent of their influence on fire regimes and vegetation at broad scales." (Skinner et al. 2006)

"Prior to the 1900s, coordinated, large-scale fire suppression efforts did not generally exist. Fires that started by lightning strikes or by human activities were often allowed to burn unabated until they were put out naturally or until they burned themselves out. Following the establishment of both the Shasta and Trinity National Forests in the early 1900s, fire was considered detrimental to growing trees, and fire suppression was considered important for protecting the timber resources on forestlands. However, in the early years of

the Forest Service, rangers were spread thin, fire suppression conflicted with local interests, and many fires were allowed to burn unchecked. It wasn't until after World War I that more personnel were made available to fight fires. Following the 1920s, fire suppression forces grew, and as fire prevention policies and fire suppression methods improved, attempts were made to suppress all fires." (FS 2005)

Each year the Forest Supervisor would prepare an Annual Fire Report, and three of these one-page summaries, for the years 1913, 1914, and 1915 were found in the NRA files. Selected information is given in table 2-1. The vast majority of these fires were less than 10 acres in size. Lightning caused 38 percent of the fires over this three-year period, followed by campers who caused 24 percent and sawmills which caused 16 percent. Another 4 percent were railroad-caused.

Table 2-1
Annual Fire Report Data 1913-1915[a]

Year	Number of Fires	Total Acres	Timber (MBF)	Destroyed Value	Suppression Costs
1913	129	77	87	$96.00	$1555.82
1914	81	396	1034	$2563.00	$8780.00
1915	152	3876	781	$987.00	$9366.36

Notes:

[a] Sundahl 1995

The trail system along the major ridges was patrolled regularly by horseback and high points served as fire "lookouts." The permanent lookouts probably began around 1916 as foundations at the site of the Brock Mountain Lookout bear this date. Hogback is shown on a 1924 Shasta National Forest map. The Hirz Mountain Lookout, still standing, features a K-brace galvanized steel tower that stands 20 feet above ground level. It is a unique tower and live-in cab combination, the only one of its type in California. This structure has been determined to be a significant archaeological site, eligible for the National Register of Historic Places. Sugarloaf Mountain Lookout, still standing, has a tower of the battered, enclosed timber type, standing eight feet high. This structure has been determined not eligible because of extensive alterations that have changed its original character.

A 1944 study (BOR 1944) of the Shasta Lake area noted that the "Sacramento River watershed had always been an area of extreme fire hazard and risk, due to inflammable vegetative types and the long dry summer season." The study went on to mention that "during the past ten years there have been an average of thirty-five fires per year in the immediate Shasta Dam drainage. From 1929 to 1936 more than 3% of the lands were burned over compared to a California average of one-half of one percent. The majority of these fires have their inception along the main routes of travel….During the 1943 fire season, there were ten fires in and around the reservoir and more than 4,600 acres were burned over."

The Report on the Development of a Land Management Plan for the Shasta Reservoir Lands (Burrows 1947) stated, "The extremely high fire danger rating prevalent throughout the entire area, in conjunction with the problem of accessibility, resulted in the need for special consideration of the fire suppression problem. Recommendations have been made designed to augment the existing State-Federal cooperative protection agreement by the establishment of a central suppression station within the area and procurement of waterborne equipment to facilitate suppression activities within the areas of poor accessibility. The annual maintenance costs of such a station and equipment represent a sound investment when considered as insurance against possible erosion control and revegetation expenditures on a large scale necessitated by a future fire denudation."

The NRA experiences approximately 25 to 30 fires annually. In the past 15 years the NRA has experienced 4 major fires:

- In 1999 the High Complex burned 48,000 acres as the result of a severe lightning storm. The fires involved primarily federal lands, but also included Federal and State Designated Protection Area's (DPA).
- Also in 1999 the Jones fire burned 26,000 acres as the result of a human caused ignition. While the fire burned 3,600 acres of federal land and 20,000 acres of private lands, the entire fire was within the State DPA. One fire fighter fatality occurred, and approximately 954 structures were lost.
- In 2004 the Bear fire burned 10,000 acres within the State DPA which included 3,800 acres of federal land and 6,200 acres of private land. One hundred and ten structures were lost. The fire was human caused.
- In 2008 the Motion fire burned 28,336 acres resulting from a large widespread lightning storm that hit the entire north state. The fire occurred within the State DPA and burned approximately 7,000 acres of NFS lands.
- In 2012 the Bagley Complex burned 46,011 acres following a widespread lightning event. Two separate fires, the Bagley and the Fork, quickly grew together in remote terrain resulting in the loss of valuable private and public timber reserves. (The Bagley Complex was located outside the NRA boundary but within the NRA Management Unit)

The majority of fires that occur within the NRA are size class A and B fires that total less than one acre each. The highest percentages of these fires are human caused, accounting for approximately 80 percent of the total fire starts in the NRA. These fires usually occur in the wildland urban interface and are associated with the high use recreation areas, vehicle traffic on Interstate 5, Highway 3 and adjoining forest roads. Roadside fires, abandoned campfires and fireworks are common fire causes.

> *"During the period of 1929 to 1936, inclusive, all of the 275 fires with the exception of five or six were man caused. These fires were concentrated near the highways and relatively accessible areas." (Brandeberry and Barnum 1938)*

2. Setting

2.1 Fire and Fuels

Both the Shasta and Trinity units fall within the Klamath Mountains Bioregion which makes up a major portion of northwestern California continuing into southwestern Oregon to near Roseburg. Lightning is common in the Klamath Mountains. "Lightning-caused fires have accounted for most area burned in recent decades (e.g., 1977, 1987, 1999, and 2002). Lightning may ignite hundreds of fires in a 24- hour period. As a result of the large number of simultaneous fires combined with poor access for fire-suppression forces, steep topography, and extensive strong canyon inversions (see above), widespread lightning events have contributed to situations where fire burns for weeks to months and cover very large areas" (Skinner et al., 2006).

"The mixed conifer series is the most common series found throughout the province that includes stands of ponderosa pine at the drier ends of the mixed conifer zones. Mixed conifer and ponderosa pine series as well are both characteristic of short interval fire adapted fire regimes. Pine sites may have shorter intervals of disturbance (5-15 years) due to drier site conditions and extended burn seasons where higher elevations and transitions zones to mixed conifer stands may experience longer intervals (5-30 years) due to climatic variables" (FS 2005).

Shasta Unit

The immediate area surrounding Shasta Lake that makes up the Shasta Unit can be characterized by a very complex and diverse intermixing of vegetation held in a complicated topography under a Mediterranean climate. This heterogeneity leads to a fire environment that yields a diversity of fire regimes and associated fire effects.

The vegetation varies based on slope and elevation. Shrub lands are common on warm or rocky, dry sites and on low silica soil sites such as those derived from limestone sources (Skinner et al. 2006). Species found in these shrub lands include white leaf and green leaf manzanita, Brewers oak, chemise and deer brush. Sites with better soils, moisture or cooler climates support tree species such as California black oak, knob cone pine, ponderosa pine, and Douglas fir. Lower elevations on the south shore of Shasta Lake include Oak Woodlands with the primary understory being grasses.

The topography is influenced by Shasta Lake and its many tributaries. The major arms of the lake flow from directions between north and east as well as major openings from the southeast and southwest in Jones Valley and at Shasta Dam respectively. These major drainages along with their associated side drainages, relatively low ridge top elevations provide no consistent directional trend. The area is also defined by short, steep slopes with measurements commonly found above 40 percent. This variation in topography is a strong determining factor in the connectivity, structure and rates of fuel accumulation across the landscape (Skinner et al. 2006).

The climatic patterns that influence the area around Shasta Lake are Mediterranean by definition with cool, wet winters and lengthy dry, warm summers. This weather pattern leads to a fire season that typically begins in early May and can extend into November under a summer drought scenario. Typical rainfall totals in January average 11.8 inches and bottom out at 0.3 in July with an annual average of 63.1 inches. Temperatures range from a high of 54 degrees in January to 96 degrees in August.

Post-Frontal winds, locally known as "North winds" occur when high pressure builds following the passage of a cold front, causing strong winds from the north or northeast. These north wind events often cause erratic fire behavior and present control problems to fire managers. These winds are enhanced by the varying terrain around the lake and can reach speeds up to 50 mph. Some of the largest fire growth events have occurred on days with a north wind event (e.g., Bear Fire, Jones Fire).

Trinity Unit

The Trinity River Management Unit (TRMU) is well known for its steep and rugged terrain. Mountains are deeply dissected by steep drainages and narrow river canyons. Elevations range from 1,000 feet at Burnt Ranch to over 9,000 feet at Thompson Peak in the Trinity Alps Wilderness.

Climatic patterns influencing the TRMU are Mediterranean which is characterized by warm dry summers and cold wet winters. Precipitation occurs as rainfall at low elevations and snow at high elevations above 4000 feet. Average maximum summer time temperatures are in the mid 90 degree Fahrenheit range and average minimum winter temperatures are in the 30 degree Fahrenheit range. The majority of precipitation occurs between October and May and it is common for snow to remain in the higher elevations of the Trinity Alps Wilderness through June. Average total precipitation is approximately 35 inches at Weaverville.

Currently, vegetative composition, structure and patterns across the landscape are less diverse resulting from a relatively wet climate combined with fire exclusion in the last century (FS 1999). Fire history studies show fire occurrence declined drastically with the onset of fire suppression resulting in changed vegetation patterns across the landscape (Skinner et al. 2006). Vegetation has shifted from fire adapted, shade intolerant conifers and hardwoods to more shade tolerant, non-fire adapted conifers. Stand structure has also changed with denser, shade tolerant species encroaching on south and west aspects.

Historically, fires created openings of variable sizes within a forest that was more open than today. The findings from one study show the relationship between historical fire return intervals and forest stand development. It suggests frequent low- and moderate-intensity fires, which occurred during the pre-suppression era, resulted in complex mosaics of age, size and structure (FS 1999). Forest openings in the Klamath Mountains today are smaller and less frequent resulting in a more homogenous pattern (Skinner et

al. 2006). The lack of landscape fire has increased surface fuels and small diameter "ladder fuels", which ultimately contribute to extreme fire behavior such as crowning and spotting.

Median fire return (MFR) intervals for Klamath mixed conifer can vary by elevation, aspect, vegetation and climate. In one study, in the lower to mid-montane zone, fire scar records for Douglas-fir, ponderosa pine and sugar pine scattered within live oak stands show a historical MFR interval of 6-22 years (Skinner et al. 2006). It was also apparent from aerial photos taken in 1944 that large fires were common. Fire scars in this area were still visible and vegetative patterns point to the occurrence of large disturbances (FS 1999). Large fires were common prior to Europeans, mostly due to drought, severe wind, low humidity and high temperatures (Reinhardt 2008).

Lightning is the major cause of fire ignition on the TRMU. According to the unit's fire history (1976 to 2006), approximately 63% of all fire starts are from lightning. Lightning storms commonly occur from May to September and often produce precipitation. During dry lightning events, as many as 50 fires can result with one lightning storm, and each fire can burn separately or burn together into one large complex. Fire complexes worth noting occurred in 1977, 1987, 1988, 2006, and 2008 when thunderstorms with little to no rain caused multiple fires, burned thousands of acres and lasted for several weeks. Under these conditions, suppression resources can become quickly depleted and fire managers may be forced to prioritize suppression responses.

2.2 Prevention/Community Protection

Both the Shasta and Trinity units have developed unit prevention plans in accordance with FMP direction. These plans detail the specific duties and responsibilities of the prevention personnel assigned to each of the units.

Management, Fuels, and Prevention personnel from each of the units are actively involved in local and county fire safe councils.

Local and county fire safe councils are encouraged to develop Community Wildfire Protection Plans (CWPP). The local district representatives collaborate with our local and state cooperators to assist in developing these plans.

2.2.1 Cooperators

The forest level management maintains agreements with CALFIRE, Shasta County Fire, private cooperators such as Sierra Pacific Industries and Roseburg, as well as local government agencies such as Shasta Lake, Mountain Gate and Shasta College Fire Protection Districts.

Each unit maintains the annual operating plans tiered to these agreements with the local agencies. For the Shasta unit this includes; Shasta Lake Fire Protection District, Mountain Gate Fire Protection District and the Shasta College Fire Protection District. Additionally the unit maintains an annual operating plan with CALFIRE on the use of the joint facility at the Big Bend Station. For the Trinity unit this includes: Coffee Creek, Weaverville, Lewiston and Trinity Center Fire Departments.

2.3 Suppression

Shasta Unit

The Shasta unit is located within the boundary of the Shasta Lake Ranger District (SLRD). The District Ranger of the NRA is the Line Officer having management oversight for all suppression actions occurring within the boundaries of the Shasta Lake Ranger District including the Shasta NRA. This plan deals primarily with the needs within the NRA.

Fire suppression resources assigned to the SLRD are responsible for suppression activities on all NFS lands within the Direct Protection Area (DPA) in the NRA.

The STNF has assigned battalion designators to geographic areas corresponding to each of the original 7 Ranger Districts. The Shasta Lake District including those lands within the Shasta NRA are designated as Battalion 5.

2.3.1 Response Areas

The Shasta unit has been divided into response areas for the purpose of dispatching an appropriate level of resources based on the values at risk and prevalent burning conditions. These response areas have the assigned designation of V-1 thorough V-9. A copy of the current response areas can be found on the map board in the battalion chief's office.

2.3.2 Direct Protection Areas

On the Shasta unit, under written agreement, the FS provides wildland fire suppression on all lands regardless of ownership north of Shasta Lake and the Pit River. A copy of the Direct Protection Area (DPA) boundary map is available in the Redding ECC and on the map board in the Shasta Lake battalion chief's office.

CALFIRE conversely provides direct protection for wildland fire suppression on federally owned lands south and west of Shasta Lake and the Pit River.

CALFIRE and and/or county and local fire protection agencies maintain jurisdiction on all non-wildland incidents that occur on state and private lands within both units of the NRA.

All lands in the Trinity Unit are under Federal DPA.

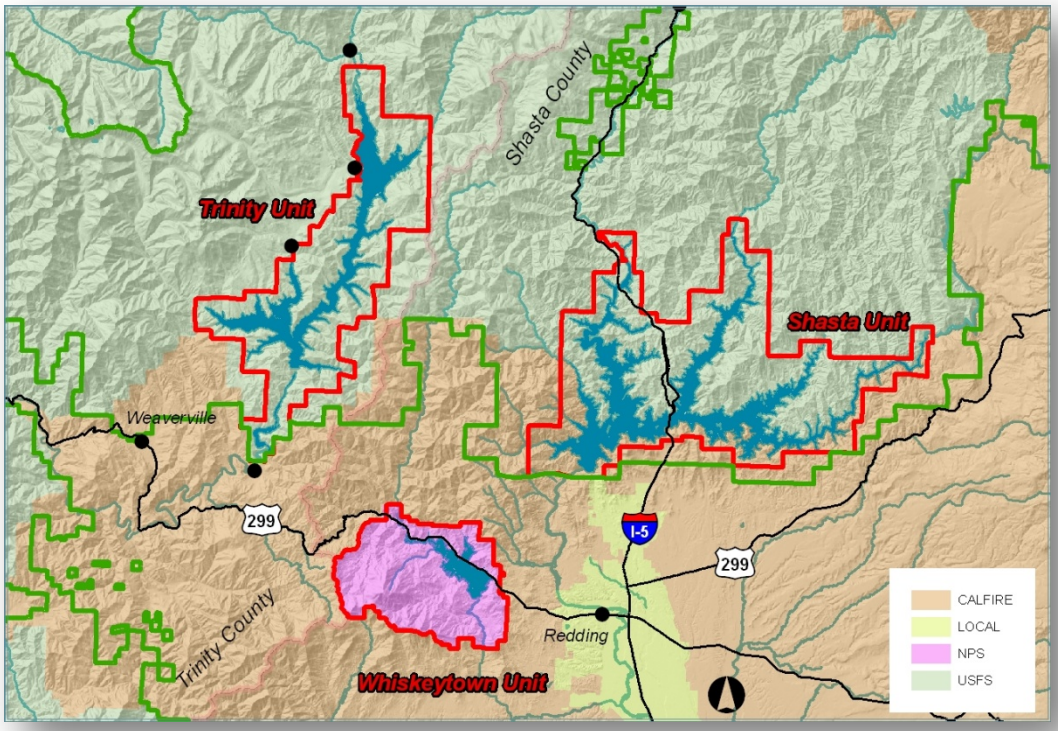


Figure 2-1. Direct Protection Areas.

2.3.3 Staffing

Management oversight of the Shasta Lake fire program including: suppression, prevention, detection and fuels is provided by a single Division Chief (DFMO). A suppression Battalion Chief (ADFMO) provides field response, coordination, and direct supervision of the suppression, prevention and detection resources. The fuels shop is supervised by a District Fuels Officer (DFO). Fuels personnel with applicable ratings are used to augment response and coordination roles in suppression.

The Shasta unit's suppression program is comprised of three single engine modules and an Interagency Hotshot Crew. Standard staffing is consistent with the Forest Fire Management Plan's Specific Action and Staffing Guide. Engines are traditionally available 7-day effective with 5-person staffing from mid-May through the end of the funded fire season.

The detection program consists of a single staffed lookout on Sugarloaf Mountain west of I-5 in the Lakehead area. The lookout is staffed with seasonal employees, a lookout and relief lookout, traditionally from May 15th, through the end of the funded fire season. Two other lookouts are available to be staffed on an as-needed basis.

The prevention program consists of four PFT District Fire Prevention Technicians. Each FPT is assigned a wet patrol unit.

The fuels program consists of a District Fuels Officer and an Assistant Fuels Officer; both hold PFT appointments.

2.3.4 Facilities

The administrative site for battalion 5 is the Shasta Lake District Office (DO), located in Mountain Gate, 3 miles north of Redding off Interstate 5 (I-5).

Co-located at the DO are the office and engine bays for Engine 52 consisting of a FS Model 62 Type 3 Engine.

The Lakeshore Station (Antlers Guard Station) is located approximately 15 miles north of Redding in the community of Lakehead. The compound, which dates back into the 1950's, houses a FS Model 62 Type 3 Engine (Engine 51) as well a 20 person IHC hotshot crew (Shasta Lake Hotshots). The compound has a small office, fire cache, storage shed. The facility has limited sleeping quarters and is not sufficient as barracks. A separate unimproved storage facility leased from the Southern Pacific Railroad provided temporary storage space.

A new site in the Lakehead area has been identified for a replacement facility. A site plan has been developed along with a multi-phase project. Opportunities for cooperator involvement in a multi-agency facility have been proposed. The project is on hold pending funding.

The Big Bend Station is located approximately 35 miles east northeast of Redding, in the community of Big Bend. Designed in cooperation with CALFIRE and built in the mid 1990's on federally owned land, the facility seasonally houses a FS Model 62 Type 3 Engine module (Engine 53) as well as a CDF Engine module. Separate office and residential facilities for each agency are co-located on the same compound. A local operations plan governs the facility roles and responsibilities.

Sugarloaf Lookout is located atop Sugarloaf Mountain just west of the community of Lakehead. The lookout is staffed seasonally from May through the end of the funded fire season. The Hirz Mountain Lookout is located on the McCloud arm of Shasta Lake off Gilman Road. It was decommissioned and has been refurbished for use as part of the Recreation rental program. The lookout may be staffed on an as needed basis if the conditions warrant.

Hogback Lookout is located in the Reynolds Basin area west of Big Bend on the Pit arm of Shasta Lake. While not seasonally staffed, the lookout can be made available on an as needed basis. Options for seasonal staffing Hogback under a cooperative effort are ongoing.

Trinity Unit

The Trinity unit is located within the boundary of the old Weaverville Ranger District and within the Trinity River Management Unit. The District Ranger of the NRA Management Unit has management oversight for suppression and fuels management actions occurring within the boundaries of the Trinity NRA. Fire suppression resources assigned to the TRMU are responsible for initial attack suppression actions in the Trinity NRA.

Those lands within the Weaverville Ranger District of the Trinity River Management Unit including the Trinity NRA are designated as Battalion 4.

2.3.5 Response Areas

Battalion 4 has been divided into response areas for the purpose of dispatching an appropriate level of resources based on the values at risk and prevalent burning conditions. A copy of the current response areas are maintained by Redding ECC.

2.3.6 Staffing

Management oversight of the Trinity River Management Unit in Battalion 4 is provided by a single Division Chief (DFMO). A suppression Battalion Chief (ADFMO) provides field response, coordination, and direct supervision of the suppression, prevention and detection resources. The fuels shop is supervised by a District Fuels Officer (DFO). Fuels personnel with applicable ratings are used to augment response and coordination roles in suppression.

Battalion 4's suppression program is comprised of 1 engine / water tender module, 2 single engine modules and a Helishot Crew. Standard staffing is consistent with the forest Fire Management Plan's Specific Action and Staffing Guide. Engines are traditionally available 7 day effective with 5-person staffing from mid-May through the end of the traditional fire season.

The prevention program consists of a single PFT District Fire Prevention Technician. The FPT is assigned a wet patrol unit.

The fuels program consists of a District Fuels Officer and an Assistant Fuels Officer, both hold PFT appointments.

2.3.7 Facilities

The administrative site for battalion 4 is the Weaverville District Office (DO), located in Weaverville, 45 miles west of Redding off Highway 299.

Co-located at the DO are the office and engine bays for Engine 43 consisting of a FS Model 62 Type 3 Engine.

The Mule Creek Guard Station is located off of Highway 3 on the Stuarts Fork of Trinity Lake. The compound houses a FS Model 62 Type 3 Engine module (Engine 41) and Water Tender (46).

The Coffee Creek Guard Station is located just north of Trinity Lake in the community of Coffee Creek. The compound houses a FS Model 62 Type 3 engine module (Engine 42).

Trinity Helibase is located just outside the community of Lewiston. Adjacent to CAL FIRE's Trinity River Conservation Camp, the helibase houses Helicopter 506 and the H-506 Fly Crew.

2.4 Fuels Management

The fuels management program on both units operates differently than other units on the Shasta-Trinity National Forest due to the restricted treatment options allowed within congressionally designated National Recreation Areas (NRA). Further complications include the proximity to the population centers around Redding, Trinity Center, and Lewiston, the interspersed private land within the management areas and the complex fire environment found around the lakes including fuel loading that is out of historical contexts and weather that leads to an extended fire season.

These issues coupled with the fire dependent ecosystems, the fire history associated with the area and the chance for large, catastrophic fire makes effective fuels management a high priority for the agency and its cooperators.

Although there is discussion on the need for restoring fire as an ecological process, or at least creating stand structures that would help reduce the general intensities of fires to a more historical level, there are many competing socio-political concerns and objectives that make management action problematic. Fuels management actions shall be needed into the future despite these controversies due to the current and increasing values at risk.

2.4.1 Air Quality

The Northern half of the Central Valley is located in the Sacramento Valley Air Basin (SVAB). In the SVAB, air pollutants can become concentrated due to inversion layers forming in the lower elevations, subsequently lowering air quality. Much of the SVAB is designated as nonattainment with respect to the national and State ozone and particulate matter (PM) standards.

Smoke management is considered in the development of burn plans and coordinated with local air quality authorities. The Shasta Lake Unit poses significant concerns for the air quality of Redding and surrounding communities. Smoke impacts resulting from north winds can create potential health and safety concerns. Within the Shasta unit, all burning is in compliance with current requirements of the Shasta County Air Quality Management District (AQMD) incorporating the Northeast Air Alliance Smoke Management Plan in all prescribed burn projects above ten acres. Within the Trinity unit, all burning is in compliance with the requirements of the North Coast Unified Air Quality Management District.

Both units work in partnership with the respective local air quality authorities, the California Air Resources Board, and the Redding Weather Service to develop burning prescriptions that adhere to current air quality rules and regulations. The units participate in the Burn Conference call prior to burning with daily representation during burns. Public notification including local neighborhood contacts and information postings are conducted to keep the public informed.

2.4.2 Criteria for Selecting Fuels Projects

Fuels created by project activity are treated to reduce fire hazard and to protect scenic quality. Natural fuels are managed to improve forest health, provide wildlife habitat, enhance scenic quality, and reduce the risk of fire.

Hazardous fuels management issues are primarily focused in wildland-urban interface (WUI) areas, it is recommended that more than 75% of the fuels reduction efforts take place in relation to these areas. Consideration is given to implementing one Community at Risk (CAR) fuels reduction project each year. The non-WUI areas are focused on creating and maintaining a vegetative mosaic that reduces the potential for resource damaging fire effects, improving forest health, maintaining and improving habitat for associated animal and plant species.

Resource objectives for projects within the NRA are diverse, with the primary objective being to reduce the risk from stand replacing wildfire with additional wildlife; watershed and view shed improvement advantages.

Due to the varied objectives and interests within the NRA, the planning process is a collaborative approach utilizing both internal and external partners treating hazardous fuels in both WUI and non-WUI areas. A strong commitment exists to create relationships with communities within and around the NRA in order to emphasis community protection and ecosystem maintenance.

Planning efforts are aligned with the Healthy Forest Restoration Act which implements the National Fire Plan activities. This includes utilizing planning tools created by the Healthy Forest Initiative.

Fuels created by other management actions should be evaluated for further fuels treatment. For fuels management projects, all treatment options should be evaluated during the planning process. Fuel treatment types should be considered in the context of the environment for which they will be located. Included in this decision should be location in reference to other past and future treatments, effects on wildlife, watersheds, plant life as well as the impacts on communities and infrastructure.

Fuel breaks or Modified Fuel Profile Zones (MFPZ) are considered in areas where values at risk are very high and other options are limited due to proximity to those risks. These treatments are made in conjunction with other treatments to allow for a higher chance of success during a suppression event. Maintenance is a consideration in the planning of all MFPZs.

Organizations such as Fire Safe Councils, Resource Advisory Councils, Public and Private organizations interested in land management (e.g., California Deer Association, Rocky Mountain Elk Foundation) as well as local and state government are included in an interdisciplinary/inter-agency approach to land management that crosses ownership boundaries. This is accomplished in coordination with the Fire Prevention Officers helping to create presentations and assist in communicating to selected audiences.

Priority for treatments are determined at the unit level and are based on a scale where projects are evaluated by the relationship to WUI areas, CAR's, threatened and endangered species, sensitive watersheds and cost. Based on the analysis the Line Officer decides which option best responds to the factors evaluated.

Fire boat on Shasta Lake.

3. Management Guidance

3.1 General Suppression and Rehabilitation Guidelines for Fires on the NRA

Safety of our employees and the public is paramount. Effective risk management will be utilized to ensure that an environment free from unreasonable risk is maintained.

Initial suppression action will be taken to provide for public and firefighter safety, minimize suppression cost and damages, and to prevent the escape of any wildland fire.

The forest is broken into areas of similar characteristics and management objectives identified as Fire Management Units (FMUs). These include Wilderness, Late Successional Reserves, Interface and Private Lands and General Forest. Each FMU has been assigned an appropriate suppression response (Table 2-2).

All wildland fires will receive an appropriate suppression response based upon Forest Plan direction.

Table 2-2
Appropriate Suppression Response

Fire Management Unit	Appropriate Suppression Response	Manage Fire for Resource Benefit
Wilderness	Full range, use MIST	Allowed
Late Successional Reserve	Full range, use MIST when appropriate	Allowed
Interface and Private Lands	Aggressive control only	Not allowed
General Forest	Full range	Allowed

The vast majority of the lands within the NRA are found within the Interface and Private Lands FMU. The FMP lists the appropriate suppression response for this FMU as restricted to aggressive control strategies regardless of ignition source, in order to protect the public and prevent fire spread on private property.

Those lands within the NRA that fall within other FMU's shall receive an appropriate suppression response based on the Forest Plan and FMP guidance.

All wildland fires on or threatening private lands protected under agreement with the State will have aggressive control as the appropriate management response.

Each Battalion has established a District Mobilization Plan that is reviewed and updated on an annual basis.

On federal land within the NRA utilize, to the extent possible, tactics that favor the use of low impact techniques including use of natural barriers, topographic features, and watercourses. Mechanized equipment (dozer) use is discouraged in areas where the viewshed from the Lakes would be negatively impacted. Dozer lines with undulating, irregular edges, wider in some places with islands of vegetation look more natural than straight lines. Use of any mechanized equipment will be in consultation with a resource advisor.

The County Sheriffs hold statutory authority to provide for evacuations within their respective counties. Agency personnel shall initiate evacuations to the extent necessary to mitigate an immediate threat.

A Forest Service resource advisor will be assigned to all wildland fires occurring in the NRA, regardless of land ownership. During initial attack the unit Duty Officer may fill this role.

Appropriate action will be taken to rehabilitate and/or restore the fire site from the effects of suppression actions. This responsibility falls to the Incident Commander. For extended attack incidents a burned area emergency rehabilitation plan (BAER) should be considered. Visually prominent dozer lines may be rehabilitated by reducing the color contrast with hand piled brush, mulch or a dark colored erosion mat, reseeded or re-dozed with the above guidelines.)

3.2 Resource Specific Guidance

A Forest Service resource advisor will be assigned to all wildland fires occurring in the NRA, regardless of land ownership, and can provide assistance with obtaining detailed resource specific information.

3.2.1 Cultural Sites and Special-Status Species

Identify and protect known cultural sites from resource damage during fire suppression activity to the extent possible.

Eagle nesting sites potentially threatened by fire or smoke encroachment will be identified by the district wildlife biologist or resource advisor.

Those areas surrounding identified eagle nests are identified in the Forest Plan as having management objectives consistent with those of Late Successional Reserves (LSR). The Wildlife Biologist for the NRA produces a yearly map that identifies known active eagle nesting sites. Aggressive control to limit intensity and prevent extension to the overstory is recommended. MIST may be utilized.

3.2.2 Devils Rock-Hosselkus Research Natural Area

The Shasta Unit contains the southern portion of the Devils Rock-Hosselkus Research Natural Area (DHRNA). This RNA is located in the east side of the Squaw Creek Drainage north of Brock Mountain. The standards and guidelines provided for RNA's in the Forest Plan is:

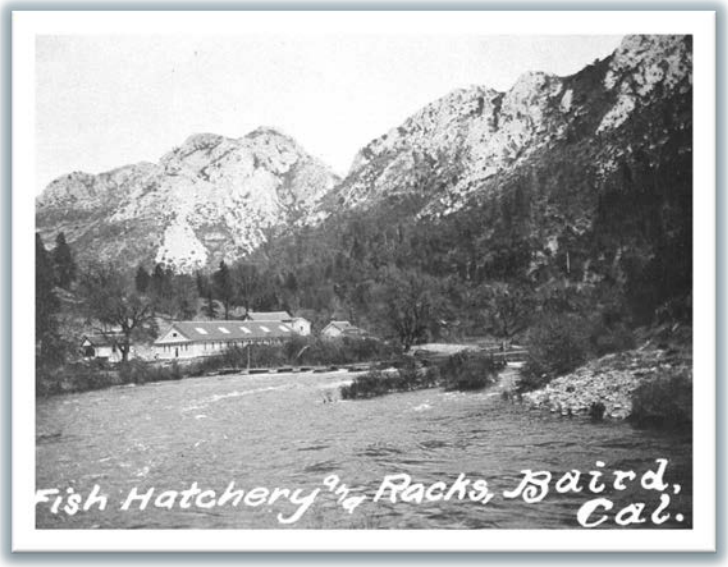
- "No natural fuels treatment or construction of shaded fuel breaks will be made with RNA's without appropriate planning and approval by the Research Natural Area Committee (RNAC)."
- "Wildfire suppression tactics will favor low impact techniques and minimize mechanical disturbance."
- Any fires within the DHRNA should be assigned a resource advisor. The black oak forest type as represented in the RNA is a fire-dependant system.

3.2.3 Aquatic Environments and Retardant

Minimize impacts to wetlands/aquatic environments from the use of fire fighting chemicals. All retardant use will be documented in the fire record identifying location of drop(s), amount, and kind. If no retardant is delivered within 300 feet of any body of water documentation within the fire record is appropriate. If any retardant is delivered within 300 feet of any body of water, follow the guidance in the FMP (Appendices O and V). Guidance includes the Forest Service's *Implementation Guide for Aerial Application of Fire Retardant* (Available at: http://www.fs.fed.us/fire/retardant/).

3.3 Fire Clearances

In a letter, dated December 17, 2009, to all Region 5 Forest Supervisors, the Regional Forester provided direction for a consistent approach to the management of defensible space on National Forest System (NFS) lands in California. The definition of defensible space is found in parts (a)(1) and (a)(2) of California Code – Section 4291. It is important to note that State Law does not give private land owners either authorization or obligation to remove vegetation on NFS lands without consent of the Forest Service, nor is the Forest Service obligated to provide for such at public expense.



U.S. Fish Commission's Baird Station on the McCloud River.

FISHERIES AND AQUATICS

1. Historical Overview

Shasta Unit

Prior to the construction of Shasta Dam, the Sacramento, McCloud, and Pit Rivers were major spawning streams for anadromous fish including steelhead, coho salmon, Chinook salmon, American shad, and white sturgeon. These river reaches were also inhabited by resident populations of Sacramento pike minnow, Sacramento sucker, hardhead minnow and blackfish. These anadromous and resident populations would have served as an important food source to the local Native Americans and later to the early European settlers. According to native Wintu informants the average size of salmon in the McCloud and Sacramento was "approximately twenty pounds", with occasional fish weighing as much as 65 and 70 pounds (Du Bois 1935). The McCloud River was once labeled by the California Fish Commission as "the best salmon-breeding river in the world" (CFC 1890). The first Federal fresh water fish hatchery, Baird Hatchery, was located on the McCloud River just west of Grey Rocks.

> The year 1872 was a significant one in the history of the Sacramento salmon. In that year the newly established U.S. Fish Commission received an appropriation of $15,000 to be spent in the "propagation of food fishes." At a meeting held by Commissioner Spencer Fullerton Baird and attended by various New England fish commissioners and members of the American Fish Culturists Association, Livingstone Stone, a retired minister who had recently taken up trout culture, suggested the importation of California salmon to replace the vanishing salmon of the New England streams. It seemed a good idea at the time, for it was not known then that the Pacific and Atlantic salmon are entirely different fish with radically different life cycles. (Lufkin 1991)

In July 1872, Stone left the east coast and headed for California. Upon his arrival in San Francisco, he contacted the State Fish and Game Commissioners but they could provide little current information

regarding the location of salmon spawning areas. Further inquiry turned up an employee of the railroad who reported seeing Indians spearing salmon in the McCloud River just above the mouth of the Pit River.

Stone "traveled north to Red Bluff, the railroad terminus, then by stage to the Pitt River ferry. From there he walked up the river bank to the McCloud; two miles up that stream to the old Indian campsite and fishing grounds afterwards called Baird. He and his two assistants, Myron Green and Willard T. Perrin, at once began building a house, a tent hatchery, tanks and a flume....By the middle of September they began collecting eggs, although the best of the run was over" (Raymond 1991). In October, they shipped 30,000 eggs to the east, but only 7,000 survived the trip.

The next year the crew gathered two million salmon eggs which were shipped east by railroad express (Raymond 1991). During the period from 1873-1883, the egg take ranged from about 1 million to over 12 million (Yoshiyama et al. 1997). As the hatchery became famous, it attracted visitors, journalists and, in 1874, John Muir, who was walking from Redding to Mount Shasta (Raymond 1991).

"Turning from salmon operations, Livingston Stone soon located another hatchery a few miles upstream from the Baird station near the mouth of Greens Creek. Here rainbow trout were spawned and their eggs shipped to the East and suitable locations in many foreign lands. Introduction of McCloud River trout met with success in many places. In addition to successful introductions over a wide area in the United States, rainbow trout were transplanted to the waters of all continents, in many of which they did as well or better than in their native range" (Schley1971).

Success was somewhat short-lived, "as the railroad was being built along the Sacramento River the water was so fouled that the salmon run in the McCloud was nearly stopped" (Cranfield 1984). Erosion of rocks and sediments into the river blocked and muddied the water, and the railroad workers caught fish by blasting the holes (Clark 1929). In 1883, the first year of construction, only one million eggs were taken. Consequently operations were halted at Baird from 1884 through 1887 (Cranfield 1984). The hatchery reopened in 1888 and provided eggs to the Sisson Hatchery (now the Mount Shasta Hatchery) on Spring Creek in Siskiyou County.

After the railroad was finished the salmon runs grew again to normal levels but by the early 1900's Stone's records showed a continuing decline in the salmon population. From 1911 to 1919 the take of eggs at Baird was low. During the last active season at Baird, that of 1935, only 5,200 eggs were taken (probably from a single female) (Hedgpeth 1941).

The Pacific salmon never did adapt to eastern waters. Over its years of operation, more than 50 million eyed salmon eggs were shipped from the Baird Hatchery to all parts of the world without any real evidence of success except for the establishment of runs in several rivers in New Zealand.

The construction of Shasta Dam eliminated 110 miles of spawning habitat for salmon, steelhead and other anadromous fish. The completion of the dam converted a river ecosystem to a lake environment. Baird Hatchery was flooded by Shasta Dam in 1944. Coleman National Fish Hatchery was established to mitigate the loss of salmon and steelhead production as a result of the dam.

Trinity Unit

Prior to the construction of Trinity Dam, the upper Trinity River was inhabited by steelhead, Chinook salmon, and coho salmon. These fish served as an important food source to the area's indigenous peoples as well as the local wildlife. As European settles moved into the area and began mining the rivers and streams for gold, the local ecology of the area was radically changes. Riparian vegetation was removed from the flood plain and the channel was dredged quickly rendering fish habitat into dredge piles. This transformation of the river brought about the eventual decline of the anadromous fish populations in the upper river.

The Trinity River Diversion Project became operational in 1963 with the completion of Trinity and Lewiston Dams. These dams effectively eliminated an estimated 60 miles of salmon and steelhead spawning habitat. Though the habitat was degraded, it would still have been used by salmon and steelhead in reduced numbers. The completion of the dam also eliminated the flushing flows that maintained the fish habitat within the lower river. Because flood flows no longer flushed the river of sediment and debris, fish habitat began to change and fish populations in the lower river were affected. The most significant of these changes was the loss of shallow stream margins which are important as juvenile salmonid rearing habitat. The downgrading of pool and spawning habitats as these areas filled with sediments has also resulted in a decrease in stream productivity.

2. Setting

2.1 Fisheries

Shasta Unit

Shasta Lake is a large artificial impoundment on the Sacramento River formed by the construction of Shasta Dam, which is operated by the Bureau of Reclamation (Reclamation) as part of the Central Valley Project for the purpose of irrigation, hydroelectric power generation, and flood control. Management of the fisheries resources of Shasta Lake is not a primary concern of reservoir operations for Reclamation, but it is given secondary consideration when feasible. The Shasta-Trinity National Forest and California Department of Fish and Wildlife (CDFW) are the agencies responsible for the management of the fisheries resources.

Shasta Lake supports both a warm water and cold water fishery. Warm water fish are primarily non-native and include spotted bass, small- and largemouth bass, black crappie, channel catfish and bluegill. Cold water fish include native rainbow trout, brown trout and Chinook salmon.

The fisheries resources of Shasta Lake are greatly affected by the reservoir's thermal structure. During summer months, the warm water surface layer is 30 feet deep and up to 80°F. Water temperatures above 68°F favor warm water fishes. Deeper water layers are colder and suitable for cold water species.

Most native species found in the reservoir also inhabit the lower reaches of the tributaries. One of the species, the hardhead minnow, is classified as a State of California Species of Special Concern. Cooler temperatures in the major tributaries to the lake tend to attract fish to their outlets, particularly trout. For this reason, the lower reaches of these tributaries provide important spawning habitat for resident lake fish.

Following the initial filling of the reservoir, an outstanding fishery for largemouth bass developed. Other game fish were introduced during this time and the lake became noted for its excellent fisheries. As is typical of most reservoirs, this fishery experienced a decline over time. Most of the snags, trees and other vegetation covered by the lake when it first filled decayed and disappeared. With the deterioration of the cover, the largemouth bass population dependent on it for breeding also declined. Later fishing pressure also impacted the bass fishery. Tests made by CDFW from 1973 to 1975 on smallmouth bass revealed that anglers were taking 70 percent of all smallmouths in the lake every year. A 1976-77 survey showed that anglers caught and kept over 50 percent of the largemouths. Faced with the problem of the declining bass fishery CDFW and the Forest Service instituted various cooperative efforts in the early 1980's. CDFW instituted a minimum size limit of 12 inches for bass and supplemented the existing bass population. In 1981they introduced 200 Florida largemouth bass and 235 Alabama spotted bass. Since that time spotted bass have become the dominant bass species in the lake and the fishery is considered excellent. Additionally, the Forest Service began improving cover along the lake's exposed shoreline by providing vegetative and artificial habitat.

Habitat continues to be a limiting factor for warm water fish production. Water level fluctuations, steep-sided banks, and a lack of cover pose significant barriers to the survival of most warm water fishes. The shoreline

of Shasta Lake is generally steep, which limits shallow warm water habitat and is less conducive to the establishment of vegetation. Within the drawdown area of the lake, fluctuating water levels, wave action and erosion have resulted in the loss of all but the heartiest vegetation. The lack of vegetation along the shoreline at certain reservoir levels negatively affects shallow aquatic habitat, which is the primary rearing habitat for juvenile fish in the lake. Years of continuing habitat improvement efforts by federal and state agencies have helped to mitigate some of this problem, but more habitat improvement work is needed. In spite of the habitat problems, Shasta Lake is a productive warm water fishery and is recognized as one of the better bass fisheries within the state.

Bass tournaments are a significant activity on the lake and provide an important source of revenue for the local economy. The black bass are the major fish species targeted by warm water anglers. Spotted bass are now estimated to comprise over 90 percent of the total bass angler catch. Smallmouth bass are the second most caught bass species and is still considered an important game fish. Largemouth bass which were once very common have declined severely in numbers, but are still highly sought by bass anglers due to their large size.

Black crappie, bluegill, and channel catfish are popular among anglers of all ages. While crappie populations undergo annual fluctuations, bluegill and catfish populations tend to remain fairly stable and abundant. The ease and unspecialized nature of fishing for these species makes them popular particularly among the young and novice angler. White sturgeon which are endemic to the area, are still present in Shasta Lake. Though an occasional large sturgeon is caught, this fishery is not considered significant due to its limited and specialized nature. Other warm water fish species include the green sunfish, white catfish and the brown bullhead, but they do not contribute significantly to the lakes fishery.

In addition to the warm water fishery Shasta Lake has an excellent cold water fishery. This fishery is largely maintained through the stocking efforts of CDFW. The major cold water game fish are rainbow trout and Chinook salmon. These two species represent about half of the total angler catch. This amounts to over 232,500 fish user days with an estimated annual value over $25,000,000. Rainbow trout and Chinook salmon populations are sustained by hatchery stocking. Annually, an average of 120,000 catchable rainbow trout and 50,000 subcatchable Chinook salmon are planted by CDFW. There is some natural spawning by rainbow and brown trout, but this natural production is insufficient to sustain the fishery. Past efforts to establish other cold water species such as kokanee and coho salmon have been unsuccessful. Threadfin shad are the primary forage fish species for trout and salmon within the lake.

There are three universal access facilities on Shasta Lake for use by the mobility impaired angler located at Centimudi, Antlers, and Packers Bay boat launches. These facilities provide for boat access only and do not address the needs of the mobility impaired bank angler. Due to reservoir drawdown and the steep nature of the banks surrounding Shasta Lake, opportunities to develop such facilities is limited.

Trinity Unit

Trinity Lake is an artificial impoundment on the Trinity River formed the construction of Trinity Dam. The purpose of this reservoir is the interbasin transfer of water to the Sacramento River system via a tunnel that empties into Whiskeytown Lake. Five major stream systems feed the reservoir: Trinity River, Swift Creek, Stuarts Fork, East Fork Stuarts Fork, and East fork Trinity River. The Shasta-Trinity National Forest and CDFW are the agencies responsible for management of the reservoirs fisheries resources.

The Trinity River Hatchery was constructed in 1963 by the Bureau of Reclamation to compensate for salmon and steelhead spawning areas made inaccessible by Lewiston and Trinity Dams. The dams blocked access to 59 miles of Chinook salmon habitat and 109 miles of steelhead habitat. Much of this habitat was prime spawning and rearing habitat. In the case of the Chinook salmon, it represented about 50 percent of the suitable spawning habitat in the upper Trinity River basin (BOR and TCRCD 2007). The Hatchery is owned

by Reclamation and is operated by CDFW pursuant to a contract that specifies certain annual fish production goals that CDFW is responsible for producing.

Following the initial filling of Trinity Lake and the subsequent stocking of non-native fish species, an excellent fishery for smallmouth bass developed. The previous California state record smallmouth bass was caught in Trinity Lake in 1976 and weighed 9 pounds 1 ounce. Trinity Lake has also experienced a decline in its fisheries. In 1982, a 12-inch limit was established for bass and in 2000 CDFW instituted a two fish limit for bass between March 1st and May 31st. There is a five fish limit during the remainder of the year. Spotted bass where illegally introduced into the lake, but have not become established. Trinity Lake has an excellent spring-time bass fishery that is self-sustaining and in recent years has drawn more anglers looking to catch larger fish.

Fishing for cold water fish centers on the stocked rainbow trout, brown trout and Chinook salmon. Currently CDFW releases 2,400 catchable rainbow trout, 50,000 sub-catchable brown trout, and 25,000 Chinook salmon. Rainbow trout are the most frequently caught cold water fish species.

Kokanee salmon are the most prolific cold water fish species in the lake. Prior to the introduction of the *Neomysis spp,* kokanee became quite large and were considered a major game fish. The *Neomysis spp* compete directly with the Kokanee through the consumption of zooplankton and as a result the kokanee have declined significantly in size since the 1970s. Kokanee and are now a forage species for trout and salmon. The kokanee salmon are self-sustaining and spawn in all the major tributaries.

The same habitat problems that affect Shasta Lake also affect this reservoir. Steep-sided banks, water level fluctuations and the lack of cover limit warm water fish production. Habitat improvement efforts have taken place, but on a smaller scale than at Shasta Lake. This is largely due to the more remote location of this reservoir, and the lack of accessibility. Trinity Lake has an excellent bass fishery. Smallmouth and largemouth bass are the primary warm water species for anglers. During the spring when these fish become more active and move into shallow water, a tremendous bass fishery develops where fish caught in excess of five pounds are not uncommon. It is estimated that bass fishing accounts for over half of the angling effort that takes place. Due to the location and smaller size of Trinity Lake, there is not as much fishing pressure as at Shasta Lake. There are large populations of white catfish and brown bullhead in the lake, but they remain virtually unexploited. Additional fish species found include; green sunfish, speckled dace, Klamath smallscale sucker, and Pacific lamprey. The current state record for brown bullhead was taken from Trinity Lake as well as the previous State record smallmouth bass.

Lewiston Lake, located immediately below Trinity Dam. This small reservoir formed by Lewiston Dam is about six miles long and averages less than a quarter mile in width. The average depth is less than 30 feet. Lewiston Lake is strictly a cold water fishery due to the deep-water outflow from Trinity Lake. Water temperatures generally range from 40 to 67 degrees Fahrenheit. The lake level is fairly stable which enables the growth of rooted aquatic vegetation and an abundant aquatic invertebrate community. The lake has a 10 mile per hour speed limit and is well suited for the angler looking for a quiet and picturesque setting. Lewiston Lake has two universal access fishing platforms located at the Pine Cove Boat Launch.

Approximately 20,000 catchable rainbow trout are stocked annually and the lake has three trout culture cages for raising trout to a "trophy" size. In recent years Lewiston Lake has received a greater amount of interest by the angling public. This is due in large part to the cage culture program which has significantly increased the size of the trout caught by the average angler. Prior to the cage program trout averaged less than a pound. As a result of the cage culture program, the trout now average 3 to 5 pounds. Other fish species in Lewiston Lake include smallmouth bass, three-spine stickleback, golden shiner, kokanee, and Pacific lamprey. The forage base for trout is composed largely of aquatic invertebrates.

2.2 Aquatic Invasive Species

In recent years aquatic invasive species have become a significant concern in California. The quagga mussel, zebra mussel and the New Zealand mud snail have become established in numerous lakes and streams, primarily in southern California. These invasive species threaten the diversity and abundance of native species through competition of resources, predation, parasitism, hybridization, disease transmission, or causing physical or chemical changes to the habitat. They can cause serious environmental and economic impacts for infested areas.

A small population of New Zealand mud snail was found in Shasta Lake in 2008. Due to severe and rapid water level fluctuations the current status of this population is not known. The effect of the mud snail on the ecosystem of Shasta Lake is largely unknown as this species typically inhabits streams. This species can be extremely prolific and has been recorded at densities exceeding a half million individuals per square meter. The effect on streams has been the displacement and reduction of native mollusks as well as benthic invertebrates which are an important food source for fish. To date, New Zealand mud snails have not been found in Trinity or Lewiston Lakes.

The zebra and quagga mussels are not currently found in any of the lakes on the Shasta Trinity National Forest. The potential impacts of these mussels, should they be introduced to lakes on this forest, are extreme. They are able to colonize both hard and soft surfaces under a variety of fresh water conditions. The ability to adapt to extreme environmental conditions as well as their high reproductive rate means these species are capable of rapid colonization in very dense populations. Should this occur in Shasta or Trinity Lake, there would be a potentially profound effect on the fisheries of these reservoirs. As filter feeders they have the ability to affect the food web at the most basic level. In addition, the pseudofeces that are produced from filtering the water accumulate and alter the water chemistry. As the waste particles decompose, oxygen is used up and the pH becomes acidic, toxic byproducts are produced. The effect on the fisheries is less available food and less suitable habitat, resulting in a decline in fish abundance.

Table 2-3
Fish Species Known to Occur in the NRA

Common Name	Scientific Name	Shasta Lake Tributaries	Shasta Lake	Trinity Lake	Trinity Lake Tributaries
Chinook salmon	*Oncorhynchus tshawytscha*		X	X	
Kokanee salmon	*Oncorhynchus nerka*			X	X
Rainbow trout/steelhead	*Oncorhynchus mykiss*	X	X	X	X
Brown trout	*Salmo trutta*	X	X	X	X
White sturgeon	*Acipenser transmontanus*		X		
Pacific lamprey	*Lampetra tridentata*			X	X
Sacramento sucker	*Catostomus occidentalis*	X	X		
Klamath smallscale sucker	*Catostomus rimiculus*			X	X
Sacramento pikeminnow	*Ptychocheilus grandis*	X	X		
Hardhead	*Mylopharodon conocephalus*	X	X		
Sacramento blackfish	*Orthodon microlepidotus*	X	X		
California roach	*Hesperolecus symmetricus*	X			
Speckled dace	*Rhinichthys osculus*	X	X		
Golden shiner	*Notemigonus crysoleucas*	X	X		
Carp	*Cyprinus carpio*		X		
Channel catfish	*Ictalurus punctatus*	X	X		
White catfish	*Ameiurus catus*		X	X	
Brown bullhead	*Ameiurus nebulosus*		X	X	
Black bullhead	*Ameiurus melas*		X		
Riffle sculpin	*Cottus gulosus*	X	X		
Largemouth bass	*Micropterus salmoides*		X	X	
Smallmouth bass	*Micropterus dolomieui*	X	X	X	X
Spotted bass	*Micropterus punctulatus*	X	X		
Black crappie	*Pomoxis nigromaculatus*		X		
Bluegill sunfish	*Lepomis macrochirus*		X	X	
Green sunfish	*Lepomis cyanellus*		X	X	
Threadfin shad	*Dorosoma petenense*		X		
Tui chub	*Gila bicolor*		X		
Tule perch	*Hysterocarpus traski*		X		

Salmon caught in the McCloud River before construction of Shasta Dam.

3. Management Guidance

3.1 Relationship with California Department of Fish and Wildlife, and Other Partners

The Shasta-Trinity National Forest is responsible for the management of Shasta Lake and Trinity Lake fish habitat, while the California Department of Fish and Wildlife is responsible for the management of fish populations within these reservoirs. This makes it all the more important for these two agencies to cooperate and share management responsibilities. It is extremely difficult, if not impossible to manage habitat and populations separately. Therefore, both agencies are involved in reservoir fisheries management and cooperate and coordinate on a regular basis. Policies and criteria for the management of the fisheries resources are consistent throughout the NRA regardless of the reservoir. Fish habitat improvement techniques will vary by reservoir as available natural materials vary. All habitat improvement projects are consistent with the Shasta-Trinity National Forest Land and Resource Management plan. The Forest has several other partners that assist with completing fisheries objectives. These partners assist with habitat improvement projects, the cage culture program, or with environmental education. The partners include the California Conservation Corp, Kokanee Power, California Inland Fisheries Foundation, Pine Cove Marina, Trinity Lake Resort, Antlers Marina, Sugarloaf Cottages, Tsadi Resort, Silverthorn Resort, Holiday Harbor, Shasta Lake Caverns, Shasta College, Bella Vista Elementary School and Douglas City Elementary School.

3.2 Criteria for Future Fisheries Projects

Reservoir habitat improvement for warm water fishes is governed by habitat restoration plans written for both reservoirs. The Forest Service implements habitat improvement project based on these plans with input from CDFW.

Depending on Forest Service budget and personnel constraints, up to three percent of the drawdown zone is improved for fish on an annual basis. Habitat improvement treatments for warm water fish species in Shasta and Trinity Lakes include the planting of rooted willows and button brush, as well as willow cuttings, the construction of brush structures and log crib structures, cabling oak stumps together, and the seeding annual cereal grains. The type and extent of improvements is depended on labor and funding. CDFW helps monitor these improvements as well as general warm water fish population trends through annual electro-fishing. The

Forest Service conducts monitoring of the habitat improvements through the use of SCUBA and underwater camera. The cold water fishery for both reservoirs is managed entirely by CDFW as this fishery is based on stocking and has little to do with habitat. No habitat improvement is implemented for cold water fish species in either lake. The Forest Service assists with tagging and research of the cold water fishery when requested. CDFW is the agency solely responsible for setting angling regulations and daily size and bag limits.

Both agencies in cooperation with local marinas operate a fish rearing program at all three reservoirs. Trout are kept in cages, raised to a large size, and then released for capture by the angling public. The Forest Service builds and maintains the cages, CDFW provides the fish, and the marinas provide for the care and feeding of the trout. Presently there are five cages in Shasta Lake, three cages in Trinity Lake and three cages in Lewiston Lake. Typically the trout average three to four pounds when released, but trout as large as 16 pounds have been released in Lewiston Lake. An effort to raise sturgeon in Shasta Lake when the cages are not in use is currently being pursued. This would help restore a native fish species already found within Shasta Lake and would help fill a presently underutilized niche.

3.3 Fishing Tournaments

Bass tournaments and more recently trout derbies have becoming ever increasing popular events on Shasta and Trinity Lakes. These tournaments provide an important source of revenue for the local economy with the larger events drawing in several hundred people at a time. The larger tournaments require a special use permit and are administered by the special uses team (see Recreation Special Uses section for more information). There are also numerous smaller club tournaments that take place but do not require a Forest Service permit. These smaller bass tournaments are a significant activity on Shasta Lake. On any given weekend there are one or more tournaments taking place. The effect of these tournaments on the bass population has been evaluated by the California Department of Fish and Wildlife. It has been shown that fish mortality is relatively low provided the fish are handled properly. Most tournament organizers will deduct points for dead fish so it is in the interest of these anglers to keep the fish healthy. In the larger tournaments, the bass are loaded onto a release boat that return the fish to the lake away from the weigh-in area so as to avoid concentrating the fish in any one location. Given the abundance and excellent condition of the bass, it appears that the tournaments do not have any significant adverse effects on the bass population.

3.4 Aquatic Invasive Species

The current management approach for aquatic invasive species has been one of education for the public and marina operators on Shasta and Trinity Lakes. Due to the sheer number of access points it is not feasible at this time to establish vessel inspection requirements. Information sheets are posted at the launch facilities and flyers are provided to all of the marinas and tournament organizers for dispersal to the public. Periodically, public contact is made during periods of high recreational use in order to emphasis the potential threat of quagga and zebra mussels. Information regarding the zebra and quagga mussels has also been posted on the Shasta-Trinity National Forest website (fs.usda.gov/stnf). This public education approach is being implemented in cooperation with the National Park Service and California Department of Fish and Wildlife.

3.5 Lewiston Lake Fisheries and Wildlife Resource Evaluation

An evaluation of the fisheries and wildlife resources at Lewiston Lake was completed in 2009. A copy can be found in Appendix D. The conclusions of the evaluation included: "The management of this area should encourage activities that maintain the existing fisheries and wildlife values and protect the natural setting while discouraging or prohibiting activities that would reduce the quality of this type of recreational experience. Maintain the 10 mph hour speed limit. Maintain the existing facilities and carefully evaluate the need for any further development. Manage the OHV use to reduce noise and associated resource damage. Finally, maintain the existing cage culture program so that trophy trout continue to be available to anglers of all ages and abilities. As per the STNF Forest Plan: "The east side of Lewiston Lake is to remain undeveloped to preserve its excellent wildlife habitat. This area provides an enhanced opportunity for people to observe wildlife.'"

Limestone formations near Shasta Lake.

GEOLOGY AND SOILS

1. Historical Overview

The NRA is located in the Klamath Mountains Geomorphic Province. The Klamath Mountains province is considered to be a northern extension of the Sierra Nevada and consists of rugged topography with prominent peaks and ridges.

The story of the rocks is a repetitious one. The region alternated between being covered by the ocean to being above sea-level many times throughout geologic history. While below sea-level, muds, sands, and lime deposits accumulated on the ocean floor. Gradually these beds were changed to shales, sandstones, and limestones. When they were above sea-level, the lands were eroded by the streams, much as they are eroded today, and volcanoes built up piles of lava and ash. (FS 1953)

In contrast to the Sierra-Nevada Mountains, which are an uplifted tilted fault block, and to the Cascade Range which was formed principally by the accumulation of lavas and volcanic debris along a line of volcanoes, the Klamath Mountains were produced by forces that folded, faulted, and uplifted the sedimentary and volcanic rocks of which they are composed.

One of the striking features of Klamath Mountain geology is the repeated recurrence of volcanic activity throughout geologic history in this region on the margin of the continent. The oldest lavas and tuffs were mildly metamorphosed (altered) by heat and pressure so that they were consolidated into a hard, massive formation. These solidified ancient volcanic rocks are the ones upon which Shasta and Keswick Dams have been built. (FS 1953)

The Klamath Mountains are internationally famous in geological circles. Here geologists began testing the new theory of plate tectonics in the 1960s. ...Geologists studying the Klamath Mountains a century ago recognized four belts whose rock units had similar makeup. The belts are younger from east to west, and major faults separate them. ...We now know that the belts and fault systems represent a sequence of plate convergence and subduction events...which added pieces of land to the western edge of North America during periods of mountain building. (Sawyer 2006)

2. Setting

2.1 General

Shasta Unit

Shasta Lake sits at the junction of three major mountain systems and the local geography is a result of all three. Each is unique and represents a full range of geologic mountain building formations. Plutonism, the intrusion of huge masses of molten rock and concurrent and subsequent uplifting is responsible for the Sierra Nevada Range to the southwest, the Trinity range to the west and the Castle Crags to the north. Granite, the principle rock formed this way can also be found near Bridge Bay and in areas of the McCloud Arm.

Faulting and folding is another way in which mountains are formed. In the process, much of the rock is subjected to extreme heat and pressure which causes it to change or metamorphose. Metamorphic rocks vary widely in appearance depending on the source material and how much heat and pressure it was subjected to. Probably the most interesting at Shasta Lake are the limestones that form the Gray Rocks, Backbone Ridge (on the west side of the lake) and the Devils Rock/Brock Mountain divide to the east.

Volcanism is a third method by which mountains are built and is a principle force in the creation of the Cascade Range to the north. In the Shasta Lake area, volcanism has left both the oldest and youngest rocks. Bass Mountain and O'Brien Mountain are volcanic cores (the centers of volcanoes) from volcanoes that erupted at the same time Backbone Ridge was being formed (400 million years ago). Lakehead and Lakeshore lie on a shelf formed by a lava flow from the Mt. Shasta area. Basalt (cooled lava high in iron) has cooled slowly enough in this area to begin to form columns. These can be seen between Sugarloaf and Antlers Resorts where the lava has been cut through by the erosion action of the river.

Trinity Unit

Landscapes of the unit are mostly semi-mature, highly dissected, moderate to steep, mountainous terrain. The topography of much of the eastern half of the unit is more rugged than the western half. Many of the landscapes along the western side of the reservoir have a geologic history of landscape instability, as evidenced by their unusual hummocky landflow topography. Mass land failures have occurred in some of these areas, especially where they have been critically disturbed through road construction activities. Generally, the topography of the east side of the reservoir is more stable than the west side.

Along the west side, from the Stuart Creek arm to the northernmost tip of the lake, there are extensive areas of ultra-basic serpentinized rocks (FS 1982a). Crystallization of magma rich in magnesium iron silicates forms peridotite. Serpentine, California's official state rock, is a metamorphosed peridotite. "Serpentine rocks split easily, glisten, and are waxy in appearance and soapy to the feel. Serpentine's color varies greatly from nearly completely black or white, often various mottled shapes of green and gray—much like a serpent" (Sawyer 2006). Serpentine outcrops occur over a wide range of elevations and climatic conditions, and they contribute significantly to the region's uniqueness.

2.2 Limestone

Limestone is one of the most interesting rock types in the region. Limestone is formed from sedimentary deposits (materials that accumulate at the bottom of an ocean or shallow sea) and often contain the fossils of the animals and plant life that lived during the time the sediments were laid down. It occurs in three formations of different ages in the Shasta Lake basin. The oldest (Devonian) outcrops are located in the Mammoth Buttes-Backbone Ridge area west of the Sacramento River Arm. The next oldest limestone emerges east of Interstate 5 and south of the Pit River and continues up the McCloud River Canyon where it forms craggy peaks. This is the McCloud limestone of Permian age. The youngest limestone formation of

large size is the Hosselkus limestone of Triassic age. The main mass of the Hosselkus limestone emerges in the vicinity of Brock Mountain between the Pit and Squaw Arms.

A variety of important values can be attributed to the presence of extensive beds of limestone in the area. These include: a new shrub species discovered in 1992, a localized endemic plant discovered in 1958, wider-ranging plants endemic to limestone substrates, localized endemic land snails, localized endemic salamander (Shasta salamander), a very diverse collection fossil faunas (including ammonites, brachiopods, corals and marine reptiles) and more recent vertebrate fossils in cave deposits. Because of its very diverse fossil fauna, the area immediately north of Shasta Lake, and generally lying between the McCloud and Pit Arms, has been rated by recognized leaders in the fields of paleontology and geology as perhaps California's single most important area for paleontological research.

Paleontological findings from these limestone formations provided the basis for current scientific knowledge of invertebrate and vertebrate development in California. One of the first paleontologists to explore the Hosselkus limestone was Dr. James Perrin Smith of Stanford University. In 1893, he was the first to find fossil reptiles, ichthyosaurs and thalattosaurs, in Shasta County (Hilton 2003). Over time more than two hundred Triassic fossil marine reptile discoveries have been made. The ichthyosaurs of the area have provided virtually all that is known about this group during the late Triassic period in North America (Cheng 1997).

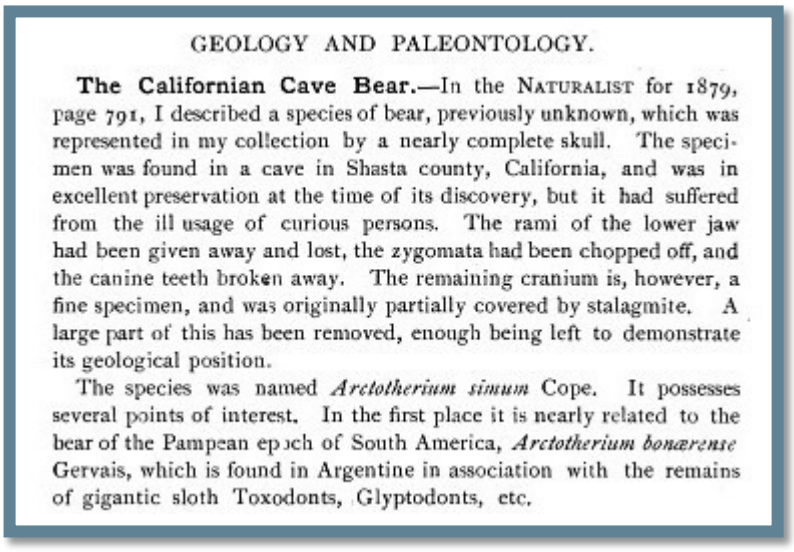
Ichthyosaur fossil

One of the earliest and most noted studies of the area was published by Dr. J. P. Smith in 1927. His work, entitled "Upper Triassic Marine Invertebrate Faunas of North America," was published as a 262 page USGS Professional Paper. This publication contains 125 pages of plates, primarily photographs of coral, and over 90 percent are from the Hosselkus area (FS 1980). The Hosselkus corals serve as a reference for other Western North America Triassic coral faunas. This publication is used by scientists as the basis for correlation of rock units in North America and the world with respect to geological time and significance (FS 1975).

Devils Rock-Hosselkus Research Natural Area (DHRNA)

In 1966, a group of University of California officials visited the Hosselkus limestone with the idea of acquiring the property as one of the University of California Natural Land and Water Reserves. This was found to be impossible since most of the land was part of the STNF. The U.C. officials were very anxious to have the Hosselkus limestone protected in some way and so they drew up a U.C. proposal for a Hosselkus Limestone Research Natural Area which was formally presented to the Chairman of the Federal Committee on Research Natural Areas on March 8, 1971. The application noted that "the fossil deposits in the Hosselkus formation are of great importance to our understanding of the evolutionary history and diversity of animals in North America." Many scientists wrote letters supporting/requesting Research Natural Area designation for the area citing that the area possesses outstanding paleontological, geological and biological features. Also in March 1971, the Forest Service designated the Hosselkus Limestone area as a special management unit. However, it was not until 1997 that the Establishment Record creating the Devils Rock-Hosselkus Research Natural Area was signed. The DHRNA occupies the upper Brock Mountain peninsula between the Squaw Creek and the Pit River arms of Shasta Lake. The area is bisected by a prominent ridge of rugged, resistant gray limestone that stretches in a north-south direction for approximately five miles. The southern portion of the DHRNA falls within the Shasta Unit of the NRA.

2.3 Caves



GEOLOGY AND PALEONTOLOGY.

The Californian Cave Bear.—In the NATURALIST for 1879, page 791, I described a species of bear, previously unknown, which was represented in my collection by a nearly complete skull. The specimen was found in a cave in Shasta county, California, and was in excellent preservation at the time of its discovery, but it had suffered from the ill usage of curious persons. The rami of the lower jaw had been given away and lost, the zygomata had been chopped off, and the canine teeth broken away. The remaining cranium is, however, a fine specimen, and was originally partially covered by stalagmite. A large part of this has been removed, enough being left to demonstrate its geological position.

The species was named *Arctotherium simum* Cope. It possesses several points of interest. In the first place it is nearly related to the bear of the Pampean epoch of South America, *Arctotherium bonærense* Gervais, which is found in Argentine in association with the remains of gigantic sloth Toxodonts, Glyptodonts, etc.

Excerpt from the *American Naturalist,* vol. 25, 1891

Fossilized remains of an extinct Pleistocene cave bear were found in a cave in the McCloud Limestone formation in 1878. In 1902, the Department of Anthropology of the University of California began a survey of the caves in Shasta County as part of an investigation to determine the antiquity of man in California. Extensive excavations during the 1902-05 field seasons were carried out by E. L. Furlong and Dr. W.J. Sinclair. From these excavations, nearly 4500 specimens were collected representing at least 78 species, including 56 mammal species (Feranec 2009). The vertebrate fauna included an extinct ground sloth, short-faced bear, horse, camel, peccary, scrub ox, mammoth, mastodon and giant jaguar. Together, the faunas of Potter Creek and Samwel constitute virtually our entire knowledge of late Pleistocene vertebrate life in northern California. Both caves also contain recent archaeological deposits dating within the past several thousand years, and both have been nominated for the National Register of Historic Places. (FS 1998)

Caves are dynamic natural systems affected by surface and subterranean environmental changes. Cave environments are dynamic and closely linked to surface environments and surface activities. This linkage generally occurs through the movement of air, water, plants, insects, and other animals into and out of caves.

Karst caves are found in the Shasta Lake area and in scattered limestone blocks in the Klamath Mountains. Karst caves form through the dissolution of limestone, and less often dolomite or marble. Limestone is made of calcium carbonate ($CaCO_3$). Water can only dissolve limestone with the help of carbon dioxide (CO_2) from the air or soil that makes the water slightly acidic. Caves are formed with groundwater seeps down through the soil and into cracks in the limestone bedrock. Caves form over thousands or millions of years as the water slowly dissolves the exposed surface of the limestone and expands the cracks. The beautiful cave formations, such as stalactites and stalagmites, form when CO_2 loss to the air causes calcium and other minerals from the limestone to be precipitated.

Karst landscapes are characterized by efficient flow of groundwater through conduits that become larger as the bedrock dissolves. In karst areas, water commonly drains rapidly into the subsurface at zones of recharge and then through a network of fractures, partings, and caves, emerges at the surface in zones of discharge at springs, seeps, and wells.

Cave systems, especially karst, are very sensitive to changes in temperature, changes in air humidity, and pollutants. Many formations have taken thousands of years to grow through the slow dripping of water. The continued growth of these beautiful formations is dependent on cave conditions, and even the oils from your

skin can slow or stop the growth of a formation. Many plants and animals in the cave are also sensitive to disturbance and all should be left alone. Disturbing a hibernating or maternity bat colony can result in bat death.

2.4 Soils

Soils are the basic resource that support or directly influence most, if not all other resources. The primary factors which determine the characteristic of a soil are climate, living organisms, parent material, time and topography (e.g., slope and aspect).

Shasta Unit

The soils on the Unit are derived from either metavolcanic rocks or metasedimentary rocks. At the lower elevations, most soils on steep terrain are shallow gravelly loams or gravelly clay loams. These soils support shrub and scrub oak vegetation, with scattered mixed conifer stands on the cooler north slopes. At lower elevations on more gentle slopes, most soils are deep, with loamy surface soils and clay loam subsoils. The vegetation on these soils consists primarily of shrubs, hardwoods, and mixed conifers (yellow pine, Douglas-fir, and incense cedar).

On the steep, highly dissected landscapes of the higher elevations of the Unit most soils are gravelly loams that vary in depth with the slope. A mixed conifer forest prevails over most of these soils. Some steep south and southwesterly slopes have very shallow soils that support shrubby vegetation. North slopes usually have deeper soils that support trees.

The most common soil families are Marpa, Nuens, Goulding, and Holland. Except Nuens, these soil families have medium to high erosive severity.

About 50 percent of the lake shoreline has a low erosion severity. The remaining shoreline has moderate (35 percent) to high (15 percent) erosion severity. Most of the shoreline that is exposed during routine drawdown periods has been subject to substantial erosion and very little soil remains after more than 60 years of reservoir operation. The highest rate of shoreline erosion is occurring in the Sacramento River Arm. The McCloud River and Pit River Arms have the lowest rate of erosion. (BOR 2008)

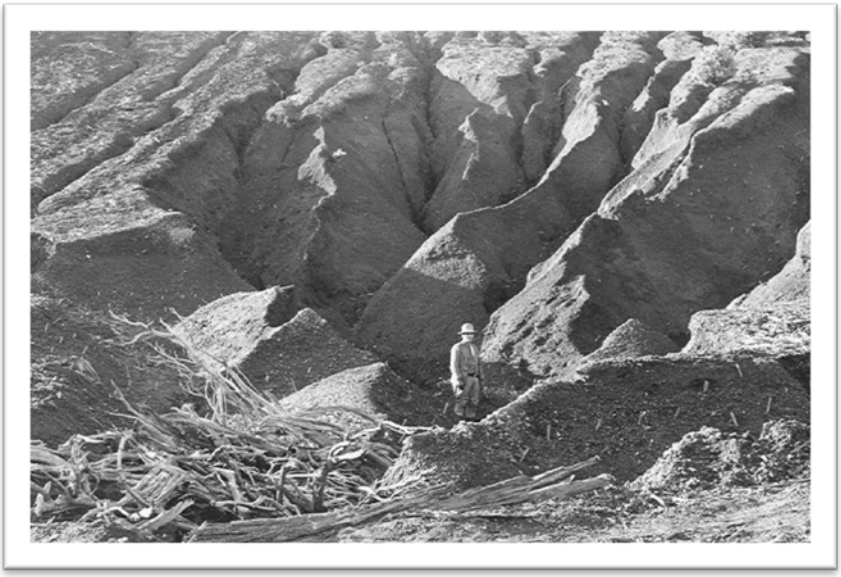
Shoreline erosion by wave action has also been substantial in some areas, especially during periods when the lake surface is at its highest level. The shoreline consists largely of fine-textured clays that remain in suspension, creating turbid conditions that last a long time and detracts from the aesthetic values of the lake. Intensive water recreational activity such as skiing, wakeboarding or high-speed boating result in highly visible turbidity along the shoreline, especially in narrow arms of the lake (FS 1976a).

Considerable soil erosion has occurred on lands along the southwest section of Shasta Lake, just west and north of the dam. Between 1905 and 1919, the west watershed was denuded of vegetation by fumes from smelters located at the townsites of Keswick, Coram and Kennett. The towns were inundated by Keswick and Shasta Reservoirs. (See "Minerals" section for more information)

Smelter fumes containing substances (primarily sulfur dioxide) toxic to plant life completely killed all existing vegetation on the adjacent slopes and resulted in continual erosion on a large scale. By 1910, the lower Sacramento River Canyon was known as the "Kennett smelter-fume area." Severe erosion resulted after large areas were denuded of vegetation producing a maze of gullies. By 1921 (last smelter closed) some 27 million cubic meters (35 million cubic yards) of soil had already eroded from the unprotected slopes. Erosion continued with each rainfall and the gullies got bigger—one was nicknamed the "Grand Canyon" (FS 1984b).

In the 1920's and 30's the State of California and the Forest Service started research to determine how to deal with the problem. Test plots of various trees, shrubs, and grasses were planted and then observed to see

what species survived to hold the soil best. Large-scale planting started in the mid 1930's, but project continuation was stymied by intermittent funding, by private property boundaries, and by World War II.



Deep erosion gullies in the Kennett area.

"The land for miles around Coram was devoid of vegetation except for poison oak bushes, a few oleanders and some peach trees. The sides of the mountains were steep, rocky and arid. A few streams trickled down the ravines and in the winter water poured through the erosion-caused gullies." Personal account of traveler in the area in the late 1920's" (Roberts 1981)

Years after the smelters had ceased operating, much of the canyon was still barren because erosion had removed the topsoil from many hillsides and major reclamation efforts did not begin until after Shasta Dam had been constructed. With completion of Shasta and Keswick Dames, the eroded sediments could no longer be washed out of the canyon and down the valley by the Sacramento River. Instead, the sediments collected and settled in the reservoirs at such a rapid rate that the future storage capacities of the reservoirs were endangered. As a result, James G. Lindley, Regional Supervisor for the U.S. Bureau of Reclamation, brought in L. G. Temple in 1946 as a soil conservation expert to establish an erosion control program. Soil stabilization work has been done through cooperative efforts of the U.S. Bureau of Reclamation and the Forest Service over a period of years. Two hundred thousand erosion control structures and five million hand-planted conifers and willows dot the landscape as part of the rehabilitation effort (Kristofors 1973). The results can readily been seen from the Backbone Creek Inlet; virtually all the trees in this area were planted (FS 1986).

Trinity Unit

Soils associated with marine sedimentary, metasedimentary, and metavolcanic rocks dominate the eastern portion of the Unit. Soils found on narrow ridges and on steep south and southwest exposures tend to be shallow, very gravelly, and loam-textured. They support sparse, low-quality mixed conifer stands intermixed with shrubs and canyon live oak. The susceptibility of these soils to erosion is low to moderate. Soil developed on the same geologic bedrock on gentle slopes and/or northerly exposures are deeper and tend to be loam-textured on the surface with clay-loam or clay subsoils. These deeper soils support better quality mixed-conifer timber, as well as shrubs.

Soils developed on non-marine sedimentary rocks are moderately deep to deep, and characteristically have loamy surface soils with clay-loam to clay subsoils. They support good-to-excellent stands of mixed conifer timber and shrubs, as well as hardwoods such as black oak and big-leaf maple.

Soils formed on ultrabasic serpentinized bedrock vary in depth, gravel content, and color. Extensive areas of shallow, bouldery soils composed of reddish-brown surface soils and brownish-red clay to clay loam subsoils are common to the ultrabasic formation. These soils support sparse, open stands of mixed conifers (Jeffrey pine, incense cedar, and sugar pine with some white fir and Douglas-fir) and shrubs. Only plant species that

can tolerate the severe calcium-magnesium imbalance associated with shallow serpentine soils can survive. Deeper soils developed on ultrabasic rocks are less affected by this imbalance and can support better quality mixed-conifer stands, hardwoods, and shrubs. The deep soils are most commonly associated with unstable areas and are highly susceptible to landslides triggered by activities such as road construction.

Soils found on granitic bedrock typically have sandy-loam surface soils and sandy-loam to clay-loam subsoils. These soils are highly susceptible to surface erosion when disturbed by virtually any management activity.

3. Management Guidance

3.1 Cave Management Policy

The Shasta-Trinity National Forest is home to numerous karst and lava tube caves. These caves are an important resource on the forest and require special management attention. Caves can house many sensitive plant and animal species and often contain fragile cave formations. Caves can also be important cultural resources.

The Forest Service policy is to manage caves as a nonrenewable resource to maintain their geological, scenic, educational, cultural, biological, hydrological, paleontological, and recreational values (FSM 2300). Each cave under Forest Service management and protection is unique, and may require the employment of unique cave management methods and techniques in addition to generalized cave management policies and programs.

Caves are a rich source of yet-to-be-discovered knowledge of the world around us; for example, several cave microbes are promising candidates for cancer medicines, and others for bioremediation of toxic waters spilled in the environment. In order to protect caves, the environment in which they occur must be protected. This includes protection of soils, surface landforms, natural drainage patterns and hydrologic systems, and cave microclimate and ecosystems.

The Federal Cave Resources Protection Act of 1988 protects caves in National Forests, National Parks, BLM land and other lands administered by the Departments of Agriculture and Interior. The Act prohibits the disclosure of cave locations to the public unless it will not create a substantial risk to the cave. Under this Act, punishment for any person who destroys, disturbs, defaces, mars, alters, removes, or otherwise harms any significant cave or alters the free movement of any animal or plant life into or out of the cave can include up to one year imprisonment, a fine, or both.

Fossils are protected by the Paleontological Resources Preservation Act of 2009 (Omnibus Public Lands Management Act of 2009). This law requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on Federal land using scientific principles and expertise. The law affirms the authority for many of the policies the Federal land managing agencies already have in place for the management of paleontological resources such as issuing permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data.

Additionally on National Forest System lands, excavating, damaging, or removing any cave resource from a cave is prohibited without a special use authorization, or removing any cave resource for commercial purposes. (36 CFR 261.9)

The Shasta-Trinity National Forest Cave Management plan gives the following information for protection of caves on the STNF:

- To help ensure the safety of cave resources, the Forest maintains a list of significant caves for consideration during management activities.
- All management activities in limestone areas need clearance from the Forest's "keeper of the caves."

The Forest has a Memorandum of Understanding (MOU) with the Shasta Area Grotto, and cooperates regularly with this group in the conservation of cave resources. An MOU between the US Forest Service and the National Speleological Society is also in place.

3.1.1 Samwel Cave

Samwel Cave can provide a unique and rewarding experience to its visitors. The cave is rich in legend, cultural significance, and fossil history. However, it can be extremely hazardous to the poorly informed and unprepared explorer.

The Wintu Indians of the area believed that grizzly bear spirits lived in the cave and they referred to it as "Sa-Wal" or "Grizzly Bear Cave," a holy place where one could get magic strength by bathing in the pools located deep inside. Wintu men would go to this cave to pray to the Spirits of the Great Bear for strength or bravery before a hunt or a fight.

The Forest Service installed a locked gate on the cave entrance in 1972 to help prevent accidents, to protect the fragile cave resources, and to provide Forest Service personnel with an opportunity to talk to cave visitors before they enter the cave. The key to the locked gate is retained at the Shasta Lake Visitor Information Center. Permits to enter the cave are issued free by the Shasta Lake Visitor Information Center and there is a refundable deposit required for the key.

3.1.2 Lake Shasta Caverns

Lake Shasta Caverns was known and used by the native Wintu people for many years prior to European settlement. Charles Morton, a Wintu, led J. A. Richardson, a Baird Fish Hatchery employee, into the cave on November 3, 1878, making him the first non-native to see the caverns. The cave was named Baird Cave to honor the first U.S. Fish Commissioner in the area. From then until 1959, the caverns were visited and explored by spelunkers who climbed the 1000 foot mountainside and entered the caverns by vertical pit. To enable the public to see the caverns, tunnels were blasted and stairs and lights were installed. The caverns were opened to the public on May 30, 1964. Lake Shasta Caverns is located on the east side of the McCloud arm of Shasta Lake. Access is by boat and then bus to the cave entrance. The Caverns are on privately owned land but the land used for access roads, parking, reception centers and boat docks are on National Forest Service lands and managed under a Special Use Permit.

3.2 Devils Rock-Hosselkus Research Natural Area (DHRNA)

The Research Natural Area (RNA) program is a nationwide system created to protect a network of federally administered public lands for the primary purposes of maintaining biological diversity, providing baseline ecological information, and encouraging research and university natural-history education. Areas selected exemplify minimally disturbed ecosystems representative of the range of widespread and unique natural vegetation types on federal lands. Non-manipulative research, monitoring, and education are promoted on these RNA lands. In California, the RNA program is administered jointly by the Pacific Southwest Research Station and Pacific Southwest Region

RNAs are managed to maintain the natural features for which they were established, and to maintain natural processes. Because of the emphasis on natural conditions, they are excellent areas for studying ecosystems or their component parts and for monitoring succession and other long-term ecological change. Non-manipulative research and monitoring activities are encouraged in RNAs and can be compared with manipulative studies conducted in other similar areas.

RNAs serve as sites for low-impact educational activities. These areas are available for educational use by university and school groups, native plant societies, and other organizations interested in pursuing natural history and educational field trips.

The DHRNA was established to represent: (1) the unique target elements of limestone ecosystem and (2) the California black oak vegetation type for the Klamath Mountains Physiographic Province.

Management direction for the DHRNA is found in the STNF Forest Plan and in the DHRNA Management Plan.

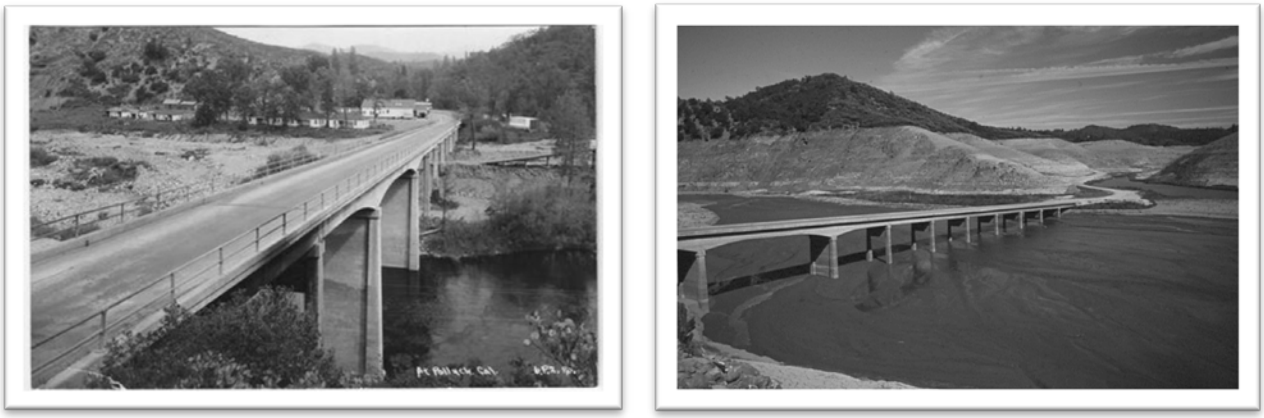
3.3 Best Management Practices (BMPs)

Soil erosion is the process by which soil particles are removed from the land surface by wind, water, or gravity. Most natural erosion occurs at slow rates; however, the rate of erosion increases when land is cleared or altered and left unprotected. For example, construction sites, if unprotected, can erode at rates in excess of one hundred times the natural background rate of erosion.

Sediment resulting from excessive erosion is a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. In addition, sediment particles can transport other pollutants that are attached to them including nutrients, trace metals, and hydrocarbons. Sediment particles such as silts and clays are the primary components of total suspended solids (TSS), a common water quality analytical parameter.

BMPs are the practices both the State and Federal water quality regulatory agencies expect the Forest Service to implement to meet our obligation for compliance with applicable water quality standards, and to maintain and improve water quality. They are performance standards for the agency. Current BMPs can be found in the Forest Service Handbook, Region 5 Amendment 2209.22-2011-1, *Soil and Water Conservation Handbook*. (More information on water quality can be found in the "Water Resources" section.)

Additionally the Forest has Soil Quality Standards (currently found in Appendix O of the Forest Plan) that are used to protect soil productivity.



Old Highway 99 bridge over the Sacramento at Pollock (now Sugarloaf) before and after construction of Shasta Dam

HERITAGE

1. Historical Overview

Shasta Unit

Because of its very diverse fossil faunas, the area immediately north of Shasta Lake and generally lying between its McCloud and Pit arms has been rated by leaders in paleontology and geology as perhaps California's single most important area for paleontology research. Marine invertebrate faunas of Mississippian, Pennsylvanian, and Permian ages; marine invertebrate and vertebrate faunas of Triassic Age; and vertebrate faunas of Pleistocene Age all occur in this small area.

As early as 1878, J.A. Richardson located several caves in the McCloud limestone area and found the skull of an extinct bear in the Potter Creek Cave. Between 1902-1905 this cave, as well as Samwel Cave, were excavated under a University of California study and produced the remains of numerous extinct vertebrate fauna including ground sloth, short-faced bear, camel, peccary, scrub ox, mammoth, mastodon, and giant jaguar. Although both of these caves have been fully explored, additional known caves have not been completely examined, and there is still a potential for finding additional caves which would yield more material of important Pleistocene paleontological value. (See "Geology and Soils" section for more information)

Native American groups inhabited the area for thousands of years prior to European settlement. Most lands now in the Shasta Unit were part of the ancestral territory of the Wintu, a subdivision of the much larger area occupied by Wintun-speaking peoples. The nomtipom Wintu claimed the Sacramento River drainage and the winimem Wintu lived along the McCloud River. The Squaw Creek drainage appears to have been a boundary area between the Wintu and the Achumawi or Pit River Tribe, and the Northern Yana may have controlled some miles of the south bank of the Pit River.

The northern portions of the Central Valley are largely unmentioned in Spanish and Mexican-era records and until the late 1820's the land between San Francisco and the Columbia River were pretty much blank on maps. The earliest historic records pertaining to the Shasta Lake area are from Hudson's Bay Company fur trappers. Numerous trappers from the Hudson's Bay base at Fort Vancouver trapped the Sacramento and

Pit Rivers between 1828 and 1840. These expeditions established a route, likely following existing Native American footpaths, which became known as the Siskiyou Trail and stretched from California's Central Valley to the Pacific Northwest. The direct north-south leg of the Siskiyou Trail closely paralleled the Sacramento River and took advantage of the valleys and canyons carved by the river through the steep terrain of Northern California. This was quite rugged terrain, when members of the U.S. Exploring Expedition traversed the upper Sacramento River portion in about 1842, they "reported that men of the party familiar with the Rockies, and even the Andes, found the California terrain twice as hard to cross. As for the idea of a railroad along the line of the river, already a-glitter in some expansionists' eyes, the Wilkes expeditionaries stated flatly that 'no sane or civilized being would ever recommend such a thing' " (Dillon 1975). The first large numbers of Americans came with the Gold Rush beginning in 1848, and prospectors by the thousands traveled along the Siskiyou Trail.

With the rapid development of California in the 1850's, the footpath became a horse trail for pack trains, then a wagon road, then a rugged turnpike for Concord stagecoaches. In 1852 the California legislature authorized the construction of a wagon or stage road from Sacramento to the Oregon line, and by 1860 the California Stage Company had established a regular passenger and express line between Sacramento and Portland. At that time it cost a passenger $45 to travel the entire route (Petersen 1965). The old trail also became the roadbed for the Central Pacific Railroad (later Southern Pacific Railroad), which was extended northward from Redding beginning in 1883. Settlements sprang up along many of the railroad stops such as Morley, Elmore, Pollack, Antlers and Delta, many of which are now under the waters of Shasta Lake.

In 1896 the Central Pacific Railroad acquired patented grants to all odd-numbered sections or fragments of sections which weren't already deeded, creating the current checkerboard pattern of land ownership. They sold some of the river frontage for small ranches or homesites.

With the growing popularity of automobiles, the State began modernizing the road in 1914, designating it the Pacific Highway. The challenge in the Sacramento Canyon was that the road had to be located where it would not interfere with the already existing railroad tracks. The concrete bridge constructed over the Pit River was noteworthy, at the time (1916) it was the longest concrete span in California at 242 feet. It now lies deeply submerged beneath the waters of Shasta Lake.

California State Historical Landmark No. 148 Bass Hill.

On the summit of Bass Hill a remnant of the California-Oregon stage road crosses the Pacific Highway and descends to the Pit River. Because this was a favorite 'holdup' spot in stage-coach days, a marker has been placed there in memory of W.L. Smith, division stage agent of the California and Oregon Stage Company, and of the pioneer stage drivers along this road. (Marker is located in the Bridge Bay parking lot)

Auto on the Pacific Highway with the original Pit River Bridge in the background.

The mid-twenties brought another surge of highway improvement in the canyon—realignments, resurfacing and extensive masonry retaining walls. In 1927 the road was designated as State Highway 99W (later to become part of Interstate 5). One reroute moved the road from Bailey Creek to Johns Creek, and the bed of this highway is still used for access to Bailey Cove Campground and extends into Shasta Lake as the boat ramp. During this time bridge construction went into high gear and more of the trademark concrete arches went up over Charlie Creek, Doney Creek, Pollard's Gulch and Dog Creek. By 1932 the District Engineer in Redding declared that the highway through the canyon was "complete." But the building of the dam meant the relocation of about twenty miles of highway over terrain that had been purposely avoided in the past.

Unlike some of our nation's historic trails which have since been obliterated or are largely untraveled, the fur men's route was only a beginning. Vehicles on Interstate 5 and freight cars of the Southern Pacific "are following the general trend of the moccasin-pounded Siskiyou Trail, albeit on consolidated and straightened out considerably by explosives and bulldozers from the wriggling map line of the 1830s and 1840s" (Dillon 1975).

The copper boom in the West Shasta Mining District began in the 1890's. (See the "Minerals" section for more information) For about 20 years, copper and zinc ore was produced from numerous underground mines in the District. Towns and transportation networks were quickly established along the Pit and Sacramento Rivers. Although many of these towns are now below the waters of Shasta Lake, many related features such as mines, tramlines, and outlying parts of the towns lie on the slopes well above the lake level.

Most known historic archaeological sites are related to mining, transportation, commerce, and recreation. Historic sites include historic buildings and lodges and historic hiking and fishing trails. On the McCloud River, a private fly-fishing club has been in operation since 1904; its lodges date from the 1860s. Some lodges are likely eligible for inclusion in the registers of national and State historic properties.

Trinity Unit

A search of the scientific literature and field reconnaissance has revealed no items of paleontological interest in the Trinity Unit.

The American Indian group that occupied the Trinity River Valley, now inundated by Trinity Lake, were called the nomsus or Upper Trinity Wintu. They generally occupied locations at the confluence of streams in the valley. Upper elevation habitation sites were located near good sources of water along moderate slopes. In addition, these sites were of seasonal use, being occupied during late spring through late fall.

The region's first recorded European exploration occurred in 1845 when Major Pierson P. Reading discovered and named the Trinity River (the English translation of "Trinidad") when he mistakenly thought that the river emptied into the Pacific Ocean at Trinidad Bay. It is probable that fur traders like Jedediah Smith visited the region prior to 1845, although there is no written documentation available (BOR and TCRCD 2007).

Major Pierson B. Reading, who owned a ranch in the northern Sacramento Valley, made several expeditions into Trinity County beginning in 1845. After doing some gold prospecting in Shasta County, he began prospecting what is now called Readings Creek in 1848. He and a large crew worked the creek down to Readings Bar at its confluence with the Trinity River. After six weeks, they returned to Shasta County with approximately $80,000 in gold. The news of his discovery triggered a rush to Trinity County between 1848 and 1850 (Jones 1981).

Boom towns quickly sprang up throughout the basin, with Weaverville and Trinity Center being among the largest. In 1851, about a year after the town of Weaverville was founded, Moses Chadborn was credited with settling an area which would later become Trinity Center. He first settled a farm, then later a trading post and sawmill. By 1853 most of the available ground in the Trinity Basin was settled after gold was discovered in the gravel bars of the Trinity River. By 1858 ("The Golden Era" of the area) Trinity Center was a thriving mining community boasting a population of 70-80 miners (FS 1965b). Ridgeville was once fondly referred to by a San Francisco newspaper as the "Golden City" distinguished by its"...beautiful women, fast horses and lazy men." Milling lumber was also an important local industry in the late 1800s because the mines used large quantities of lumber for flumes, shoring, housing, and general equipment. In fact, there were more people living in the Trinity area in the 1850s than have ever inhabited the area at any one time since. During the early 1880's it is estimated that two thousand Chinese were living along the Trinity River. Evidence of their early presence is still noticeable by several place names along the Trinity River.

By 1859 a road was completed through Trinity Center which connected Shasta and the country in the south to Yreka and Oregon in the north (FS 1965b). It was built along the original trails of the Wintu Indians and early European explorers. The original wagon road was built with private capital and when the road became public, it was operated as a toll road and users were required to pay a set fee according to what was being transported. For many years this route, a part of the Old Oregon Trail, was the main route of commerce between California and Oregon. After completion of the railroad through the Sacramento Canyon in the 1880's, the road was used for the most part as a stage line until the late 1890's. The last stage coach negotiated this route in 1924 attesting to the rugged nature of this part of California.

Stage in front of Trinity Centre Hotel.

There are still several remnants of the old Portland to Sacramento Stage Road in existence, Carville Loop Road is one. Between Lewiston and Coffee Creek, the old road followed the Trinity River and now lies beneath the waters of Lewiston and Trinity Lakes.

Most of this area was placed under Forest Service control by Presidential Proclamation establishing Trinity National Forest on April 26, 1905.

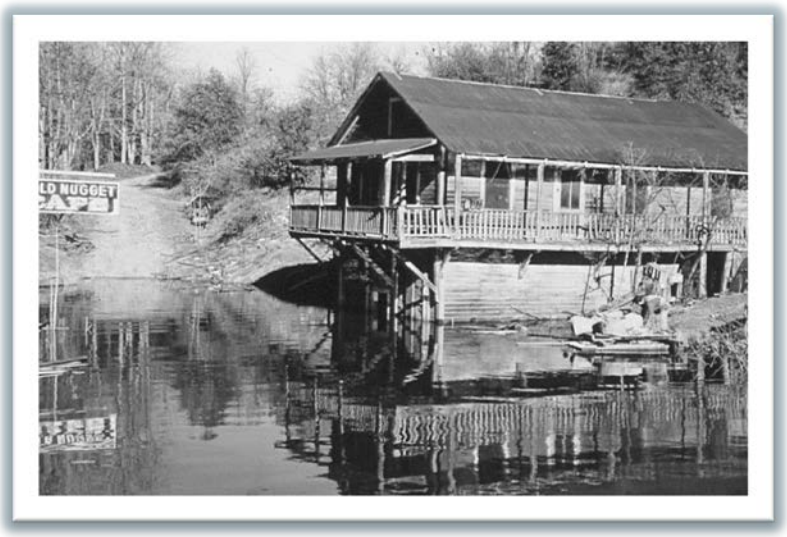
Mining operations began to decline in the basin around 1920 and all but stopped with the start of World War II.(FS 1965b). Much of the usable infrastructure needed for mining operations was removed and used as scrap to support the war effort. As the gold disappeared and railroads expanded, logging became a more important local industry than mining. Communities in the Trinity River Basin developed economies based on timber harvesting, although accelerated harvesting and economic growth in the timber industry did not come about until after World War II, when modernization and improved technologies occurred.

2. Setting

Shasta Unit

In 1941 the area to be inundated by the construction of Shasta Dam was surveyed, including some excavation, for archaeological sites. Thirty-seven aboriginal sites were mapped of which 31 were on the McCloud arm. Here along the McCloud River, the salmon supply was more bountiful than the other tributaries to Shasta Lake because of the cooler and more stable water conditions. The 37 sites are predominantly late-period village sites dating to Wintu occupation. The Wintu are believed to have arrived in the area and established permanent villages on the flats along the river approximately 1000-1500 years ago.

Subsequent archaeological surveys, conducted primarily by Shasta Lake District personnel during the drought years of 1976-77 and 1991-92, have added more than 150 sites to the inventory of heritage resources within the pool area of Shasta Lake. Most of these are prehistoric sites, and some of these sites indicate an antiquity of at least 7,000 years. Historic homesteads and mining related sites historic sites were also recorded. Many of the sites on the Shasta Unit have not been evaluated for eligibility to the National Register of Historic Places.



The rising water of Shasta Lake encroaching into the town of Kennett in early 1944.

Most pre-dam Anglo-European settlements, including the major historic sites of Kennett, Copper City, Baird Fish Hatchery, Heroult, Silverthorne Ferry, the Pit River Railroad, and Bayha Resort were also located along the more favorable terrain of the river channels and were inundated. Bully Hill Mine is one of the significant historical sites that remains above the present water level.

Relatively little land in the NRA above the maximum lake level has been surveyed for cultural resources, with the exception of the Clikapudi and Squaw Creek drainages. At present about 60 sites are known to be in the NRA above lake level. Several sites are mines or mining-related, and others are early historic homesteads. Special cases are a few cave sites which not only have paleontological and archaeological deposits, but also have traditional values to living Native Americans.

There are presently several sites considered traditional cultural properties associated with Winnemem Wintu religious and ceremonial locations that are still actively used. Most of these sites have not been documented formally in a National Register of Historic Places District. Areas within the Shasta Unit are also used for collecting herbs and other plant resources for use in ceremonies.

Trinity Unit

During the preliminary planning for the Trinity-Lewiston Lakes complex, Adam E. Treganza (during the field seasons in 1952, 1953, and 1957), carried out an archaeological survey and excavation of the area to be inundated, including most of the area presently within this Unit of the NRA. Of 120 recorded sites, the majority were inundated, as Trinity Wintu tribes generally occupied locations at the confluence of streams. Of these sites only 16 remain above lake level. Since this survey effort, the Forest Service has identified four additional sites just below the high water mark of the lake.

The Trinity Unit is replete with historical material relating to the gold mining era, dating back to 1848. Many historical sites, such as Trinity Center, Minersville, Sebastapol, Stringtown, Five Pines Mine, and Scott Ranch were inundated. However, many remain above the waters of Trinity and Lewiston Lakes including Fairview Mine, Bowerman Barn and Homestead, Ridgeville townsite and cemetery, Headlight Mine, Carrville, and hydraulic mining areas near Lewiston Lake.

Ranchers who originally settled the valley now inundated by the reservoir have lent their names to the local scene, such as Eastman Gulch, Bragdon Gulch, Linton Ridge, and Feeney Gulch.

The most prominent historic property mentioned is the Bowerman Barn and Homestead. This 116-year-old barn and the surrounding property preserve a unique view into the pioneer ranching and farming of Trinity County. This is the only structural evidence left of the old Bowerman Homestead. Barely escaping the ravages of time, it is being restored to almost original condition and is now on the National Register of Historic Places. It is one of the last of its kind, with a foundation of hand laid stone, mortise and tenon framework, and whipsawn pine boards attached with hand forged square nails. Bowerman Barn provides an important view into pioneer life in Trinity County, which is unique to Northern California.

3. Management Guidance

Heritage work by the Forest Service has identified three ongoing management problems facing the prehistoric resources near and within the lakes: the ongoing erosion caused by lake level fluctuation, recreation impact, and illegal collecting. Furthermore, visitor use of both Shasta and Trinity Units pose ongoing impacts to prehistoric and historic heritage properties adjacent to or below the high water line for each reservoir. This management situation requires monitoring and evaluation of archaeological properties under section 110 regulations of the National Historic Preservation Act.

Some projects may have the potential to create adverse impacts to National Register eligible properties. Examples would be construction or reconstruction projects necessary to maintain or enhance recreation sites within the NRA. All potential undertakings will require compliance with National Historic Preservation Act (NHPA) regulations under section 106. This consists of inventorying and evaluating heritage resources, consulting with Native Americans and other interested parties, consulting with the State Historic Preservation Office and, on occasion, with the Advisory Council prior to proceeding with any resource use or development.

3.1 National Historic Preservation Act Sections 106 and 110

The National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470 *et seq.*), is the primary federal legislation that outlines the federal government's responsibility to consider the effects of its actions on historic properties. Historic properties are defined as those cultural resources listed, or eligible for listing, on the National Register of Historic Places (NRHP). The criteria for National Register eligibility are outlined at 36 CFR Part 60. Section 106 of the Act directs that Federal agencies shall take into account the effects of their actions on heritage resources. Section 110 of the Act directs federal agencies to take responsibility for the preservation and management of heritage resources that are owned or controlled by the agency, including the designation of a Preservation Officer to coordinate activities.

Compliance with Section 106, outlined at 36 CFR Part 800, follows a series of steps that are designed to identify interested parties, determine the Area of Potential Effects (APE), conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties. The regulations require federal agencies to apply the criteria of adverse effect to historic properties identified within the APE. The criteria of adverse effect, defined at 36 CFR Part 800.5(a)(1), states: "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

3.2 Consultation or Notification of Tribes

Many Tribal entities are consulted with or made aware of project activities within the NRA. The only federally recognized tribe with an interest in the lands within the NRA is the Redding Rancheria. Recognized tribes are sovereign nations and other governments. The Forest Service conducts government-to-government consultation only with Federally Recognized Indian Tribes. Several authorities may require

consultation with recognized tribes such as NEPA, FLPMA, NFMA, Historic Preservation laws and Executive orders.

However, types of consultation other than government-to-government consultation, with traditional practitioners, communities, and other interested parties may be conducted to comply with NHPA, NEPA, NFMA, and other related laws. Many non-recognized tribes also have an interest in the lands within the NRA. For projects within the Shasta Unit, the following tribes normally receive notification: Wintu Tribe of Northern California, the Winnemem Wintu Tribe, and the United Tribes of Northern California. For projects within the Trinity Unit, the Nor-El-Muk Band of Wintun Indians normally receives notification.

3.3 Programmatic Agreement

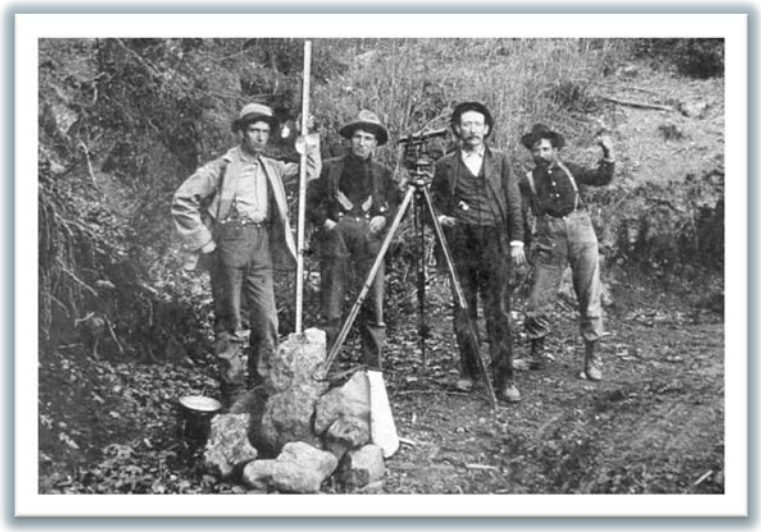
The Shasta-Trinity National Forest is a concurring Forest to the *Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region.* This agreement was signed in 2013 and is commonly referred to as the "Programmatic Agreement."

The Programmatic Agreement includes information on procedures, monitoring, public participation, exempt undertakings, and standard resource protection measures.

3.4 Forest Strategy

The prescription for the management of significant heritage resources within the Forest Land and Resource Management Plan calls for protection, interpretation, and the encouragement of scientific research for selected properties. Protection can consist of patrolling, signing, and flagging. Interpretive projects provide not only educational opportunities for the visiting public, but can also be used to encourage appreciation and protection of the heritage resources.

Suggested projects for the Shasta Unit will be the development of evaluation and interpretive programs for prehistoric resources in the Clikapudi drainage, Upper Salt Creek, Jones Valley, and historic resources in the Bully Hill area. The restoration and interpretive project at Bowerman Barn would be continued on the Trinity Unit.



Surveyors working on forest road.

LAND USE AND OWNERSHIP

1. Historical Overview

Shasta Unit

Section 3 of the 1862 Pacific Railroad Act granted the railroads 10 square miles (26 km^2) of public land for every mile of track laid, except where the tracks ran through cities and crossed rivers. This grant was apportioned in five sections on alternating sides of the railroad route, with each section measuring one-fifth of a mile in length by 10 miles in height. These grants were later doubled to 20 square miles per mile of grade by the 1864 Act. The Central Pacific Railroad (now part of the Union Pacific) was the recipient of these land grants in its quest to build a railroad westward. These Acts created the checkerboard pattern of land ownership that can still be seen today in many areas. Homesteading and mineral land patents also contributed to scattered private ownership.

Since the inception of hydroelectric power development in California, the streams of Shasta County were of keen interest. Of particular significance was the natural power design of the Pit River; the steep descent of the Pit from near Fall River Mills to the valley floor presented what has been termed a "stepladder of power." The first on-the-ground investigation into the hydroelectric potential of the Pit was conducted by J.R. Scuphan, a civil engineer, in 1875. However, actual utilization of this resource had to wait for an economic need for electric power. The Shasta County copper boom provided this impetus. In 1917 Pacific Gas and Electric Company (PG&E) bought out the Pit River rights owned by a group called the Mount Shasta Power Company, whose attempts to utilize the Pit had been stopped by financial problems. In 1922 PG&E completed Pit 1, its first project on the Pit. Ten miles downstream from Pit 1, Pit 3 was completed in 1925 (Petersen 1965). These were followed by Pit 5 in 1944, Pit 4 in 1955, Pit 6 and 7 in 1965. Pit 2 was never constructed.

A 1938 land use study of the area (Bradbury and Barnum 1938) proposed for Shasta reservoir noted that "there are now approximately 144 residences in the area excluding the towns of Kennett and Delta. The

sources from which these families obtain their livelihood are listed in the order of importance; small ranches, mining, service stations, stockraising, commercial summer resorts, and miscellaneous. The flooding of the reservoir to the 1100 foot contour will force approximately 62 per cent of the families to evacuate their homes, and will cover the most favorable types of soil for stock and ranch purposes." The study also stated that, "a large proportion of the lands [are] now used for some form of seasonal grazing of livestock. The best field estimates indicate that 1100 to 1150 head of cattle and 4000 to 5000 head of sheep and goats are grazed on lands up to the ridge tops within the National Forest."

The Report on the Development of a Land Management Plan for the Shasta Reservoir Lands under Bureau Jusridiction (Burrows 1947) gives the following information on lands in the Shasta Lake area: For the purpose of establishing Shasta reservoir, the Bureau of Reclamation (Reclamation) acquired title to approximately 120,000 acres of land. This was accomplished by either a first form withdrawal of public domain lands or by purchase of private land. A small portion was acquired from the State of California. Throughout the northern portion of the area there exists the common checkerboard of Government holdings and private lands with the Southern Pacific Railroad Company as the principal landowner.

Shasta Lake area has been administered by the U.S. Forest Service since July 1, 1948. When the NRA was proposed, most of the Government lands within the boundary were original Public Domain (Bureau of Land Management) lands or private lands acquired by the Reclamation. These lands were given National Forest status under Public Law 449 (Act of March 19, 1948 (62 Stat. 83)). By the Act establishing the NRA, the exterior boundaries of the Shasta National Forest were extended to include the Reclamation project lands described in Public Law 449, and this gave the public lands in the vicinity of the lake full National Forest status. Some lands have since been consolidated through purchase or exchange.

Trinity Unit

The 1951 project report for Trinity and Lewiston reservoirs (Bigler1951) notes that "although most of this project is located inside national forest boundaries, most alternate sections consist of Southern Pacific holdings. There are also hundreds of acres of land in private ownership. This is especially true along the Trinity River proper and in the upper areas of the reservoir where considerable acreage of meadow grazing land is involved."

"The Bureau of Reclamation is not authorized to acquire lands for recreational purposes. It is their standard practice, however, to obtain control, through withdrawal or acquisition, of the land within a distance of 300 feet horizontal from the shores of its conservation reservoirs. Where private land must be purchased for this purpose, it is customary to acquire to the nearest sectional or subsectional division line. If the land owner desires to retain as much of his land as possible, the Bureau will acquire to a meander line approximating the 300 foot horizontal distance from the reservoir." (FS 1956)

The 1957 report by the State of California (CDNR 1957) mentions that "within the project area (Trinity and Lewiston reservoirs) is a checkerboard pattern of private and public land ownership. This includes many patented and unpatented mining claims. The U.S. Forest Service has uncovered a number of fraudulent mining claims. Many were filed to capitalize on the potential recreation use of the area. Public Law 167, 84th Congress, has aided in eliminating those claims filed after July 23, 1955. The largest private land owner is the Southern Pacific Land Co. The present policy of the organization is to hold their lands....The U.S. Forest Service is carrying forward a program of forest lands exchange with the Southern Pacific Land Co., in order to consolidate their holdings. This is mutually beneficial, but is progressing slowly."

The same Act establishing the NRA extended the exterior boundaries of the Trinity National Forest to include the area around the Lewiston Reservoir. The Act made all public lands of the United States acquired for the Clair Engle (now known as Trinity) and Lewiston Lakes part of the Trinity National Forest, provided the areas within the flow lines or otherwise needed by the Reclamation for operation of the Central Valley Project would continue to be administered by them to the extent necessary for the project.

2. Setting

2.1 Land Area and Ownership

Ownership within both NRA units is mixed: approximately 8 percent of the lands are non-National Forest ownership within the Shasta Unit, and approximately 21 percent of the lands within the Trinity Unit are in non-National Forest ownership. Private ownership is somewhat concentrated on the Shasta Unit with larger inholdings at Bully Hill, Obrien Mountain, Salt Creek, near Hirz Bay, and at Lakehead. For the Trinity Unit, the private inholdings are widely interspersed with National Forest lands. Many of the private parcels are timber company lands.

Because of the mixed ownership, issues with encroachments of private property and structures over property lines onto the National Forest are not uncommon. Some of these encroachments were discovered during a Forest Service survey around Shasta Lake in the early 1990's, primarily in the Lakeshore area. These encroachments were the result of an error in a survey done by the Bureau of Reclamation during the construction of the dam. Most of these have since been resolved, however; encroachments are an ongoing problem anytime there is considerable development adjacent to the National Forest and continues to be an issue in the Lakehead area.

2.2 Administrative Coordination—Bureau of Reclamation and Forest Service

According to the 1956 document *Public Use Plan: Trinty River Planning Project* (FS 1965), "Recreational opportunities created by Reclamation projects are not recognized as a project function by Reclamation law as are irrigation, flood control, etc. Lacking this recognition, recreation must be treated by the Bureau as an incidental or corollary benefit. The planning, development and administration of recreational use on Reclamation land is therefore delegated to an agency having authority to administer public recreational areas. Bureau policy notes that since watershed management is one of the primary function of the Forest Service, and since the multiple-use policy of the Forest Service includes recreation, it follows that the recreational use of reservoirs and their shorelands within or adjacent to National Forests be managed by the Forest Service."

The relationship between the Forest Service and the Bureau of Reclamation pertaining to the administration of recreation facilities at these Reclamation reservoirs is formalized in an interagency agreement (The most current version is: Master Interagency Agreement Number 86-SIE-004 Between the Bureau of Reclamation, U.S. Department of the Interior and the Forest Service, U.S. Department of Agriculture Concerning Water Resources Related Projects of the Bureau of Reclamation within or adjacent to National Forest System Lands, 1987.) and other MOA/MOUs pertaining to specifically to Shasta Lake, Trinity Lake and Lewiston Lake (see Chapter 1, Forest Service and Bureau of Reclamation Agreements and MOUs on page 1-13).

The 1986 MOA concerning the coordination of administration of the NRA with the administration of the Central Valley Project includes the following regarding administrative jurisdiction: "The Service shall administer all lands and waters within the boundaries of the Shasta and Clair Engle-Lewiston Units of the National Recreation Area and the Bureau shall administer those lands and waters designated as Reclamation Zones in this agreement [i.e., Shasta Dam Area, Trinity Dam Area, and Lewiston Dam and Fish Hatchery Area]. The Bureau shall operate Shasta, Keswick, Clair Engle, and Lewiston Reservoirs as required for, and under the authority of, the Central Valley Project and/or other authority or legislation that directs the operation or administration of such reservoirs. The Service will administer all waters and waterways within the Shasta and Clair Engle-Lewiston Units of the National Recreation Area for recreation and resource management, provided that such administration does not adversely affect the water storage capacity or maintenance and operation of the Central Valley Project without prior approval by the Bureau."

2.3 Lands Special Uses Program

Lands Special Uses, also called "non-recreation" special uses, are widespread in the NRA and include authorizations for roads, powerlines, telephone lines, cellular communications sites and water systems. Some uses serve the general population while others are specific to private landowners. Types of authorizations include licenses, leases, permits, and easements. Use authorizations can be issued for up to 30 years, depending on the type of use and investment needed. Many existing authorizations are for 10 years and the number of expired and expiring authorizations is growing every year.

Table 2-4
2010 Non-Recreation Special Use Authorizations

Type of Authorization	Shasta	Trinity
Agriculture and Range	1	1
Native American Traditional Religious Activity	1	0
Public Information	0	2
Sanitary System	2	0
Encroachments	1	0
Feasibility and Research	1	0
Storage and Manufacturing	2	2
Electric Transmission and Distribution	6	2
Airport	0	1
Non Broadcast Communication and Telephone	3	4
Cellular and Broadcast Translator	1	1
Water Related Improvements	13	4
Road or Trail Authorizations	48[a]	98[a]

Notes:

[a]Road and Trail Authorizations extend on and off of the NRA, but are managed by the NRA district Staff

2.3.1 Licensed Hydropower Projects

There is a portion of one hydropower project, licensed by the Federal Energy Regulatory Commission (FERC) within the NRA. The Pacific Gas and Electric (PG&E) Pit 3, 4, & 5 Project (FERC License #P-233) extends from Lake Britton within the Lassen National Forest westward to Lake Shasta. Most of the reservoirs within the Project are relatively small and act as flow-through regulating facilities, but Lake Britton and Pit 7 Reservoir can store water for release later in the season, depending on streamflow and storage conditions.

Fender's Flat is a popular dispersed recreation site within the NRA which is also within the boundary of this FERC project. Its general location is Section 31, Township 35 North, Range 1 West, MDM. Any activities within this License boundary must be coordinated with PG&E. The license for the Pit 3, 4, & 5 was reissued in 2007. Implementation of the requirements in the license to provide for public recreation and improved resource conditions is ongoing and monitoring will continue through the term of the license. The Forest FERC coordinator should be contacted for more information. Hydropower projects controlled by the Bureau of Reclamation (e.g., Shasta, Trinity, Lewiston) are not licensed by the FERC.

Due to economic incentives in the 1980's, a number of small hydropower projects were proposed, some affecting the NRA. While none were constructed within the NRA, there is a possibility that projects could be proposed in the future. The Forest FERC coordinator would be aware of these activities.

2.3.2 Major travel corridors, utility corridors and communication sites

Within the NRA are the following critical transportation, utility, and communications facilities:

- Interstate Highway 5 (I-5) crossing Shasta Lake, State Highway 3 along the west shore of Trinity Lake.
- Major overhead power transmission line running northward through the Sacramento River canyon which also carries fiber optic cable.
- Union Pacific Railroad runs north and south through the Sacramento River canyon.
- Buried fiber optic lines along the west side of Trinity Lake.
- Bowerman on the Trinity Unit and Haycock Peak on the Shasta Unit are the currently designated communications sites.

Bass Mountain and Sugarloaf Peak are communication sites that fall just outside of the NRA but serve areas within the NRA boundary and enhance the recreational opportunities throughout the NRA.

3. Management Guidance

3.1 Land Adjustments (Exchanges & Purchases)

3.1.1 Land Adjustments

Those private lands that would enhance public outdoor recreation opportunities and/or the conservation of scenic, scientific, historic, and other values contributing to the public enjoyment of the NRA should be acquired as opportunities arise. A map of parcels with priority for acquisition can be found in the current Forest Land Adjustment Guide (map published with the Forest Plan). Generally, lands within the NRA would not be available for disposal. This is not a "hard and fast" rule but a guideline. The Guide also identifies specific lands that would **not** be acquired such as Bully Hill on the north side of the Squaw Arm of Shasta Lake, due to potential physical and environmental hazards.

Land exchanges will be pursued in accordance with the Forest Land Adjustment Guide. Lands directly adjacent to shoreline will have the highest priority. Lands that are adjacent to existing Forest Service facilities or that support these facilities (i.e., water systems, roads) are also high in priority.

Note that the authority of the Small Tracts Act (Act of January 12, 1983) cannot be used for the sale of federal lands within National Recreation Areas (16 U.S.C. 521.i). However, it can be used for small land exchanges also called "interchanges".

3.1.2 Rights-of-Way

The NRA staff will review annually any opportunities or needs for easements, such as for roads and trails and submit to the Forest Headquarters Office for inclusion in the annual Lands Service Request for consolidation to the Region.

3.2 Requirements Found in the NRA Legislation and Regulations

The Code of Federal Regulations (Sec. 292.11 to 292.13) contains development/zoning standards that apply to the Shasta and Trinity Units (1966 boundary description) and to a strip of land outside the National Recreation Area on either side of Highway 3.

The objectives of these sections are to: (1) Prohibit new commercial or industrial uses other than those consistent with the purposes of the act establishing the National Recreation Area; (2) promote the protection and development of properties in keeping with the purposes of that Act by means of use, acreage, setback, density, height or other requirements; and (3) provide that the Secretary receive notice of any variance granted under, or any exception made to, the application of the zoning ordinance approved by him.

Some of the standards are as follows (for the complete text see Appendix B):

- New industrial or commercial uses will be prohibited in any location except under the following conditions:
  - The industrial use would not have significant adverse impacts on surrounding or nearby outdoor recreation, scenic and esthetic values. Industrial uses having an adverse impact include, but are not limited to, cement production, gravel extraction operations involving more than one-fourth acre of surface, smelters, sand, gravel and aggregate processing plants, fabricating plants, pulpmills, and commercial livestock feeder yards.
  - The commercial use is for purposes of providing food, lodging, automotive or marine maintenance facilities and services to accommodate recreationists and the intended land occupancy and physical structures are such that they can be harmonized with adjacent land development and surrounding appearances in accordance with approved plans and schedules.
  - Privately owned and operated businesses whose purposes and physical structures are in keeping with objectives for use and maintenance of the area's outdoor recreation resources. It precludes establishment of drive-in theaters, zoos, and similar non-conforming types of commercial entertainment.

- Provisions to protect natural scenic qualities and maintain screening along public travel routes will include:
  - Prohibition of new structural improvements or visible utility lines within a strip of land extending back not less than 150 feet from both sides of the centerline of any public road or roadway except roads within subdivisions or commercial areas. In addition to buildings, this prohibition pertains to above-ground power and telephone lines, borrow pits, gravel, or earth extraction areas, and quarries.
  - Retention of trees and shrubs in the above-prescribed roadside strips to the full extent that is compatible with needs for public safety and road maintenance. Wholesale clearing by chemical or other means for fire control and other purposes will not be practiced under this standard.

- Provisions to protect scenic qualities and reduce potentials for pollution of public reservoirs will include:
  - Prohibition of structures within 300 feet horizontal distance from highwater lines of reservoirs other than structures the purpose of which is to service and accommodate boating or to facilitate picnicking and swimming.

- Property development. Location and development of structures will conform with the following minimum standards:
  - Structures for commercial purposes, inclusive of isolated resorts or motels, will not exceed two stories height at front elevation, and will be conventional architecture and will utilize colors, nonglare roofing materials, and spacing or layout that harmonizes with forested settings. Except for signs, structures designed primarily for purposes of calling attention to products or service will not be permitted.

- ◊ Locations approved for residential development will be buffered by distance, topography, or forest cover from existing or planned public use areas such as trailer parks, campgrounds, or organization sites. Separation will be sufficient to avoid conflicts resulting from intervisibility, noise, and proximity that is conducive to private property trespass.
- ◊ Requirements for approval of residential areas will include: use of set-backs, limitations to natural terrain, neutral exterior colors, nonglare roofing materials, and limitations of building heights fully adequate to harmonize housing development with the objective of the National Recreation Area as set forth in the Act.
- ◊ Only those signs may be permitted which: (1) Do not exceed 1 square foot in area for any residential use; (2) do not exceed 40 square feet in area, 8 feet in length, and 15 feet maximum height from ground for any other use, including advertisement of the sale or rental of property; and (3) which are not illuminated by any neon or flashing device. Commercial signs may be placed only on the property on which the advertised use occurs, or on the property which is advertised for sale or rental. Signs shall be subdued in appearance, harmonizing in design and color with the surroundings and shall not be attached to any tree or shrub.

3.3 Special Uses

3.3.1 General Policy

Existing uses should be evaluated prior to issuance of a new authorization to be sure the use complies with the Forest Plan as well as the objectives of the NRA. The Forest will give appropriate notice to authorization holders of uses to be discontinued. The Forest deciding official will evaluate new proposals similarly to be sure they are appropriate for the NRA and could not be accommodated elsewhere on non-National Forest lands or outside of the NRA.

3.3.2 NRA Policy for Major Travel and Utility Corridors

Appropriate steps will be taken to identify and protect the required scenic setbacks along public roads within the NRA and NRA viewshed.

Planning will take place with owners or managers of travel and utility corridors through the NRA (railroad, highway, and major power lines) to minimize the visual impacts of these corridors on the aesthetic value of the NRA.

In 2009 USDA Undersecretary Mark Rey has signed a Record of Decision (ROD) amending 38 National Forest Land Management Plans to identify locations of corridors suitable for future energy transmission infrastructure across Forest Service land. The corridors protect or minimize resource impacts to lands and surface resources by identifying preferred locations for corridors that also cross Federal lands managed by other agencies. A section of one of these corridors is within the Shasta Unit near I-5. Any proposals within this corridor will need site-specific resource concerns addressed in an environmental analysis.

3.4 County Zoning Policies

Valid zoning ordinances for both Shasta and Trinity Counties covering the private lands within the NRA and approved by the Secretary of Agriculture are in effect.

According to the Code of Federal Regulations which implements the NRA Legislation, the Secretary of Agriculture may not acquire without consent of the owner, any privately owned "improved property" or unimproved property within the boundaries of the Shasta or Trinity Units, so long as the appropriate local zoning agency has in force a duly adopted, valid, zoning ordinance that is approved by the Secretary. This suspension of the Secretary's authority of acquisition by condemnation automatically ceases: (1) if the

property is made the subject of a variance or exception to any applicable zoning ordinance that does not conform to the applicable standards (36 CFR Sec. 292.11 to 292.13); or (2) if the property is put to any use which does not conform to any applicable zoning ordinance approved by the Secretary.

Coordination will take place with Shasta and Trinity Counties to allow those private land developments and resource production proposals that will maintain or enhance National Recreation Area values and to disallow or phase out private land uses which detract from those values. Any requests for input by County Planning Department, such as zoning changes or variances, should be scrutinized carefully in context with the NRA Legislation and appropriate comments submitted. In accordance with the NRA Legislation, "the Secretary shall be given written notice of any variance granted under, or any exception made to, the application of a zoning ordinance or amendment previously approved by him."

Private landowners within the NRA zoning designation are sometimes required by the County Building department to submit their grading or building plans to the Authorized Officer (usually the District Ranger) for approval. Review the zoning regulations and the NRA regulations for guidance and consult with the Forest Landscape Architect regarding building color, etc. Balance the need for fire safe areas with vegetative screening called for in the zoning ordinances. Check with the Fire Prevention organization for guidance.

3.5 Priority Land Adjustments and Encroachment Issues

Current priority land adjustments and encroachment issues include:

- Trinity Airport near the community of Trinity Center is an important local transportation hub. Trinity County manages the portion of the airport under special use authorization on NFS lands. In 2006, Trinity County submitted an application to acquire the lands currently encumbered by airport facilities and for future needs for the airport. The Forest will continue to work with the County to evaluate this proposal.
- Lehigh Southwest Cement Company proposes to exchange land near Dekkas Rock within the NRA for National Forest System lands adjacent to their existing mine. If completed, the exchange would result in consolidation of Federal ownership in one area of the Shasta Unit and eliminate the need for two special use authorizations. A collection agreement is currently being used to facilitate this proposal.
- The Stoney Creek Parcel creates a hole in the Trinity Unit within Northwest Forest Plan identified Late Successional Reserve (LSR) habitat. The owners have already completed survey work for subdivision and most of the requirements needed to gain building approval. Subdivision would lead to creation of a block of highly developable land within LSR and directly adjacent to campgrounds, along Stoney Creek, and in between Trinity Lake and the Trinity Alps Wilderness farther upstream. The possibility of acquisition presents an opportunity to preserve the high quality visual character of this key recreation area while preventing inevitable use conflicts, encroachments, lakeshore degradation and LSR habitat fragmentation.
- Continued acquisition of the lands or rights-of-way in support of the Golinsky Mine remediation project above Shasta Lake.
- Work with Sierra Pacific Industries (SPI) to resolve the issue of the FS water system on SPI lands and encroachments by SPI of a fence, a piece of cabin and part of a road to cabins, on the north side of Trinity Lake in the Bowerman/Alpine View area.
- The NRA is actively working with the owners of the Lakehead Campground and RV Park to remove unauthorized improvements located on approximately 0.25 acres of National Forest System lands adjacent to the Park.

The Forest addresses encroachment problems on a case by case basis. The primary resolution is by removal of the facility, structure, or property. Monitoring of known areas that have presented problems in the past

and regular maintenance of land line markings is vitally important. These locations include the Lakehead area north of Shasta Lake and Trinity Center on the west side of Trinity Lake. If encroachments are found or suspected they should be documented using photographs and maps, and a case file started. The NRA staff will inform the District Ranger of the findings. It may be necessary to contact the Forest Service Surveyor for confirmation of the landline location as well as Forest Service Law Enforcement for possible legal action.

Rising Star Mine ore train.

MINERALS

1. Historical Overview

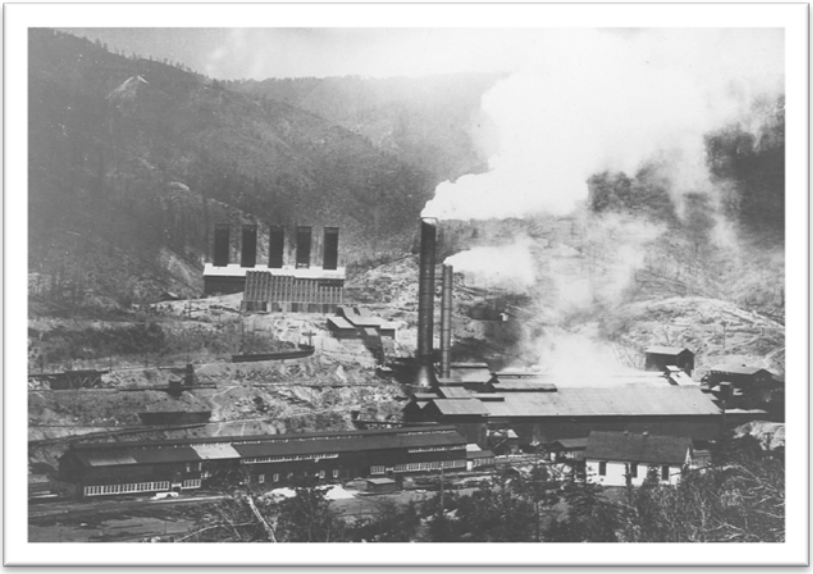
Shasta Unit

The Shasta Unit contains two historic base metal mining districts, the West Shasta and East Shasta Copper-Zinc Districts. These belts extend from Iron Mountain northeastward to Backbone Creek, then east to Ingot, a distance of about 30 miles. This area has been referred to in historic geologic literature as the "Copper Crescent." Although copper forms the basis of this mineralized horseshoe, clay products, silver, iron ore, pyrite, zinc and some gold are also part of this belt (Petersen 1965). Between 1896 and 1919, Shasta County developed into one of the major copper mining and smelting regions of the United States. Five copper smelters were supported by numerous mines. Shasta County led California in total value of mineral production, excluding petroleum, during this period. Predominately, the mineral extracted was copper. Approximately 620,000,000 pounds of copper were produced.

Copper mining began in 1862 at Copper City when Swedish miner, Charles Williams, broke, thirsty and looking for gold, brought the area back to life (Petersen 1965). By 1863 several new ore discoveries, including the Bully Hill find, had prompted a wholesale rush to this district (Petersen 1965). The lack of a smelter required shipping the ores to Europe for processing, so both production and profit were limited. In 1894, an English corporation acquired the Iron Mountain Mine (originally a silver mine), and in 1896 this company built a smelter at Keswick which eliminated the need to ship ore out of the country for processing. This development led to the expansion of copper mining within what is now the Shasta Lake watershed. Large mines were developed, including the Mammoth and Balaklala mines in the West Shasta Copper District, and the Bully Hill and Rising Star complex in the East Shasta Copper-Zinc District.

The Mammoth property, located between Mammoth Butte and Backbone Creek, was purchased in 1904 by a large corporation, the United States Smelting, Refining, and Mining Company. They built a smelter on a site between Little Backbone and Backbone Creeks in 1907, one and one half miles from the town of Kennett.

Kennett was ideally situated with respect to nearby limestone and quartz deposits which were used as flux in the smelting process. A combination of wagon roads, aerial tramways, and rails connected the mine with the smelter. The Mammoth operation became the largest and most successful copper mining enterprise in Shasta County. By the time of incorporation in 1911, Kennett replaced Keswick as the second largest city in Shasta County with 3000 inhabitants (Kristofors 1973). More than 3 million tons of copper ore were produced from the Mammoth complex before mining ceased in 1925 (CDOC 2000).



Copper smelter at Kennett.

The "Father" of Kennett was Charles Butters, a gold seeker elevated to millionaire by his development of a successful gold processing method. Butters initially mined gold in the Kennett area. With the copper boom in the 1890's the town catapulted from 20 to 2500 people, and to accommodate the newcomers, Butters laid out a model town of gridiron fashion with wide streets, sites for churches and a school, and even a city sewer system. The town possessed several hotels, a bank, a newspaper, 22 telephones, and numerous salons, including the celebrated "Diamond Bar" known for its $5000 mahogany bar. Kennett boosted the largest smelter on the Pacific Coast (Petersen 1965).

The Balaklala Mine operated from 1902 to 1909, and again from 1918 to 1919. More than 20 adits and thousands of feet of workings were developed in 1902. In 1905, a smelter was built at Coram (near what is now, Shasta Dam). An aerial tramway over 16,200 feet long was used to transport ore from the mines to the Coram smelter. The tramway had a capacity of 75 tons per hour. Despite its great size and expected potential, the smelter ceased operation in 1911. The inability of the company to install adequate fume control devices resulted in numerous lawsuits and, eventually, the closure of the smelter with a successful suit by the Shasta County Farmers' Protective Association. The emissions from copper smelting contained sulfur dioxide which severely impacted air quality and caused massive environmental degradation and the loss of forests throughout the region. Fumes from smelters were toxic to vegetation causing much (about 100 square miles) of the area west of the Sacramento River from the Keswick Dam to about 6 miles north of Shasta Dam to become denuded. By 1919, all the local smelters including those at Keswick, Kennett, Bully Hill, and Ingot were closed by court order.

Looking NE up the Sacramento River and O'Brien Creek at part of the area denuded by smelter fumes (T34N, R5W, Sec.24). Note the ponderosa pine and black oak remnants. Photo taken in 1932.

The Bully Hill and Rising Star complex, located next to Squaw Creek, was the largest operation in the East Shasta Copper-Zinc District. During the years these mines were in operation, more than a half-million tons of ore (containing about 48.8 million pounds of copper, 25.1 million pounds of zinc, 38,000 ounces of gold and 2.2 million ounces of silver) was mined between 1900 and 1950. At least nine adits and thousands of feet of workings were developed at this site. In the Bully Hill's prime, 2000 horses and mules were kept in Delamar. They were used to lower the ore to Copper City or the Delamar smelter. A smelter was put into operation in 1901, but ceased operation in 1910 due to increasing zinc content in the ore made refining more difficult, and litigation over emissions. "For the next ten years, experiments were conducted at Bully Hill with methods to separate and recover zinc and copper from complex ores. One electrolytic process of zinc recovery was later adopted by the Mammoth Company and the Broken Hill Mining Company of Australia. Although the Delamar smelter never reopened, the Bully Hill mine continued to be operated on a limited basis" (Kristofors 1973) until the 1927.

Iron was first mined in the Shasta Lake watershed in 1902 at the Shasta Iron Mine (located on the peninsula between the McCloud and Squaw/Pit Arms) to provide flux for the copper smelter at Bully Hill. A smelter was put into operation nearby in 1907 to produce pig iron from the mine. The smelter was shut down following World War I, but iron ore production continued until 1925. The mine became active again in World War II, and produced quantities of iron ore for use as marine ballast. Barges were required to transport the ore across Lake Shasta, following the completion of Shasta Dam. In 1948, production ceased and litigation arising from loss of access to the mineral deposits due to the rising lake level was settled (CDOC 2000).

Limestone was mined from the Holt and Gregg quarries beginning in 1894 and processed in kilns to produce lime for agricultural and construction use through 1927. Beginning in 1896, limestone from these and several other small quarries were used to provide flux material for the copper smelters located at Iron Mountain, Bully Hill, Coram, and Kennett until their operations ceased (CDOC 2000).

With the decline of the smelters, the towns of Copper City, Coram, Delamar, Ingot, Kennett, Keswick, and Winthrop died. The mining towns of Kennett and Copper City are now under Shasta Lake.

Trinity Unit

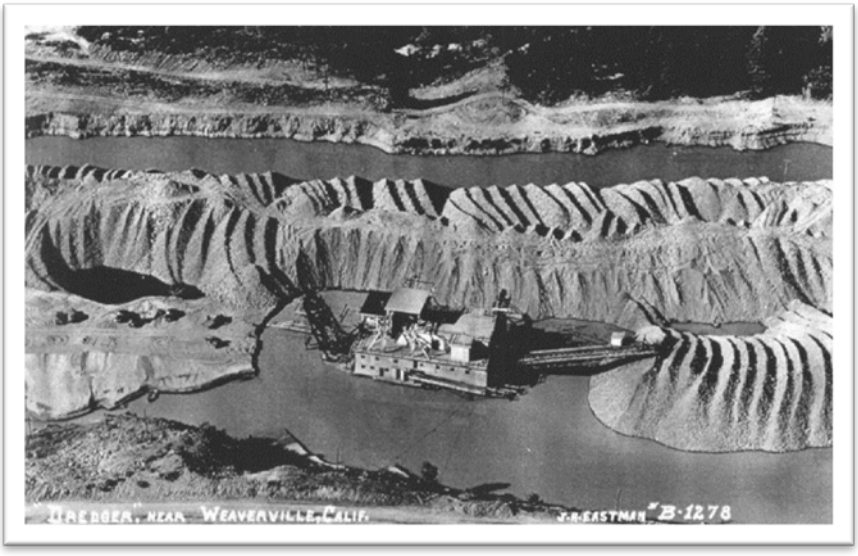
Following the discovery of gold near Reading's Creek in 1848, various placer mining claims were established and large scale placer mining continued up until the late 1950s. Historically, the principal mineral of economic

importance was gold, and the Trinity River watershed had the greatest concentration of gold mines in California outside of the Sierra Nevada. Both hardrock (lode) mines and placer (alluvial gravel) mines are present in the watershed.

Lode gold, chromite, quicksilver (mercury) and copper were also produced in or near the unit, but to a much lesser extent than placer gold. Chromite and quicksilver was mined exclusively within the headwaters of the East Fork Trinity River in the Crow Creek area. The Altoona mining district in northwest Trinity County is the largest mercury-producing district in California outside of the main Coast Range belt, with an output since 1871 of approximately 34,000 flasks of mercury.

Early gold miners typically employed hand equipment, including pans, picks and shovels, cradles, sluice boxes, and various combinations thereof. The initial strategy focused on panning stream bed deposits. Ground sluicing became common in the 1850s as a way to access gold deposits in the stream channels and on the land above the river and creeks. By the 1860s, this technique was the dominate method of gold mining. A ground sluice is a channel or trough in the ground, often hand dug to achieve the correct slope, through which gold bearing gravels are washed. Unlike the previous sluice box and cradle operations, ground sluicing required large quantities of water with which to excavate the ground. This need resulted in the construction of extensive networks of ditches, flumes, and penstocks. The method for ground sluicing was the antecedent to hydraulic mining. (BOR and TCRCD 2007)

The advent of hydraulic mining was one of the major innovations for placer mining gold. The peak of hydraulic mining lasted from the 1860s to the 1880s, when the nation's first environmental lawsuits led to its strict regulation and eventual demise. The millions of tons of silt, sand, and gravel that washed down from the mines was the industry's undoing. With the Sawyer injunction of 1884, the industry collapsed and the hydraulic miners abandoned the diggings for other work. (BOR and TCRCD 2007)



Dredger at work.

The interpretive sign at North Shore Vista illustrates the process of dredging. The Carville Dredge sat idle and rusting in Carville Pond until the early 1960s when it was finally dismantled and shipped to Bolivia. During the construction of Trinity Dam, crews attempted to float another dredge, the Fairview, which had been sitting for years along the river. The Fairview listed to port and sank during the attempt and remains at the bottom of Trinity Lake.

The refinement of placer mining culminated with dredging. Dredges were used where large placer fields existed in river canyons, such as those along the Trinity River, beginning during the late 1890s. Dredging operations were sporadic up to the turn of the century because this system for recovering gold was still fairly new and many operations were unsuccessful. Dredge mining along the Trinity River boomed during the 1910s and 1920s as dredging became more efficient and a profitable business involving major investors, foreign and domestic. The main channel of the Trinity River and Coffee Creek were mined by bucketline dredges and by

dragline dredges in the less accessible areas. The hallmark of dredge mining is the tailings piles, which are still visible along the river. (BOR and TCRCD 2007)

World War II curtailed mining activity and large-scale operations were shut down permanently after 1942, when the United States entered the war. Much of the usable infrastructure needed for mining operations was removed and used as scrap to support the war effort.

Land within the Trinity Unit of the NRA contains numerous historic placer mines. Many of these mines are now beneath Trinity Lake. Mines occurred throughout the basin with concentrations occurring along Coffee Creek, Trinity River, East Fork Trinity River and the Bonanza King area. The principal placer mining districts were the Trinity Center and Carrville districts.

Mining operations had significant effects on the hydrology, water quality, and channel and hillslope morphologies in the Upper Trinity River watershed. Dredging and hydraulic mining activities removed millions of cubic yards of material from hillslopes and valley floors completely reworking river channels and floodplains. Mining activities had adverse effects on water quality, some of which continue to this day. Prior to World War II the Trinity River was reported to be constantly turbid throughout the low flow season due to mining activities. Ditch systems were constructed in many of the Trinity River tributaries (e.g. Stuart Fork) for the purpose of conveying water to hydraulic mining operations. Approximately 20 miles of ditches were constructed in the Upper Trinity River watershed. The ditches were subsequently abandoned and have created slope stability problems in some areas where they trap and divert surface runoff. (FS 2005)

2. Setting

2.1 Requirements Found in the NRA Legislation and Regulations

The federal lands within the NRA were withdrawn from mineral entry under the 1872 Mining Law by the NRA legislation, subject to valid existing rights. As of 2008 the status of all claims in the NRA predating the withdrawal is "closed." NRA lands remain open to mineral leasing. Hardrock minerals in the NRA are available for prospecting, exploration, and development under the solid mineral leasing regulations (43 CFR 3500). Authorization for prospecting permits and leases for these activities are subject to both the consent of the STNF and the application of terms and conditions to protect the values of the NRA.

2.2 Mine Clean-up

Shasta Unit

The copper mining era left a legacy of water quality problems associated with acid mine drainage (AMD) also referred to as acid rock drainage (ARD). The extraction of ore from the mines resulted in extensive development of underground workings, creation of large waste rock dumps and tailings piles. The mine workings and waste rock dumps are the principal sources of low pH, metal laden discharges referred to as AMD. "The impact of ARD on the creeks of the West Shasta Copper-Zinc District was first documented in 1940. At that time, the seasonal flooding of the creeks and Sacramento River allowed for dilution of acidic waters. Following construction and filling of Shasta Dam, completed in 1945, ARD resulted in documented fish kills in the vicinity of the West Shasta Copper-Zinc District. Since 1939, attention has been directed at reducing ARD impacts on Shasta Lake and in the Sacramento River below Shasta Dam" (CRWQCB 2004).

AMD is formed when rainwater infiltrates into the mine workings through soil and rock. This water contacts sulfide deposits open to air in the old tunnel complexes of the mines. The ensuing chemical reaction significantly lowers the pH of the water. As this water moves out of the mine tunnels, its acidic nature leaches metals from the rocks. The discharge, commonly from mine portals, is toxic to fish and other aquatic organisms.

Although most of the major mines of the West Shasta Copper-Zinc Mining District lie south and west of the NRA, discharges from these mines still affect the drainages within the NRA and Shasta Lake. Acidic drainage flows into Shasta Lake by way of two tributaries: Little Backbone Creek and West Squaw Creek. The Mammoth, Golinsky, and Sutro mines are located in the Little Backbone Creek watershed and the Balaklala, Keystone, Shasta King, and Early Bird mine are located in the West Squaw Creek watershed. The Golinsky mine is the only one of these mines within the NRA.

The East Shasta mining district includes the abandoned Bully Hill and Rising Star mines, which drain into Town Creek and Horse Creek, respectively. These mines are located on private land within the NRA boundary. "A containment structure constructed sometime during the early 1900s has filled with sediment downstream from the Bully Hill Mine. No information is available on the character of the material stored behind this earth fill dam. In 2006, North State Resources, Inc., conducted a Phase 1 Site Assessment of an area adjacent to, but over a small divide from, the Bully Hill Mine. This assessment documented elevated levels of sulfide minerals in sediment samples and extremely low pH values in surface waters draining the mine" (BOR 2011a).

Shasta Lake and five of its tributaries are listed as impaired under Section 303(d) of the Federal Clean Water Act as a result of ARD and heavy metal contamination from abandoned copper-zinc mines within the watershed. For water bodies on the Section 303(d) list, the CWA requires the development of total maximum daily load (TMDL) allocations for the pollutants of concern.

The Central Valley Regional Water Quality Control Board has instituted waste discharge requirements associated with permits issued under the National Pollutant Discharge Elimination System (NPDES) for the Mammoth, Sutro, Keystone, Balaklala, Shasta King, Early Bird, Bully Hill and Rising Star Mines.

2.2.1 Mammoth, Sutro, Keystone, Balaklala, Shasta King, and Early Bird Mines

Adopted RWQCB Orders

- Order No. R5-2002-0153, NPDES Permit No. CA0081876, Waste Discharge Requirements for Mining Remedial Recovery Company, Inc., Mammoth, Sutro, Keystone, Stowell, Balaklala, Shasta King, and Early Bird Mines.

Excerpts from the order:

> The extraction of large quantities of ore from the mines resulted in extensive development of the underground workings, the principal source of acid mine drainage (AMD). The Discharger (Mining Remedial Recovery Company, Inc) discharges AMD from other point and non-point sources on their property including, but not limited to, seeps, exposed ore and mineral zones, and waste rock dumps.
>
> The mines are in a remote, steep mountainous area west and south west of Shasta Lake. Access to the mines is difficult and utilities (power, water) do not exist. Due to the difficulties inherent in accessing the mines and developing a large infrastructure, it is unreasonable and inappropriate to apply effluent limits developed for active copper mines and listed in 40 CFR 440.102, to the mine portals. Therefore, rather than requiring adherence to strict, numeric effluent limits which may only be obtainable by application of active treatment technology (i.e. lime neutralization), the Regional Board finds the application of Best Management Practices (BMPs) including installation of concrete bulkhead seals, surface water management, and operation of passive treatment systems (i.e. constructed wetlands, anoxic limestone drains, etc.) to be appropriate.
>
> From the period of 1980 to present, the mine owners implemented numerous remedial measures at the mines, including the installation of concrete bulkhead seals in the mine portals, surface water diversions, passive treatment systems, waste rock sequestering, etc. Inspections by RWQCB staff of the mouths of Little Backbone Creek and West Squaw Creek at Shasta Lake in the spring months over the past 20 years have shown a significant reduction in the number of fish kills present, dropping from several thousand trout in the 1970s to a few (less than 5) noted in the past several years. This

> reduction of fish mortality in Shasta Lake is a direct result of the remedial measures implemented at the mines to date.

In 2004, the Central Valley RWQCB amended the Basin Plan (Resolution No. R5-2004-0090) related to the beneficial uses for West Squaw Creek. In the resolution they found: "MRRC has implemented remedial activities and Best Management Practices which have resulted in an overall reduction of metal loading to West Squaw Creek from both point and non-point sources by 80 percent, which includes a reduction of 95 percent from point sources." However, "data shows that even with the removal of all the metal loading from identified point source discharges, West Squaw Creek will still not support fish and other low pH or metal sensitive aquatic species from below the Early Bird Portal to Shasta Lake due to non-point sources of low pH, metal laden solutions, both man induced and natural."

2.2.2 Bully Hill and Rising Star Mines

Adopted RWQCB Orders

- Order No. R5-2003-0039, NPDES No. CA0084212, Waste Discharge Requirements for Millenium Holdings, Inc., Bully Hill and Rising Star Mines.
- Order No. R5-2003-0051, Requiring Millenium Holdings, Inc., Bully Hill and Rising Star Mines, Shasta County, to Cease and Desist from Violating Waste Discharge Requirements.
- Order No. R5-2005-0096, Waste Discharge Requirements for Millenium Holdings, LLC, Closure of the Rising Star Waste Rock Containment Facility.

Excerpts from the orders:

> The Discharger (Millenium Holdings, Inc.) discharges acid mine drainage (AMD) from several portals at the Bully Hill and Rising Star Mines. Neither mine is currently operating. The extraction of ore from the mines resulted in extensive development of the underground workings and creation of large waste rock dumps. The mine workings and waste rock dumps are the principal sources of AMD.
>
> The mines are in a remote, hilly area on the west side of the Squaw Creek Arm of Shasta Lake. Access to the mines is difficult, and neither power nor water is available at the site. Due to the difficulties of travel to the mines and constructing and operating conventional treatment facilities, it is unreasonable and inappropriate to apply effluent limits listed in 40 CFR 440.102, developed for active copper mines, to the mine portals. Therefore, rather than requiring adherence to numeric effluent limits which may only be obtained by application of active treatment technology (e.g. lime neutralization), the Regional Board finds the application of Best Management Practices (BMPs), which may include, but not be limited to, installation of concrete bulkhead seals, management to prevent surface water intrusion into tailings, waste piles, and ore bodies, capping of waste rock piles, and operation of passive treatment systems (i.e. constructed wetlands, anoxic limestone drains, etc.) to be appropriate.
>
> Millenium Holdings failed to comply with the waste discharge requirements and was issued a cease and desist order in 2003. The two lower portals of the Rising Star Mine were sealed in 2004 which appreciably reduced ARD discharges to surface waters. To further comply with the requirements, they proposed construction of rock containment facility at the site.

2.2.3 Golinsky Mine

Adopted RWQCB Order

- Order No. 98-701, Cleanup and Abatement Order for USDA Forest Service, Shasta-Trinity National Forest, Golinsky Mine.

Golinsky Mine closed when the copper market declined in 1919, although it was briefly reopened in the 1930's. The Golinsky Mine facilities were dismantled by 1944 when Shasta Dam was completed and the

reservoir started to fill. Ownership of the land was acquired by the United States government in 1944 through a land purchase, and the site has been administered by the Forest Service since then. No mining activity has occurred since 1938.

The mine is located on Bohemotash Mountain (T 34N, R5W, Sections 28 and 33), two miles from the Shasta Lake shoreline. It is situated on steep slopes that drain to Little Backbone Creek, which in turn flows to Shasta Lake. Two main portals are separated by approximately 65 vertical feet. Slopes in the vicinity of the mine are frequently greater than 100 percent (45 degrees). An abandoned limestone quarry that was integral to milling operations is located approximately 1.4 miles southeast of the mine site. A tramway linked the limestone quarry to the town of Kennett to supply its smelter.

The Golinsky Mine discharges AMD from at least two portals, seeps, and waste rock dumps. In January 1998, the Central Valley RWQCB issued a cleanup and abatement order to the Forest Service. The primary water quality concern of the cleanup and abatement order is the toxicity to aquatic life that results from AMD. Specific elements listed in the order include: (1) eliminating or treating discharge of AMD from the mine workings, (2) removing sources of AMD such as waste rock and tailings, (3) diverting drainages, and (4) developing methodologies to reduce metal loading into Little Backbone Creek and Lake Shasta. The order required implementation of a monitoring program and production of a report describing the feasibility of methods to reduce or prevent AMD discharge. This was to be followed by implementation of the selected remedy. Compliance with water quality standards was to be achieved by October 2001.

Because the site is remote and lacks utilities or personnel to operate an active treatment system, passive alternatives for meeting the federal effluent limits criteria were selected for implementation. To date, three portals have been plugged, minimizing the mine workings surface exposure to oxygen. Pipes have been installed so water no longer runs through the mine tailings but is instead diverted into tanks for monitoring and release.

2.3 Mercury Program

Mercury contamination of fish is a national problem that has resulted in the issuance of fish consumption advisories in most states, including California. Mercury, a metal, is naturally found in rock and soil, and is washed into surface waters during storms. Mercury also evaporates from rock, soil, and water into the air, and then falls back to the earth in rain. Human activities redistribute mercury and can increase its concentration in the aquatic environment.

The coastal mountains in northern California are naturally rich in mercury in the form of cinnabar ore, which was processed to produce quicksilver, a liquid form of inorganic mercury. This mercury was taken to the Sierra Nevada, the Klamath mountains, and other regions where it was used in gold mining. Historic mining operations and the remaining tailings from abandoned mercury and gold mines have contributed to the release of large amounts of mercury into California's surface waters. Mercury can also be released into the environment from industrial sources, including the burning of fossil fuels and solid wastes, and disposal of mercury-containing products.

Once mercury gets into water, much of it settles to the bottom where bacteria in the mud or sand convert it to the organic form of methylmercury. Fish absorb methylmercury when they eat smaller aquatic organisms. Larger and older fish absorb more methylmercury as they eat other fish. In this way, the amount of methylmercury builds up as it passes through the food chain. Fish eliminate methylmercury slowly, so it builds up in fish in much greater concentrations than in the surrounding water. Methylmercury generally reaches the highest levels in predatory fish at the top of the aquatic food chain.

Elevated levels of mercury associated with historic gold and mercury mining have been found in fish in numerous reservoirs and stream sites in northern California. As part of the effort to assess the status of mercury contamination in California gold and mercury mining districts, the United States Geological Survey

(USGS) collected sport fish from Trinity Lake and the Trinity River watershed region of Trinity County (including the Trinity River upstream and downstream from Trinity Lake, Coffee Creek, Canyon Creek, Eastman Creek, Eastman Dredge Ponds, Carrville Pond, Crow Creek, Tamarack Creek, the New River, and the East Fork Trinity River and its tributaries) in 2000-2002.

Comparison of the mean mercury concentrations, in several fish species in Trinity Lake and selected water bodies in the Trinity River watershed, with the guidance tissue levels for mercury indicated that issuance of safe eating guidelines was appropriate for these water bodies. The Office of Environmental Health Hazard Assessment (OEHHA) has issued two health advisories (*Safe Eating Guidelines for Fish from Trinity Lake and the East Fork Trinity River*, March 2009 and *Safe Eating Guidelines for Trout from Lewiston Lake, Carrville Pond, the Trinity River Upstream from Trinity Lake,* March 2009) to consumers giving recommendations on how much of the affected fish in these areas can be safely eaten. In this advisory, women of childbearing age and children are encouraged to be especially careful about following the advice because of the greater sensitivity of fetuses and children to methylmercury.

3. Management Guidance

3.1 Locatable and Leasable Minerals

There are certain restrictions concerning 1872 mining law activities in the NRA. Section 6 of the NRA Legislation (16 U.S.C. 460q-et seq.) addresses mineral development and specifies the following:

(1) Lands within the recreation area, subject to valid existing rights, are withdrawn from location, entry, and patent under the United States mining laws.

(2) The Secretary of the Interior, under such regulations as he deems appropriate, may permit the removal of the nonleasable minerals from lands or interests in lands under his jurisdiction within the recreation area in the manner pre-scribed by section 10 of the Act of August 4, 1939, as amended (53 Stat. 1196; 43 U.S.C. 387), and from those under the jurisdiction of the Secretary of Agriculture within the recreation area in accordance with the provisions of section 3 of the Act of September 1, 1949 (63 Stat. 683; 30 U.S.C. 192c), and he may permit the removal of leasable minerals from lands or interests in lands within the recreation area in accordance with the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181 et seq.), or the Acquired Lands Mineral Leasing Act of August 7, 1947 (30 U.S.C. 351 et. seq.), if he finds that such disposition would not have significant adverse effects on the purposes of the Central Valley project or the administration of the recreation area: Provided, that any lease or permit respecting such minerals in lands administered by the Secretary of Agriculture shall be issued only with his consent and subject to such conditions as he may prescribe. (Also see 43 CFR Subpart 3583)

In a 1966 memorandum from Deputy Chief Nelson to the R5 Regional Forester, the Deputy Chief expanded on the regulations in the NRA Legislation. He wrote, "Forest Service concurrence in mineral leases or permits should be on the same basis and take account of the same objectives as other compatible non-recreation uses such as timber sales. In other words, we should make sure that prospecting for or extraction of minerals does not significantly impair the recreation and scenic values of the National Recreation Area (FS 1966a)."

Aside from the mining laws, at this time there is no law that provides a specific "right" for mineral collectors and rockhounders to collect specimens from federal lands such as National Forests. Direction in the Forest Service Manual 2862.1, Hardrock Mineral Collecting, states, "on lands where hardrock minerals are leasable, the Forest Service may determine which areas and under what conditions hardrock mineral specimens may be collected for non-commerical purposes, such as collecting for recreational, scientific or research purposes."

There have been requests by the public to utilize the NRA for non-commercial mineral collection using pans, sluices, and suction dredges, but the Forest Service has not authorized these activities to date and will not until an analysis is completed to determine if conditions need to be prescribed to avoid any significant adverse impact on the recreation and scenic values of the National Recreation Area.

3.2 Mineral Materials

Mineral materials consist of common varieties of sand, gravel, stone and other similar materials.

Mineral materials may not be removed from segregated or withdrawn lands where removal is specifically prohibited by statute or by public land order. Where not specifically prohibited, removal of mineral materials may be allowed if the authorized officer determines that the removal is not detrimental to the values for which the segregation or withdrawal was made (36 CFR 228.41 (b)(2)).

3.3 Limestone

Limestone outcrops provide essential habitat for many rare wildlife and plant species. Of special concern is habitat for the Shasta salamander (*Hydromantes shastae*), a rare, local endemic species that relies on limestone formations.

Mining of limestone is incompatible with maintenance of Shasta salamander habitat. Consequently, no limestone mining will be approved within the NRA.

Jones Valley Campground May 30, 1958.

RECREATION

1. Historical Overview

Shasta Unit

The recreational benefits of Shasta Lake were evident from the beginning—construction of the dam was still in its initial stages when the January 1938 *Land Use Study of the Kennett Area* (Brandeberry and Barnum) was published. The authors of this report wrote, "The establishment of this immense lake with elongated fingers extending up the streams and rivers will probably give the area a stronger appeal to people far and near. Resorts and recreational developments will probably spring up along the highway and other easily accessible areas as well as on locations having real recreational potentialities. It is conceivable that boating may develop into one of the principal activities to be enjoyed." The author goes on to say, "Private owners should be encouraged to develop recreational facilities for public use at a reasonable cost....Public lands having less than 25 percent slope should be held and developed as needed for camping and picnicking purposes."

The 1944 study (BOR 1944) on how the recreational use of the reservoir should be promoted and regulated said this about boating—Shasta Reservoir will accommodate water craft of all sizes and kinds. The most difficult problem is provision of floating docks which will be necessary because of the changing lake level. Locating anchors where they will be least subject to wave action much depend upon observation and experiment after the reservoir is formed. Places for launching boats from trailers can be provided at points where old U.S. Highway 99 enters the reservoir.

Recreational features around the shoreline were initially managed by the National Park Service and recreational plans for the lands surrounding the lake began as early as 1944. With Public Law 449 of March 19, 1948, Congress transferred administrative responsibility for the lake to the Shasta National Forest and the Shasta Lake Recreation Area was created as part of the Redding District. When the Redding District inherited the recreational developments around the lake, they consisted of the following:

Table 2-5
Recreation Facilities Exisitng at Shasta Lake in 1948

Facility	Existing Improvements
Allie Cove Campground	4 campsites with tables and fireplaces, 2 pit toilets, water system
Jennings Creek Campground	2 tables, 1 fireplace, 1 pit toilet
Lakeshore Campground	Partially developed
Stein Creek Campground	4 campsites, water system
Salt Creek area	Heavily used but no improvements
Bridge Bay	Boat moorage, 200 feet of dock, floating service station, swim area. Roughly graded into terraces for proposed resort, parking areas and boat docks.
Sightseeing Boat Pier	Partially developed with pier and parking area (in present day Cemtimudi location)
Lakeshore Resort (private land)	Restaurant, 10 cabins, store, small dock, 0.35 mile trail from Resort to docks

Source: Preliminary Plan for Shasta Lake Recreation Area (FS 1948)

By 1947, "recreation is the dominant auxiliary resource at Shasta....Already, with Shasta Lake only three years old, the area has attracted national and international interest" (NPS 1947). "The problem is the most judicious use and control of the resources, rather than getting the public to the area. The public already is there. Boating, bathing, hiking and riding, scientific study, hunting, fishing, camping, picnicking, all must be facilitated, maintained, and fully protected for a large number of people" (NPS 1947).

"The theme of development at Shasta is recreation." "Marine recreation naturally is stressed. Shasta Lake is an unusually interesting lake for boating. It is extremely irregular as to shoreline and is consistently narrow. One does not require great speed to obtain a sense of movement because the shores always are near enough at hand to provide a sense of movement in relation to them" (NPS 1947).

The 1953 Development Plan (FS 1953) for the Shasta Lake Recreation Area notes, "Recent pressures and the notable increased popularity of Shasta Lake as a leading recreation spot in California make replanning a timely necessity....To weigh the ultimate demands for development of Shasta Lake, an understanding of its attractions and problems is essential. Along with the many attractions Shasta Lake also has some real problems that will act to limit development. These are: (1) Fluctuation to the lake level resulting from flood control and irrigation aspects of the Central Valley Project. Selection of sites for all types of development should be on the basis to minimize lake fluctuation. This can be attained by choosing sites with steep offshore conditions backed by gentle to moderate onshore terrain. Some careful grading may be necessary to gain these conditions and provide good building sites. All dock and other water type facilities must be of a floating nature. (2) The rough and relatively inaccessible terrain. This will make additional road building costly. (3) The relatively few sites which have the right combination of gentle terrain, vegetative cover, access, and usable water. Because of the broken nature of the terrain at the lake many of the drainages are short and small, leaving but few live springs and streams in the summer months. (4) The high summer temperatures and prevalence of poison oak. (5) Fire prevention to maintain the critical watershed."

Some examples of trends in the 1950's, as recorded in FS reports were, campground and picnic use increased from 10,500 visits in 1949 to 47,000 visits in 1952 (450% increase), boating use on Shasta Lake increased 40% from 1956-1957 inclusive, and resorts on and near Shasta Lake showed a 300% increase in use from 1953 to 1957.

Bailey Cove Boat Ramp parking area in 1958.

The 1958 revision of the Shasta Lake Recreation Area Development Plan (FS 1958) attempted "to emphasize the inadequacy of existing facilities and to present a conservative and practical approach under which Shasta Lake recreation facilities may be developed to the point where they are more nearly adequate to handle the normal crowds."

Recreation in the area continued to receive national attention. James K. Carr, Under-Secretary of the Interior during the Kennedy administration, was keenly interested in the recreation potential of the Bureau of Reclamation reservoirs in Northern California. In May, 1962 the Secretaries of Agriculture and Interior agreed to have the Bureau of Outdoor Recreation assume leadership in a study of the Whiskeytown, Shasta and Trinity areas. The report of this task force was published in April 1963 and immediately resulted in identical bills being introduced into the House and Senate to establish a Whiskeytown-Shasta-Trinity National Recreation Area. (NPS and FS 1971)

The legislation that became law clearly stated that the primary objective in the NRA would be to provide an optimum environment for outdoor recreation through development of the recreation resource and the conservation of the scenic, scientific, archeological, historic, and other values contributing to public enjoyment.

"According to the President's Commission on Materials Policy, approximately half the employed people in the United States work between 35 and 40 hours per week, about one-sixth work less than 35 hours. The Commission sees an average 34 hour week by 1975 and probably a three day work week may become standard for many groups of workers. The increased leisure from a shortened work week, plus the trend toward longer paid vacations, will place recreation in a far more important role than it occupies today. (1957)"
(FS 1956)

The popularity of Shasta continued to increase, when the first Land Use Plan for the NRA was published in 1976 some of the issues of critical concern included:

- Some areas of Shasta Lake are becoming overcrowded with various boating and related activities. There is a feeling that the numbers of houseboats and similar large boats are excessive, and are in conflict with other uses of the lake. Powerboating conflicts with other lake recreation uses in specific areas. High-performance powerboats generate noise levels which clash on the natural setting.
- The number of developed camping sites on public land is insufficient to meet the average summer-weekend demand. Most camping facilities on public land do not meet the standards of development expected by the using public.

- There is conflict between fishing and other uses of the lake (primarily water skiing and houseboating).

However, the 1970's was a time of funding cuts and instead of continuing the development of additional recreational facilities, a number of existing campgrounds were closed, reducing the total to 21 around Shasta Lake, totaling 510 camping units. Available funding was focused on the rehabilitation of existing facilities. (Sundahl 1995)

Table 2-6
Approximate Initial Construction Dates of Recreational Facilities at Shasta Lake

Date	Campground/Picnic Area	Date	Campground/Picnic Area
1930	Deep Creek	1957	Lower Salt Creek
1947	Big Tree (later renamed Madrone)	1958	Hirz Bay
1947	Allie Cove	1959	Arbuckle Flat
1947	Jennings Creek	1961	Gooseneck Cove
1948	Lakeshore East	1961	Rend Island
1947	Stein Creek[a]	1961	Ski Island
1950-52	Antlers	1961	Slaughterhouse Island
1953	Rocky Ridge	1961	Salt Creek Point Boat-In
1953	Lakeshore Beach & Picnic/Sugarloaf Beach	1961-62	Mariners Point
1954	Bailey Cove	1964	Nelson Point
1954	Jones Valley Inlet	1964	Old Man
1954	McCloud Bridge	1965	Lower Jones Valley
1955	Curl Ck Boat-In	1965	Upper Jones Valley
1955	Greens Ck	1966	Oak Grove
1957	Dekkas Rock	1966	Chirpchatter
1957	Ellery Creek	1966	Gregory Creek
1957	Moore Creek	1967	Deadlun
1957	Pine Point	1975	Fishermans Point
Date	**Boat Ramp**	**Date**	**Boat Ramp**
1955	Antlers	1955	Bailey Cove
1955	Hirz Bay	1968	Centimudi
1955	Lower Salt Creek	1970-72	Jones Valley
1955	Sugarloaf	1973	Packers Bay

Notes:

[a] Unfortunately the developments are under about 5 feet of water when the lake is full so will have to be relocated on higher ground (4/27/53).

Table 2-7
Yearly Comparisons of Visitor Days (Totals)[a]

Year	Visitor Days
1973	2,124,785
1974	2,162,003
1975	2,327,224
1976	1,184,075
1977	734,872
1978	2,157,765
1979	2,067,691
1980	2,545,668
1981	2,451,481
1982	2,425,000[b]
1983	2,448,585[b]

Notes:

[a] Source: *Shasta Lake Enlargement: Feasibility of Recreation and Secondary Road Development* (FS 1984a)

[b] Reduction in use attributable to a change in the process for counting visitation in the category "Roads-Recreation. Without this change us would have shown an increase in 1982 and 1983.

Boating use on the lake was monitored for many years by aerial boat counts. These counts, taken in the heavy use season, range from 800 to 2600 boats at one time (FS 1984a).

Trinity Unit

Group of people camping in Trinity County.

In the 1951 Project Report for Trinity and Lewiston Reservoirs (Bigler 1951), the National Park Service gave the following information regarding present recreational use. "It is estimated that approximately 50,000 visitor days are now enjoyed annually in the areas that will be inundated by these reservoirs. When compared to more accessible similar areas, the study reveals that these are not extensively used for recreational

purposes mainly because of the distance from centers of population and the lack of good roads. The immediate areas are used at present for varied recreational purposes. Recreationists come into the areas mainly for fishing, hunting, and camping. These areas are used as base camps from which people make pack trips into the more mountainous back country. In the fall months the runs of steelhead trout and king salmon up the Trinity River from the Pacific Ocean offer excellent sport fishing. Black-tail deer are hunted throughout the areas. The camping and fishing season is at its best in the high country from early July through September. In the immediate areas the recreational season is much longer."

The 1951 report (Bigler 1951), "recommended that sufficient acreages be reserved at this time to meet the ultimate public recreational need." "Although Shasta Reservoir is only 20 air miles and 43 road miles from Trinity Dam, no great recreational competition is anticipated due to the fact that Trinity and Lewiston Reservoirs will attract visitors who are seeking a more isolated, primitive, or wilderness type of recreation." As for location of recreational development, they noted that "Drawdown will be a factor to consider in locating recreational facilities adjacent to the upper parts of Trinity Reservoir where slopes are more gentle and water will recede from elevation 2334 feet to an average recreational season level of 2266 feet causing a 68 foot recession during a typical moderate year. If recession should reach minimum pool elevation of 2145 feet, the 189 feet of vertical shore line would appear." Lewiston Reservoir, on the contrary, has only periodic fluctuations of approximately a foot, which is most favorable to recreation. "The Stuart Fork Branch of the Trinity River offers the most varied and adaptable areas for recreational development of the entire Trinity Reservoir."

"Bureau policy notes that since watershed management is one of the primary functions of the Forest Service, and since the multiple-use policy of the Forest Service includes recreation, it follows that the recreational use of reservoirs and their shorelines within or adjacent to National Forests be managed by the Forest Service" (FS 1956). "The recreation inventory by the Forest Service was conducted in the spring and summer of 1956, at which time available recreational sites were cataloged. It was learned that flat land suitable for recreation use is scarce on the lake shores. The inventory was done with an eye towards maintaining a proper balance between the various types of recreational uses" (FS 1959). The present Minersville public campground is the major facility being inundated. Plans now call for relocation of these existing facilities during 1958 due to planned inundation of the campground by 1959 (FS 1959). "It is proposed that the soon to be inundated Minersville Campground be relocated at Tannery Gulch." And it will also serve in part to meet the basic facilities as agreed upon between the U.S. Bureau of Reclamation and the Forest Service. "Everything considered, Tannery Gulch is the most desirable recreation site on the two reservoirs. It is located directly on the 2,390' contour at a point where the offshore slope is steep. Thus, reservoir drawdown will not expose extensive barren areas near the camp. The site provides a clear view of the Trinity Alps mountains and has excellent cover" (FS 1956).

The first Land Use Plan for the NRA published in 1976 included the following issues of critical concern:

- Some areas of Clair Engle Lake are becoming overcrowded with various boating and related activities. Powerboating conflicts with other lake recreation uses in specific areas. High-performance powerboats generate noise levels which clash on the natural setting. Some of the large vessels used as houseboats are poorly constructed; some color selections on this type of boat are not compatible with the natural surroundings. Houseboats continually moor in selected locations along the shore and monopolize these areas to the exclusion of other uses.
- Potential residential or resort development on some parcels of private land would destroy National Recreation Area scenic, watershed, archeological or historical values.
- There is some conflict between fishing and other uses of Clair Engle (primarily water skiing and houseboating) in recognized productive fishing areas.

Table 2-8
Approximate Initial Construction Dates of Recreational Facilities at Trinity and Lewiston Lakes

Date	Campground/Picnic Area	Date	Campground/Picnic Area
Prior to 1950	Preacher Meadow	1966	Clark Springs
Prior to 1950	Rush Creek	1966	Cooper Gulch
1960	Tannery	1966	Mary Smith
1961-62	Hayward Flat	1966	North Shore VIS Info Sign
1961-62	Jackass Springs	1966	Tanbark
1961-62	Ridgeville	1966	Tunnel Rock
1963	Fawn	1967	Ridgeville Island
1963	Stoney Point	1967	Captains Point
1963	Stony Point Picnic	1967	Mariners Roost
1964	Ackerman	1968	Bushytail
1966	Alpine View	1969	Minersville
Date	**Boat Ramp**	**Date**	**Boat Ramp**
1962	Tannery	1966	Pine Cove
1962	Trinity Center	1977	Bowerman
1962	Fairview	1989	Clark Springs
1966	Stuart Fork		Minersville

2. Setting

2.1 General

"It was reaffirmed early in the NRA planning process that the key element or attraction which created most of the recreation resource in both Units of the NRA was the available water surface of the three lakes. Land activities thus became either secondary (such as the camping, resort and recreation residence use) or adjunctive (such as those which serve to complete the recreation experience such as hiking, sightseeing, off-road vehicle use, and general outdoor enjoyment of a forested environment)" (FS 1976a).

Shasta Unit

Shasta Lake is the biggest reservoir in California with about 370 shoreline miles at high pool. Its four major arms, the Sacramento River, McCloud River, Squaw Creek, and Pit River Arms, are all distinctly different. Each of the arms has their own inlets and coves, which makes Shasta Lake one of the most interesting and diverse lakes in the region. Due to the lake's location within the National Forest, much of the shoreline is relatively pristine with vegetated hillsides, beautiful rock formations, and wildlife all around.

The lake is located in close proximity to the city of Redding and receives a substantial amount of repetitive local users, especially during the shoulder seasons (Oct. to Dec. and March to May). The number of annual visitors to Shasta is approximately two million, many of them staying three days or more (Aukerman et al. 2008a).

Shasta Lake is most popular for its urban-type recreation activities and experiences, such as motor boating, house boating, and high development camping. This activity-oriented character sets Shasta Lake apart from the other reservoirs within the National Recreation Area and creates a unique niche for recreation opportunities in the region.

The size of the lake allows visitors to truly get away from crowds if they wish. Squaw Creek and especially the Pit River Arm provide incomparable semi primitive opportunities for boaters with clear green water, beautiful scenery, and wildlife viewing opportunities.

The boating activities at Shasta Lake are as varied as its shoreline. Although everything from canoeing to sailing to jet skiing takes place, the lake receives most use from motor boaters. It is truly a playground for powerboats. Wake boarding, tubing, and jet skiing are very common activities, since the lake has so much room and many protected areas. Fishing is very popular during most of the year and different species of fish can be found in different parts of the lake. The one activity Shasta is famous for is house boating. The lake has the nickname "house boating capitol of the west", with about 650 commercial and 450 private houseboats using the lake. Shasta Lake is perfect for houseboats with its many little inlets and coves where visitors stay to swim and sunbath or for overnight use.

Segments of the McCloud River have been determined eligible for listing under the Federal Wild and Scenic Rivers Act (WSRA) and are protected under the State Public Resources Code (Section 5093.542). The river has not been formally listed as wild and scenic under either the Federal WSRA or State Public Resources Code (PRC). The Forest Service evaluated the eligibility of the McCloud River for listing as wild and scenic under the Federal WSRA during preparation of the Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan) in 1994. Although the Forest Plan found the McCloud River eligible for listing, the Forest Plan direction was to not formally designate any reach of the river as wild and scenic. Instead, the direction was to manage the lower McCloud River under a Coordinated Resource Management Plan. The coordinated resource management plan (CRMP) is a coordinated effort between landowners and stakeholders with a vested interest in the river. The CRMP requires its signatories to protect the values that make it eligible for Federal designation as wild and scenic and contains a provision stating that the Forest Service reserves the right to pursue designation if the CRMP is terminated or fails to protect these values.

The California Resources Agency evaluated the McCloud River in the late 1980s to determine whether it was eligible for listing under the State PRC. The California Resources Agency study found it eligible, but the California legislature declined to add the river to the California wild and scenic river system. The legislature instead passed an amendment to the California Wild and Scenic Rivers Act to protect the river's free-flowing condition and the river's fishery below McCloud Dam through the State PRC. (BOR 2013)

Trinity Unit

Trinity Lake is the third largest reservoir in California with about 145 shoreline miles at high pool. It is located next to the Trinity Alps Wilderness, which makes it an especially beautiful place with deep-forested hills and scenic mountain views. The northern part of the lake is distinctly different from the southern and western parts. The area around Trinity Center gets more use from sailors, windsurfers, and fishermen. The southern part around Stuart Fork Arm receives more use from houseboats and motorboats. This part of the lake is busier than the northern part and the main channel between Trinity Dam and Trinity Center. There are many smaller inlets off the main channel, such as Bragdon Gulch, which are quiet and peaceful and are truly special places for visitors to escape.

The lake is located in close proximity to the towns of Weaverville, Lewiston, and Trinity Center. The city of Redding is approximately an hour drive away. Trinity Lake receives a substantial amount of repetitive local users, especially during the shoulder seasons. The number of annual visitors to Trinity Lake is approximately one million.

The location of the lake makes it very unique and the spectacular mountain setting provides a completely different experience than Shasta Lake. In comparison to Shasta Lake, recreationists visit Trinity for its beautiful setting and scenery as well as for the activities it provides.

Since Trinity Lake is not in close proximity to large metropolitan centers, the recreational emphasis is on overnight use. It is a family-oriented lake and many of the visitors stay for long periods of time in the many campgrounds on and around the lake. The vast majority of the developed recreation facilities are adjacent to or near State Highway 3 on the west side of the lake. The east side of the lake is undeveloped with limited overnight facilities. Access is via County and Forest Service roads and is subject to seasonal closures.

Lewiston Lake is an afterbay of Trinity Lake, extending all the way from Trinity Dam to Lewiston Dam, with approximately 15 miles of shoreline along Highway 105. It is a fairly narrow stretch of water with the characteristics of a river. Much of the shoreline is vegetated, especially on the east side of the lake, and the abundance of wildlife provides for outstanding wildlife and bird viewing opportunities. Lewiston Lake's water level does not fluctuate, which makes for a very pretty and natural looking shoreline. The water in Lewiston Lake is much colder than Trinity Lake and therefore excludes swimming, but offers excellent fishing opportunities. The speed limit on the entire lake is 10 mph, this creates a popular area for small fishing boats as well as canoes and kayaks. Lewiston Lake is similar to Trinity Lake with all developments and facilities located on the west side of the lake. The east side has no developments and road access is very limited.

The main stem of the Trinity River from the confluence with the Klamath River to 100 yards below Lewiston Dam was designated a National Wild and Scenic River by the Secretary of the Interior in 1981. The first mile of the Trinity River below Lewiston Dam is located within the NRA boundary.

2.2 Activities/Facilities

2.2.1 Concessionaire Program

Since the 1980s, the NRA has used private concessionaires to operate and maintain a number of its developed recreation sites. Concessionaires receive a term special use authorization (permit) to perform these duties. The sites include campgrounds, picnic areas, vistas, boat ramps, and swim areas. Operation activities performed by the concessionaire include cleaning and stocking supplies, garbage removal, providing visitors with information, enforcing campground rules, hazard removal and abatement. The concessionaire is also responsible for the safe operation and maintenance of the drinking water systems at federally owned recreation facilities under special use permit.

2.2.2 Boating

High quality water-based recreation is the main focus of the recreation program on the NRA. Our boating facilities are built to facilitate and support access to the water.

Shasta and Trinity Lakes are well suited for all types of power boating. At Shasta Lake, the hot, dry summers, and the relatively long warm water season (100+ days) enhance the water-related attractions. Non-power boating activities such as sailing, rafting, and canoeing are present, but limited due to the physical configuration, wind patterns and safety concerns of high numbers of power boats found on the lakes.

The lower elevation and narrow, south-facing confines of Lewiston Lake result in higher air temperatures and less proportional use during the summer months (but more during the winter) than at Trinity Lake. Lewiston Lake offers more opportunity than Trinity Lake for small boating and canoeing.

The 1976 NRA Management Plan (FS 1976b) calculated theoretical capacity of Shasta Lake for all power boating at 2360 (12.5 acres per boat over 29,500 acres of lake based on studies of boating on other, similar lakes around the country). The 1976 plan set the management limit for average daily peak-season power boating use at 2000, and the 1982 and 1988 plan updates validated that limit. The peak season extends from Memorial Day through Labor Day.

The 1976 NRA Management Plan (FS 1976b) calculated the theoretical capacity of Trinity Lake for all power boating at 2050 (8.0 acres per boat over 16,400 acres of lake based on studies of boating on similar lakes). The 1976 plan set the management limit for average daily peak-season power boating use at 600, and the 1982 and 1988 plan updates reconfirmed that limit. The peak season extends from Memorial Day through Labor Day.

Respondents to the 2005 survey (Graefe, et al. 2005) at both Shasta and Trinity Lakes were asked to estimate the percentage of time that they spent on various boating activities (Table 2-9). The results varied among the different boater groups. The most popular activities included swimming from the boat, fishing, relaxing/sunning on the boat and waterskiing/water sports.

Table 2-9
Boating Activity Participation
(percentage of time spent on different boating activities)

Boating Activity	Onsite Boaters		Houseboats		Moorage		Rental	
	Shasta	Trinity	Shasta	Trinity	Shasta	Trinity	Shasta	Trinity
Swimming (from boat)	17.8	21.1	10.2	9.3	13.0	17.7	14.4	10.6
Cruising	18.4	15.5	6.9	4.2	9.6	18.6	9.0	7.4
Fishing (from boat)	24.5	12.9	13.1	5.2	10.8	12.3	14.5	8.8
Relaxing/sunning – on lake	13.0	19.6	19.1	14.0	18.2	20.8	14.5	16.1
Houseboating	2.4	5.6	45.5	47.6	33.6	7.5	33.7	31.0
Waterskiing/Water sports	19.6	20.4	7.5	9.8	16.0	16.8	10.8	18.8
Personal watercraft use	3.0	3.3	3.2	2.2	4.1	2.0	2.7	4.0
Other	1.0	1.7	0.3	0.8	1.0	1.4	1.9	1.7
Relaxing on boat – at dock	NA	NA	6.3	5.5	2.1	1.6	0.9	0.8

2.2.3 Floating Toilets

Water based recreation is so popular on the NRA that floating flush toilets have been placed on Trinity and Shasta Lakes to provide for added convenience and an enhanced recreation experience for spending the day recreating on water. The floating restrooms have proven to be very popular with visitors. There are currently six floating toilets deployed seasonally (Memorial Day – Labor Day) on Shasta Lake and eight floating toilets on Trinity Lake. Traditionally, Shasta Lake deployment locations have included Brushy Canyon, Ycotti Creek, Big Backbone Creek, Waters Gulch, Elmore Bay and Pit River/ I-5 Bridge. The Pit River/ I-5 unit typically stays open year round. Trinity Lake locations typically include Clark Springs, Ridgeville Island and Digger, Feeny and Frethy Gulches.

2.2.4 Lake Directional Signs:

The floating directional sign program on Shasta Lake is a collaborative project between the NRA and volunteers from Shasta Lake Resorts, Shasta Marina and Shasta Caverns for construction, installation and placement of directional signs as an aid to boaters. Marina volunteers were primarily used for installation of heavy anchors with specialized equipment that they possessed. Three signs were placed at significant crossing points on Shasta Lake.

Floating directional sign on Shasta Lake.

2.2.5 Boat Ramps

Shasta Lake offers both public and commercial boat ramps. There are seven public boat ramps on Shasta Lake, of which six are fully developed with paved and lighted parking areas, restrooms, and garbage disposal facilities. The public ramps are operated by a concessionaire under a STNF special use permit. These ramps provide year-round access, and a daily use fee is required. The public boat ramps may be closed when the parking lots reach full capacity or when lake debris makes launching dangerous. When lake levels are down more than 75 feet, some ramps become inoperable or are moved to alternate locations. A few paved ramps are long enough to accommodate boat launching when the lake level has a drawdown of 75 feet. These ramps are located at Hirz Bay, Jones Valley, Packers Bay, Sugarloaf, and Centimudi. Antlers, Centimudi, Packers Bay and Antlers offer accessible boat loading platforms for disabled users. All public boat ramps provide parking for the disabled.

Trinity Lake offers both public and commercial boat ramps. At the current time there are six public boat ramps on Trinity Lake, of which 5 are fully developed with paved parking areas, restrooms, and garbage disposal facilities. The public ramps are operated by a concessionaire under a special use permit. When lake levels drop more than 40 feet, some ramps become inoperable and are closed or moved to alternate locations. Clark Springs offers an accessible boat loading platform for disabled users. All public boat ramps provide parking for the disabled.

Lewiston Lake has one developed public boat ramp with paved parking area, restrooms, garbage disposal and accessible fishing platforms and one undeveloped dirt ramp for non-motorized boat launching. This ramp is also operated by a concessionaire under a special use permit. Because Lewiston Lake water levels do not fluctuate, this boat ramp is operational year-round.

Table 2-10
NRA Boat Ramps

Boat Ramp	Open for Launching Lake Drawdown (in feet)	Lake
Antlers	0-75	Shasta
Bailey Cove	0-50	Shasta
Centimudi	0-210	Shasta
Hirz Bay	0-95	Shasta
Jones Valley	0-210	Shasta
Packers Bay	0-115	Shasta
Sugar Loaf	75-160	Shasta
Bowerman	0-47	Trinity
Clark Spring	0-57	Trinity
Fairview	0-57	Trinity
Minersville	65-200	Trinity
Stuart Fork	0-32	Trinity
Trinity Center	0-70	Trinity
Pine Cove	Lake level is constant	Lewiston

2.2.6 Camping

The camping facilities on the NRA are development level 3 to 5 (development level 0 would be primitive with no amenities and development level 5 would be an urban setting with high amenities), with most sites having water, flushed toilets, hardened camping units, paved camping spurs and fees required. There is even one campground on the Trinity Unit that has showers and RV hook ups. The Shasta Unit has a Lookout Cabin rental on Hirz Mountain that is very popular.

Developed Campgrounds

Standard site features at developed campgrounds include a defined parking spur, fire-ring, picnic table, a generally flat area for tents, trash and recycle receptacles, campsite unit markers, and in areas with bear activity, animal resistant food storage lockers. Restrooms at developed campgrounds range from water-less vault toilets, to flush restrooms with water. Water spigots are offered at many developed campgrounds, strategically placed at various locations along the campground road, but not at every campsite. Currently, electric hook-ups for RVs and showers are offered only at the Bushytail Campground on the Trinity NRA Unit.

Camping in developed campgrounds on the Shasta Unit primarily provides overnight accommodations for visitors who recreate on the lake during the day. Consequently, the proximity of a given campground to the lake is the primary factor affecting its use level. Both family campgrounds and organized group campgrounds are heavily used when the lake level is within 40 feet of full pool. If the lake level falls below 50 feet of full pool, the utilization of developed campgrounds is greatly reduced.

Campgrounds on the Trinity Unit are used both for destination camping (not directly associated with water surface recreation) and as overnight accommodations for water-oriented activities. The public is interested in both family and group camping opportunities.

Table2-11
NRA Campgrounds

Facility	Number of Units	Operated by Concessionaire (C) or Forest Service (FS)	Fees Y/N	Lake
Antlers	59	C	Y	Shasta
Bailey Cove	7	C	Y	Shasta
Ellery Creek	19	C	Y	Shasta
Gregory Creek	18	C	Y	Shasta
Hirz Bay	48	C	Y	Shasta
Jones Valley (Lower)	13	C	Y	Shasta
Jones Valley (Upper)	8	C	Y	Shasta
Lakeshore East	26	C	Y	Shasta
McCloud Bridge	14	C	Y	Shasta
Moore Creek	12	C	Y	Shasta
Nelson Point	8	C	Y	Shasta
Oak Grove	45	FS	Closed	Shasta
Pine Point	14	C	Y	Shasta
Alpine View	53	C	Y	Trinity
Bushytail	11	C	Y	Trinity
Clark Springs	21	C	Y	Trinity
Hayward Flat	98	C	Y	Trinity
Jackass Springs	10	FS	N	Trinity
Minersville	14	C	Y	Trinity
Stoney Point	15	C	Y	Trinity
Tannery Gulch	82	C	Y	Trinity
Ackerman	51	C	Y	Lewiston
Cooper Gulch	5	C	Y	Lewiston
Mary Smith	17	C	Y	Lewiston
Tunnel Rock	6	C	Y	Lewiston

Table2-12
NRA Group Campgrounds

Facility	Maximum Group Size	Operated by Concessionaire (C) or Forest Service (FS)	Fees Y/N	Lake
Dekkas Rock	60	C	Y	Shasta
Hirz Bay (#1)	120	C	Y	Shasta
Hirz Bay (#2)	80	C	Y	Shasta
Moore Creek	90	C	Y	Shasta
Nelson Point	60	C	Y	Shasta
Pine Point	100	C	Y	Shasta
Fawn	60	C	Y	Trinity
Stoney Creek	10	C	Y	Trinity

Table2-13
NRA Shoreline Camping Areas

Facility	Operated by Concessionaire (C) or Forest Service (FS)	Fees Y/N	Lake
Beehive	C	Y	Shasta
Gregory Beach	C	Y	Shasta
Jones Valley Inlet	C	Y	Shasta
Lower Salt Creek	C	Y	Shasta
Mariners Point	C	Y	Shasta

Table2-14
Campgrounds Outside NRA Boundary but Managed by NRA MU

Facility	Number of Units	Operated by Concessionaire (C) or Forest Service (FS)	Fees Y/N	Lake
Chirpchatter	5	FS	N	Shasta
Deadlun	25	FS	N	Shasta
Deep Creek	10	FS	N	Shasta
Madrone	10	FS	N	Shasta
Big Flat	5	FS	N	Trinity
Bridge Camp	10	C	Y	Trinity
Clear Creek	6	FS	N	Trinity
Eagle Creek	17	C	Y	Trinity
East Weaver	10	C	Y	Trinity
Goldfield	6	FS	N	Trinity
Horse Flat	10	FS	N	Trinity
Preacher Meadow	45	C	Y	Trinity
Rush Creek	8	C	Y	Trinity
Scott Mountain	7	FS	N	Trinity
Trinity River	7	C	Y	Trinity

Boat Access Camping

Developed boat-access camping is a popular recreation activity on the Trinity and Shasta Lake Units when lake levels are high enough for easy access. Each NRA Unit has four boat-access only campgrounds that receive considerable use. Just like many the other developed campgrounds accessed from roads, the boat-ins offer a semi-primitive camping experience with site amenities that include picnic tables, fire-rings, and vault toilets that are easily accessible from the camp sites. Boat-in campgrounds are pack-in/ pack-out trash. Animal resistant food storage lockers are only available at the Greens Creek site on the Shasta NRA Unit. Boat-in campgrounds are free for public use, and may be accessed by watercraft launching from the public boat ramps or marinas on the lakes.

Table2-15
NRA Boat-In Campgrounds

Facility	Number of Units	Operated by Concessionaire (C) or Forest Service (FS)	Fees Y/N	Lake
Arbuckle Flat	11	FS	N	Shasta
Gooseneck Cove	8	FS	N	Shasta
Green's Creek	9	FS	N	Shasta
Ski Island	23	FS	N	Shasta
Captain's Point	3	FS	N	Trinity
Mariner's Roost	7	FS	N	Trinity
Ridgeville	10	FS	N	Trinity
Ridgeville Island	3	FS	N	Trinity

Dispersed Camping

The NRA has a wide variety of dispersed camping opportunities. Auto-access camping, especially along the shoreline at and below the high-water line, is a very popular activity. As the lake level drops each year, flat areas accessible by vehicle are gradually exposed. These areas become favorite camping spots because they are right next to the water. On Shasta and Trinity Lakes the most popular areas can accommodate more than 50 campsites and regularly reach that level during holiday weekends. These areas serve as overflow areas when developed sites are full and the lake is low enough that flat areas are exposed. When the lake is below 50 feet of full pool these areas are the primary camping sites instead of developed campgrounds. Although many campers use self-contained recreational vehicles, portable toilets and garbage bins are provided during the high-use season at the larger sites to reduce the impacts of human and solid waste. Sanitation and litter programs need to continue to be a management emphasis.

Much of the shoreline of Shasta and Trinity Lakes is unroaded because of steep terrain. This topography provides an opportunity for a unique camping experience—camping in small, secluded undeveloped areas around the lakes which are accessible only by boat. Because the suitable flat areas are small, with room for only a few camping units, there has been good dispersal of this use with little site deterioration. Litter cleanup is a major part of the lake patrol workload with focus on public education and regular site cleaning efforts. Water contamination by inadequate human waste disposal is a potential concern.

Dispersed camping during hunting season is also a popular activity on Forest Service lands away from the lakes on the Shasta Lake Ranger District and the east side of Trinity Lake in the Trinity Divide Area.

2.2.7 Developed Day Use

A large number of local users visit both NRA units for a wide variety of day uses. The visual draw of the lakes with the surrounding forested area makes driving for pleasure a major activity that occurs in the NRA. Our developed day use facilities include swimming and beach areas, vista with interpretive panels and picnic areas.

Swimming is another popular part of the overall water-oriented experience. Because of the steep shoreline, the heavy drawdown during the recreation season, and the prevalence of a rocky and muddy shoreline, there has not been many opportunities to develop safe, acceptable facilities for this activity. Most swimming occurs from boats in the deeper waters, as a part of house boating and power boating.

On Trinity Lake there is one developed swimming beach and one developed swim area adjacent to the lake on the west side of Highway 3. These beaches/areas were created by covering the muddy and/or rocky shoreline

with sand or decomposed granite. Both areas have restrooms, picnic tables and grills. Both of these sites are operated by the concessionaire with a fee charged for daily use.

On Lewiston Lake the low temperature of the water resulting from drawing water from the lower levels of Trinity Lake makes the lake uncomfortable for water contact sports, despite the warm air temperatures. There are two day-use picnic areas on Lewiston Lake that are operated by the concessionaire with a fee charged for daily use.

There are four vista/interpretive/information sites on the Trinity Unit which feature vistas of the lakes and the Trinity Alps Wilderness Area. All of the information sites are operated and maintained by Forest Service recreation staff, and are offered free of charge.

There are four public day use/picnic sites located on the Shasta Unit and four day use/picnic site on the Trinity Unit. All sites provide potable water. Some of the sites operated by the concessionaire charge a fee for daily use.

Table2-16
NRA Day Use Areas

Facility	Type of Day Use	Number of Picnic Sites	Lake
Bailey Cove Picnic	Picnic Site	9	Shasta
Dekkas Rock Picnic	Picnic Site	5	Shasta
Fisherman's Point	Picnic Site	7	Shasta
McCloud Bridge	Picnic Site	5	Shasta
Clark Springs Day Use & Beach	Picnic and Swimming Site	34	Trinity
North Shore Vista	Information Site	NA	Trinity
Osprey Info Site	Information Site	NA	Trinity
Trinity Vista	Interpretive Site	NA	Trinity
Tanbark Picnic	Picnic Site	8	Trinity
Stoney Creek	Swimming Site/Picnic Site	4	Trinity
Lewiston Vista	Information Site	NA	Lewiston
Pine Cove	Picnic Site	2	Lewiston

2.2.8 Non-motorized Trails

Most of the trails on the NRA follow the lakes shoreline and are relatively short in distance (longest being approximately 8 miles). They offer plenty of opportunities for day hiking, mountain biking, running, fishing, sightseeing and wildlife viewing. There are two interpretive trails, Trails of the Trees and Samwel Cave Nature Trail. Trail of the Tress is located at Tannery Gulch Campground on the Trinity Unit and Samwel Cave Nature Trail is located on the Upper McCloud Arm on the Shasta Unit. Trail of the Trees' theme is complexity of forest communities and Samwel Cave Nature Trail's theme is the relationship between the Wintu Indians and the cave. Due to persistent hot temperatures during the summer season most hiking and mountain biking occurs in the fall and spring, with the mild winter season also being popular on the Shasta Unit.

Table 2-17
NRA Trails

Trail	Length of Trail (miles)	Lake
Bailey Cove	3.1	Shasta
Clikapudi	8	Shasta
Clikapudi Advanced Mountain Bike Loop	1	Shasta
Dry Fork Creek	4.7	Shasta
Fisherman's Point	0.5	Shasta
Hirz Bay	1.6	Shasta
Packers Bay Trails:		Shasta
Fish Loop Trail	0.7	Shasta
East Side Trail	0.4	Shasta
Overlook Trail	0.4	Shasta
Waters Gulch Trail	2.8	Shasta
Potem Falls Trail	0.3	Shasta
Samwel Cave Nature Trail	1	Shasta
Sugarloaf	1	Shasta
Trail of the Trees	0.5	Trinity
Trinity Lakeshore Trail	4	Trinity
Baker Gulch Trail	0.2	Lewiston
North Lakeshore Trail	2	Lewiston
South Lakeshore Trail	1	Lewiston

2.2.9 Off-Highway Vehicles (OHVs)

Opportunities for off-highway vehicle recreation are provided by the Chappie Shasta OHV Area (Chappie-Shasta) located immediately west of Shasta Dam. This 52,000 acre area offers over 250 miles of trails for 4x4, ATV, motorcycle, and mountain bike enthusiasts. The roads and trails within the area are the result of mining and logging operations, and are well suited for OHV use. It is available to OHV enthusiasts for year round use. Approximately 9,000 acres of Chappie-Shasta lies within the NRA boundary. Beginning on July 27, 2010, with the signing of Public Law 111-206, Chappie-Shasta is now solely managed by the Bureau of Land Management.

Table 2-18

Chappie-Shasta Off-Highway Vehicle Area History	
October 1982	BLM filed grant application with State OHV Grant Commission.
January 1983	State OHV Commission approved grant.
August 1984	Most landowners grant permission to BLM for easement surveys. Silver King Mines Inc refused permission.
May 1985	Silver King entertained possibility of direct sale of their properties to Government. State Regional Water Quality Control Board notified BLM of three hazardous waste sites on Silver King properties. A determination was made that it was not in public interest to acquire properties if waste sites included.
April 1986	Silver King Mines indicated they would consider sale of properties excluding the hazardous waste sites.
May 1986	Project agreement between State OHV Commission and BLM signed.
December 1986	Interagency Agreement between FS and BLM signed--provides for coordination of effort.
April 1987	SWQCB issued order to Silver King Mines Inc. to correct discharge problems on three mines within project area.
July 1988	FS Regional Foresters Office responds to WQCB proposal indicating it is not in public interest to acquire properties offered (Silver King). Project participants decide to shift emphasis to westside of project area until Silver King issue is resolved.
June 1989	Field inventory of trail system in westside begins using volunteers from Redding Dirt Riders Motorcycle Club.
January 1990	Purchase of Santa Fe Pacific lands completed adding 3860 acres to the OHV project area.
September 1991	Interagency Agreement with NPS Whiskeytown signed adding 2500 acres.
June 1992	Construction of OHV Staging Area completed and opening ceremony held.
January 1995	Sierra Pacific land exchange completed adding 8669 acres to OHV area.
2001-2007	Grants for operation and maintenance from the State of California.
2002	Interagency Agreement updated. FS to prepare and administer special use permits for events staged on FS lands. Both agencies agree to act as lead agency for OHV activities on their respective lands.
July 2010	Ownership of National Forest System lands within the OHV Area were transferred to the Bureau of Land Management by Public Law 111-206 "Shasta-Trinity National Forest Administrative Jurisdiction Transfer Act."

On Earth Day 2003, Forest Service Chief, Dale Bosworth, outlined four primary threats to the health of America's National Forests, one of them being the undesirable effects of irresponsible Off-Highway Vehicle use. To address this problem, the Forest Service published, on November 9, 2005, a final travel management regulation governing use of OHVs and other motor vehicles on National Forest System lands. The Forest Service's final travel management regulation revises regulations at 36 CFR parts 212, 251, 261 and 295 to require designation of roads, trails and areas open to motor vehicle use.

Numbering of Roads and Trails. *The roads are given numbers that are based on the township in which the northern end of the road is located. The trails are given numbers based on the range in which the trailhead is located.*

In March 2010, the Forest Supervisor signed a decision designating those roads, trails and areas open for motorized use on the STNF. It does not close any part of the existing National Forest Transportation System (NFTS) and adds 32.1 miles of formerly unauthorized routes to the NFTS. Designated routes and areas will be identified on a "Motor Vehicle Use Map (MVUM)". It will indicate where forest users can drive on the forest, including what classes of vehicles are authorized for each road, trail and area. The prohibition on motor vehicle use off the designated system goes into effect and is enforceable when designated routes are identified on the MVUM. Motor vehicle travel off NFTS routes by the public is prohibited except as allowed by permit or other authorization. Parking is allowed within one vehicle length off of NFTS routes unless otherwise prohibited.

The decision adds open areas below the high-water marks of Shasta Lake (28,403 acres) and Trinity Lake (15,644 acres), with only highway-legal vehicles allowed, a maximum speed limit of 15 MPH, and seasonal restrictions and cultural resource protection measures applied where needed. All motor vehicle travel will be prohibited below the high water mark on Iron Canyon Reservoir. The free MVUM will be revised and reissued as needed to accommodate future changes to the forest's designated transportation system.

2.2.10 Interpretive and Information Services Program

The primary location for visitor information on the NRA is Shasta Lake's South Arrival Information Station, a staffed facility adjacent to the ranger station along Interstate 5, three miles south of the NRA boundary. It is open May through Labor Day. The function of this station is to provide the public with information about camping, commercial facilities, and the lake. This facility has been very successful, attracting approximately 6000 visitors a year.

Additionally, visitor information services are provided at the NRA ranger station at the location described above. Beyond information services about recreation, campfire permits and sale of Forest products, such as fuelwood cutting permits, shoreline debris free-use permits, forest maps and passes can be acquired at the ranger station front desk. The ranger station front desk is open weekdays all year long, excluding federal holidays.

As of 2012 the NRA has an interpretive specialist staff position. This position is charged with developing and providing natural and cultural resource based interpretive programs to the visiting public, school groups, periodic special events and community organizations. Programs generally occur in the field on both NRA units at amphitheaters, group campgrounds, developed campgrounds, trails and marinas and resorts under special use permit. The concessionaire also provides interpretive programs with the oversight of the interpretive specialist. Both Units have interpretive programs predominantly between late May and early September. Programs provide information and emersional experiences involving resource identification (i.e., plants, animals, and stars), cultural and historical themes (pre-lake and Native American), geologic history and mineral resources, camping ethics, fire safety, recreational activities and junior ranger information.

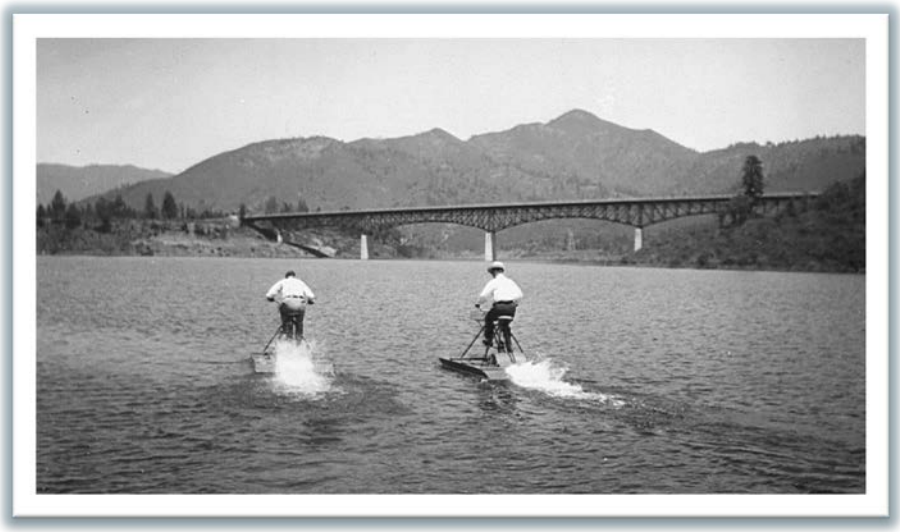
"The Shasta Lake Information Center, at Mountain Gate, completed its first full year of operation in September and has now played host to over 35,000 visitors in the 15 months it has been open....Visitors from all over the world have stopped in to see the carpet map and receive recreational information. Nearly all the countries of Europe, and Israel, China, Japan Australia, New Zealand and, of course, Canada and Mexico, have been represented by visitors." (Interpretive Services 1983)

There are four vistas/overlooks (with interpretive signs, maps of the area, and self-service information) on the Trinity Unit. Vista/ overlook locations include Trinity Vista, Osprey, North Shore Vista, and Lewiston Vista. It is important that vegetation maintenance routinely occur at these sites to ensure the view shed is sustained.

Fire Guard stations provide valuable information contact points for visitors out on the unit. These include Big Bend and Lakeshore guard stations on the Shasta Unit and Coffee Creek and Mule Creek stations on the Trinity Unit.

There is one Forest Service scenic byway located on the Trinity Unit. The Trinity Heritage National Scenic Byway, this is a self-guided auto tour. The tour is approximately 104 miles long, beginning in the town of Weaverville and ending at the junction of Interstate 5 north of the town of Mt. Shasta. There are 17 interpretive stops along the byway (9 in the NRA).

The NRA also uses the boat ramp kiosks as important information sites for providing the boating public with safety and orientation information. Beyond maps of the lakes displaying geographic boundaries and recreational features, the boat ramp kiosks have information about underwater obstacle, quagga/ zebra mussels and regulatory buoys.



Recreating on Shasta Lake using water bicycles in about 1947.

2.3 Recreation-Related Surveys, Studies and Assessments

2.3.1 Shasta and Trinity Lakes Boating Carrying Capacity Study (2005)

During the 2002 boating season, the NRA requested that Pennsylvania State University conduct a carrying capacity study for Shasta and Trinity Lakes. The objectives of this study included: developing a profile of recreation users, measuring recreation use patterns at the lakes; and assessing visitors' expectations, satisfaction, perceptions of existing conditions, and opinions about lake management. The final report was published October 2005.

"The basic conclusion of this investigation is that boating on Shasta and Trinity Lakes has not reached problematic levels but may be near capacity at this time" (Graefe et al. 2005b). This conclusion is based on the following study results. "First, the quality of the boater experience at both lakes is high. Current boaters tend to be quite satisfied with their experience across a broad range of use levels and types of encounters. A large majority of the boaters at both lakes felt safe while boating and reported that they had encountered use levels that were about what they expected. In addition, most of the experiential impacts measured were relatively minor. Boaters expressed concerns about issues unrelated to recreational use levels such as fluctuations in water levels. From the data collected it seems that people–related problems were more likely to be a result of inappropriate visitor behaviors (e.g. unsafe operation of personal watercraft or inconsiderate behavior) rather than the number of lake users encountered. Such problems probably can be addressed through management programs that don't involve setting use limits at or below current conditions" (Graefe et al. 2005a).

"Secondly, boating quality is related to use levels at the lakes in complex ways. Overall satisfaction measures showed little or no difference across high or low use times. But differences in results throughout the season suggest that many people currently self–regulate to maintain the experiential quality they prefer. For example, they choose to boat on non–holiday weekends, or come earlier or later in the year. Although the results suggest that current use levels could increase slightly without much negative impact on the recreation experience, the nature of the experience itself would presumably change toward less focus on the environment and more focus on humans. Such a change would conflict with management goals" (Graefe et al. 2005a).

2.3.2 An Economic Assessment of Alternative Water-Level Management for Shasta and Trinity Lakes

The reservoirs are managed by the Bureau of Reclamation as part of the Central Valley Project. The Forest Service manages recreation on the lakes; however, control of the lake levels rests with Reclamation. Effective water resource management in face of competing demands necessitates a careful accounting of the costs and benefits of alternative water uses. In many cases, the benefits associated with recreation and tourism are often overlooked. These benefits consist of direct use benefits to recreators at the site in the form of activities such as boating, fishing, and swimming, and indirect benefits to the local economy resulting from recreator economic activity, in the form of purchasing goods and services, at or near the site. The major charge of the study was to assess the economic benefits to users and the economic impacts on the regional economy associated with recreation under a number of water-level management scenarios. (Cordell and Bowker 1993)

2.3.3 National Visitor Use Monitoring (NVUM)

NVUM is an on-going national monitoring program that uses a stratified random sample to develop statistical estimates of visitor use, characteristics, satisfaction and spending information relevant to each national forest. The primary goal of NVUM is to provide an estimate of the total number of recreation visits received on National Forest System lands. To date there have been two rounds of NVUM surveys on the Shasta-Trinity National Forest. Each survey round is conducted in five-year intervals, and the survey sampling period occurs over the course of the entire fiscal year (FY) (October 1 – September 30). The first round of NVUM surveys on the Shasta-Trinity National Forest occurred in FY 2002, and the second round in FY 2007, with summary reports available in 2003 and 2008 respectively. The third round of surveys is occurring in FY 2013. A sample subset was developed for the NRA in the second and third survey rounds that collected visitor use data at NRA locations.

The most recent NVUM summary report from 2008 listed approximately 1.4 million site visits (+/- 21.3%) to the NRA for recreation during the FY 2007 survey period. Motorized water activities (18%) was the highest primary activity reported by survey respondents. While the 2003 summary report did not include a subset sample of the NRA, there were approximately 2.2 million site visits (+/- 11.7%) to the Shasta-Trinity National Forest during the FY 2002 survey period. Fishing (21.3%) was listed as the highest percentage of primary use reported by survey participants.

2.3.4 Other

- Shasta-Trinity National Recreation Area Fee Retention Monitoring Program Survey Report (2002)
- A Survey of Shasta Lake Launch Ramp Users (1999)
- A Survey of Shasta Lake Campers (1999)
- A Survey of Trinity Lake Launch Ramp Users (1999)
- A Survey of Trinity and Lewiston Lakes Campers (1999)
- The Shasta National Forest Customer Final Report (1993)

- The Shasta-Trinity National Forest Customer Final Report (1993)

2.4 Water Recreation Opportunity Spectrum (WROS) Inventory

"The Water Recreation Opportunity Spectrum (WROS) is a tool to understand the type and location of six types of water related recreation opportunities, otherwise known as WROS classes. The six WROS classes range across a spectrum of urban, suburban, rural developed, rural natural, semi-primitive, and primitive classes. Each WROS class is defined by a particular "package" of activities, setting attributes, experiences, and benefits" (Aukerman and Haas 2004).

In the summers of 2002/2003, the Bureau of Reclamation sponsored WROS inventories on 30 water bodies in California. Aukerman, Haas, & Associates, LLC were contracted to oversee the field inventory and prepared a final report for each lake.

A two and a half day inventory of Shasta Lake was conducted on July 28, July 30, and July 31, 2003. Fourteen inventory sites were completed using the WROS Inventory Protocol, expert opinion, and discussion among an inventory team. A full day inventory of Trinity Lake was conducted on August 1, 2003. Seven inventory sites were completed using the WROS Inventory Protocol, expert opinion, and discussion among an inventory team. Additionally, after inventorying Trinity Lake, part of the WROS team visited Lewiston Lake.

Based upon the WROS inventory, lake-wide maps were developed depicting the current recreation situation for Shasta Lake (Figure 2-2) and Trinity/Lewiston Lakes (Figure 2-3). Shasta Lake is currently providing suburban (S4), rural developed (RD4 & RD6), rural natural (RN6, RN 7 & RN8), and semi primitive (SP9) classes of water recreation opportunities. Trinity Lake is currently providing rural developed (RD4, RD5 & RD6), rural natural (RN 6 & RN7), and semi primitive (SP8) classes of water recreation opportunities. Lewiston Lake is providing rural developed (RD5), and rural natural (RN6) classes of opportunities for recreationists.

The final reports for Shasta and Trinity Lakes were published in October 2008.

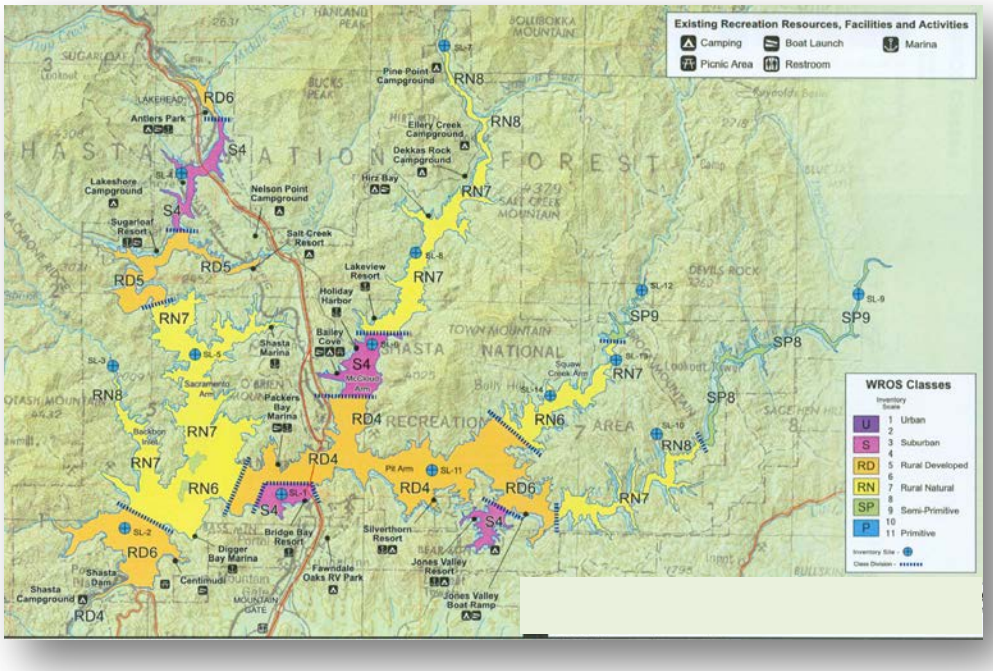


Figure 2-2. Shasta Lake – WROS Classification

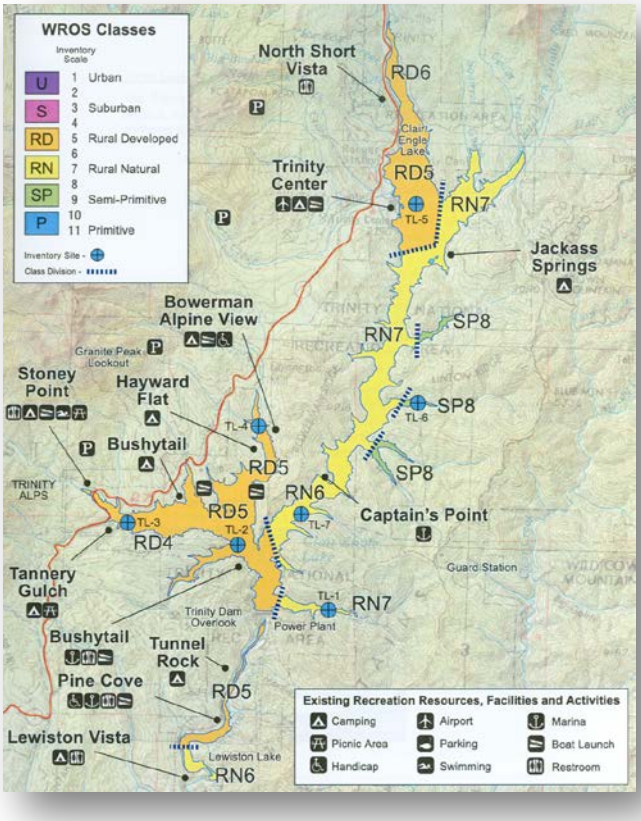


Figure 2-3. Trinity Lake and Lewiston Lake – WROS Classification

3. Management Guidance

The NRA Legislation clearly states that the primary objective in the NRA would be to provide an optimum environment for outdoor recreation through development of the recreation resource and the conservation of the scenic, scientific, archeological, historic, and other values contributing to public enjoyment. Consistent with this legislation, the Forest Service strives to focus recreation experiences on the natural setting rather than on man-made facilities.

3.1 Concessionaire Program

Since the 1980s, the NRA has used private concessionaires to operate and maintain a number of its developed recreation sites. Concessionaires receive a term special use authorization (permit) to perform these duties. The sites include campgrounds, picnic areas, vistas, boat ramps, and swim areas. Operation activities performed by the concessionaire include cleaning and stocking supplies, garbage removal, providing visitors with information, enforcing campground rules, hazard removal and abatement. Maintenance activities performed by the concessionaire include work that serves only to keep the facility in an ordinary, efficient operating condition. Examples of concessionaire responsibilities include, but are not limited to, interior painting, vandalism repair, repair of broken windows, light bulb replacement, cleaning, unplugging drains, preventive maintenance, servicing, inspecting, oiling, adjusting, tightening, aligning, watering, weeding, sweeping, waxing, refinishing picnic table and, routine housekeeping. The standards for how the sites are to be maintained and operated are provided in the annual Operation and Maintenance Plan, executed by the concessionaire and Forest Service, and included as a permit appendix.

The concessionaire is also responsible for the safe operation and maintenance of the drinking water systems at federally owned recreation facilities under special use permit. The objective of the Forest Service Drinking Water Program is to protect the health of the public and Forest Service personnel by ensuring that water provided by the Forest Service for human consumption is safe and protected. Failure to operate these drinking water systems accordingly may result in revocation of the permit. Permit holders operating federally owned water systems must comply with all applicable federal, State, interstate, and local requirements applicable to drinking water systems, and must follow the Operation and Maintenance Plan developed in conjunction with the Forest Service to address the specific system(s). Among other requirements, water system operation include following a monitoring plan (ex. submitting special and monthly water samples for total coliform bacteria), treatment for disinfecting contaminated systems, submitting sanitary sampling plan and condition surveys, and record keeping.

Under the concessionaire program the Forest Service is responsible for replacing or improving fixed assets and overseeing the performance of permit holders. Examples of Forest Service responsibilities include, but are not limited to, installing a new roof, new floor, or new siding; replacing pipes, pumps, and motors; repairing or maintaining the paths, lands, walks, walls, or landscaping adjacent to other government-owned structures; replacing vault toilets with flush facilities, paving interior roads, upgrading facilities, and installing utilities; and performing exterior painting and refinishing. A Granger-They Fee Offset agreement can be executed with the concessionaire in lieu of the Forest Service performing these tasks up to the amount of the concessionaire's permit fee.

The concessionaire is responsible for inspecting, repairing or replacing (as described in paragraphs above) and monitoring the recreation facilities within their permit. An annual safety inspection, that includes hazard trees (more discussion on hazard trees is found in the Vegetation Section), water systems, and developed site features, is performed prior to opening each site to public use for the season. In those sites that are open year-round, the concessionaire conducts such an inspection during the pre-season (January – March) of each year. Each inspection is documented in writing by the concessionaire, on a form acceptable to the Forest Service. The concessionaire is responsible for identifying safety or other concerns and for correcting any safety deficiencies for facilities in their permit. All actions proposed to correct deficiencies must be approved by the Forest Service prior to implementation, and any repairs made must be to the satisfaction and specification standards of the Forest Service. The Forest Service performs quality control site inspections as authorized for administering the permit. During these "spot check" inspections, Forest Service recreation staff review the sites for health and safety, janitorial and developed site features to ensure the concessionaire is providing quality service. These inspections are done frequently (weekly - monthly), and documented on a standardized written form that is provided to the concessionaire for action.

The concessionaire has developed and adopted its own Innkeeper's Rules and Regulations covering the operation of recreation sites and the behavior of the guests. Among its Innkeeper's Rules and Regulations the concessionaire includes all applicable Forest Service rules and regulations currently in effect on the Shasta-Trinity National Recreation Area.

Full innkeeper's rights and remedies include, but are not limited to, the right to post permit parking areas and the option to tow or impound illegally parked vehicles subject to the regulations of the California Vehicle Code. The California Penal Code Sections 537 specifies fine and or imprisonment for defrauding an innkeeper at up to $1000 and or imprisonment for 1 year.

The concessionaire staff makes effort to "enforce" the company's Innkeeper's Rules and Regulations. Enforcement is done through informing the public, using the HOST approach, and seeking voluntary compliance with the rules and regulations. When violation is clearly malicious, willful or deliberate or results in loss or damage to property or damage to government property; or jeopardizes the safety or rights of others, Forest Service law enforcement and the permit administrative officer are notified. When behavior does not involve the above elements, and voluntary compliance cannot be achieved, the concessionaire may expel the non-cooperative guest(s). If the non-cooperative guest(s) refuse to leave the premises, the

concessionaire may contact the local Sheriff's Department for assistance. In areas where the Sheriff has no authority to enforce the rule or regulation in question, the concessionaire may request assistance from Forest Service law enforcement staff by notifying Dispatch.

In 2011, Shasta Recreation Company began managing the facilities on both the Shasta Unit and the Trinity Unit under a single permit. Prior to 2011, Shasta Recreation Company had been the only concessionaire on the Shasta Unit, successfully bidding on two ten year permits and Hodge Management had been the only concessionaire on the Trinity Unit, successfully bidding on three ten year permits. In 2013 Shasta Recreation Company began a five-year permit term that will expire on December 31, 2017. The permit term may be extended up to five-years by an amendment at the sole discretion of the authorized officer based on sustained satisfactory performance or administrative need. The amendment for the five-year extension will not require additional environmental analysis, as long as the Developed Recreation Site Concession Special Use Permit project Decision Memo, signed November 30, 2012 is still wholly applicable. Upon termination of the current or amended permit, the NRA will need to conduct environmental analysis before a new permit can be authorized. The NEPA process should begin at least 9 months in advance of soliciting a Prospectus. The NEPA applicable for the concessionaire special use permit typically falls under a category of action for which a project or case file and decision memo are required, specifically falling into the 36 CFR 220.6(e)(15) category.

The NRA will continue to manage our developed recreation sites under the Granger-Thye Act campground concessionaire program. The current special use permit authorizes Shasta Recreation Company to operate both Shasta and Trinity Units to 2017 with an option to renew without competition for another five years. At the end of this permit term the NRA will issue a new prospectus to continue operations under a concessionaire, unless fee legislation makes it more cost effective for the Forest Service to reassume sole management of daily operations.

NRA staff provides administration and oversight of the concessionaire permit. This includes conducting formal monitoring during three periods annually, pre-season (January-March), peak-season (April-August) and post-season (September-December). Additionally, the concessionaire is evaluated and rated annually for performance at the mid-year, and end of year periods. Pursuant to the permit the concessionaire is required to execute an annual Operation and Maintenance Plan, which provides the fine detail and standards of how the developed recreation sites are to be maintained and operated.

3.2 Recreation Fees

Many locations and recreation facilities on National Forest lands are free to use. There are also some places or some activities where a fee is charged. The various types of recreation fees being collected may not appear different; however, there is often a big difference in how the money is used.

On the Shasta-Trinity National Forest, many of the campgrounds are operated by a concessionaire (a business that has been selected to operate and maintain the campground). The authority for the concessionaire to charge a fee at recreation sites is provided by Section 7 of the Granger-Thye Act, 16 U.S.C. 580d, and 36 CFR Part 251, Subpart B. The Forest Service allows the concessionaires to charge the public a fee for the use of the campground, in return for services provided by the concessionaire, such as toilet cleaning, security in the campground, providing drinking water, etc. The concessionaire, in turn, pays a portion of the campground fees to the federal government, which goes to the general treasury. However, in many cases, the Forest Service works with the concessionaire to completing repairs and improvements in the campground or other recreation facility, in lieu of collecting a fee from the concessionaire. This "fee offset" program allows these recreation sites to be maintained at a high quality and sees that the fees paid by the people using the campground are invested back into the site.

Effective in 2013 the concessionaire adjusted the fee structure for most of the recreation sites under its management, and in many cases recreation fees increased slightly. This fee adjustment was planned and

approved when the Forest Service accepted the concessionaire's prospectus application in 2010. Prior to the 2013 fee adjustment, most of the rates had not changed since 2006, and none had changed since 2009. The rates are designed to be reflective of the level of services and amenities provided to the public, and the costs to operate these facilities (fuel, supplies, wages, insurance, etc.). By market comparison with similar recreation facilities in other areas, the 2013 fee rates charged by the concessionaire are still in line with or slightly lower than the fees charged at other recreation facilities. Fees and season operational dates are listed in the concessionaire's Operation and Maintenance Plan, submitted to the unit annually by January 31st. Fees and season operational dates are also listed in the unit's Recreation Opportunity Guides (ROGs), which are provided as public information to our visitors.

One other authority for collecting fees at recreation facilities is the Federal Lands Recreation Enhancement Act (REA), which allows the Forest Service to collect a modest fee at certain types of recreation sites and to then use these fees where they were collected. These are facilities or services operated or managed by the Forest Service, such as campgrounds, rental cabins and lookouts, The funds collected are used to help operate and maintain the various recreation sites, to provide new or improved recreation opportunities, to restore or protect areas impacted by recreational use, or to better serve the recreation visitors in other ways . Prior to REA, when fees were collected at similar sites, the funds were deposited in the federal treasury and were not available for use at the site where the fee was collected.

Also under REA, the Forest Service may issue a special recreation permit and charge a special recreation permit fee in connection with the issuance of the permit, for specialized recreation uses of Federal recreational lands and waters, such as group activities, recreation events, motorized recreational use. The NRA issues approximately 650 house private boat permits. Additionally the NRA issues approximately 150 recreational event permits, most of which are for fishing tournaments and some outfitter/guide permits.

Many resorts, ski areas, outfitter guides and organizational camps are permitted to use the National Forest to provide special recreation opportunities to the public. These businesses pay a fee to the government for the use of the public lands. They collect fees from the recreation users for the services they provide. The fees paid by the various businesses to the Forest Service generally go directly to the federal treasury and are not used for recreation on the National Forests where they were collected.

In addition to REA the NRA has a unique program, the only program of its kind in the nation, related to permit fees collected from marinas. This program was authorized under the Omnibus Bill FY 2009 and is good through FY2014, as follows:

3.2.1 Federal Lands Recreation Enhancement Act (REA) Fee Proposal for Hirz Bay Cabin:

The NRA is in the process of opening the Hirz Bay Cabin to the public as an overnight rental through the REA expanded amenity fee program. As of 2013, NRA staff is working with the Regional Recreation Advisory Committee (RRAC) for the fee application process. If approved by the Washington Office and the RRAC, the cabin will be available in 2014 for rental under the new fee structure. Ninety-five percent of the funds generated through Hirz Bay Cabin rentals will be directed towards operation and maintenance of the cabin and future improvements.

The Hirz Bay Cabin was originally constructed in 1963. Since that time, this structure has served as a barracks for Forest Service employees, concessionaire office space, and temporary housing for volunteers and researchers. Since 2010, there have been numerous renovations made to the cabin in order to meet the desires of today's recreationists. These renovations combined function, aesthetics, and safety with an eco-friendly concern for the future. The Hirz Bay Cabin has 1080 square feet of space with three bedrooms, two full bathrooms, a spacious deck, washer, dryer, dishwasher, outside grill, security system and much more. Energy for the cabin is provided by solar power. Other eco-friendly features are new energy efficient lighting and insulation that provides for lower operating costs and reduces the impact on the environment.

3.2.2 Shasta-Trinity Marina Fees

Omnibus Appropriations Act, 2009, Public Law 111-8

- SEC. 419. Section 422 of title IV of division F of Public Law 110-161 is amended by inserting after "fiscal year 2007" the following: "and subsequent fiscal years through fiscal year 2014".

Public Law 110-161 (121 STAT. 2149)

- SEC. 422. A permit fee collected during fiscal year 2007 by the Secretary of Agriculture under the Act of March 4, 1915 (16 U.S.C. 497) for a marina on the Shasta-Trinity National Forest shall be deposited in a special account in the Treasury established for the Secretary of Agriculture, and shall remain available to the Secretary of Agriculture until expended, without further appropriation, for purposes stated in section 808(a)(3)(A–D) of title VIII of division J of Public Law 108–447 (16 U.S.C. 6807), and for direct operating or capital costs associated with the issuance of a marina permit.

3.3 Boating

3.3.1 Boating Capacity

Boating is currently managed through indirect controls, such as moorage limitations and parking capacity. It is assumed that these controls will be sufficient to manage average daily use within established management limits on Shasta, Trinity and Lewiston Lakes.

3.3.2 NRA Floating Debris Policy

Floating debris (such as logs, limbs and bark) enters Shasta and Trinity Lakes primarily by way of the rivers and streams which empty into the lake. The larger debris can present a physical obstacle to boating, while the smaller debris can clog water intake ports in boat-engine cooling systems and ruin props.

The natural annual debris cycle of the lakes begins during the winter rainy season, when debris is washed into the lake and the rising lake re-floats any debris beached on the shoreline in previous years. When the lake drops in the spring, this debris beaches itself until the lake rises again the following winter. During the peak summer recreation season, most debris is beached on the shoreline with little effect on public enjoyment or safety.

The public will be alerted to potential of floating debris using boat ramp signing and information included on recreational user maps.

While it is not the standard policy of the Forest Service to remove accumulation of debris resulting from the natural annual cycle, there are occasionally large scale debris events in which disposal efforts have occurred. These large scale debris events may result from high severity fires and severe storms. Disposal efforts require significant amount of funding and staff resources in order to safely establish catchment areas on the lake, followed by transport to storage areas for processing.

3.3.3 Regulatory Buoy Program

The California Uniform State Waterway Marking System has been devised for waterways located entirely within the boundaries of the state. The waterway marking system employs buoys and signs with distinctive standard shapes to show regulatory or advisory information. These markers are white with black letters and have orange borders. They signify speed zones, restricted areas, danger areas, and general information.

California Boating Law applies to the operation of vessels on all waters within territorial limits, including coastal waters. State boating law incorporates Federal Navigation Rules, including the international and inland rules of navigation. In addition to state law, many counties, cities, and districts have special laws or ordinances. These ordinances may regulate speed, set aside certain areas or hours for special purposes and prohibit acts which would be contrary to public interest. Boaters must comply with these local rules as well as with the

state laws. Every peace officer of the state, city, county or harbor district is empowered to enforce general boating laws, navigation regulations, and local restrictions.

Pursuant to Section 660 of the California Harbors and Navigation Code, both Shasta County and Trinity County have ordinances regulating the operation of motor boats and vessels upon the waters of their respective county. These "boating ordinances" are enforced by the County Sheriff Departments. The ordinances include placement of buoys to convey regulatory information to boaters, and as such, are the responsibility of each county.

The Forest Service has been assisting with the maintenance of regulatory buoys on Shasta Lake since the early 1970s. And has made recommendations over the years to the County Supervisors regarding locations which need regulation ("5 mph" and "No Ski" buoys), with the primary objectives of enhancing boater safety and reducing conflicts between high-speed and low-speed boating.

This buoy program also helps maintain areas of semi-primitive setting attributes as identified in the WROS inventory. This program is vital to creating areas of quiet waters for recreation users. If management direction and public input in the future calls for more semi-primitive recreation opportunities on the lakes, the Forest Service would work closely with the Counties to expand the buoy program.

3.3.4 Boating Safety Program

The NRA has developed a boating safety program to ensure a clear and consistent message of boating safety is delivered to all visitors that recreate on the three lakes. This program consists of boating safety brochures/maps, boat ramp kiosk and signing standards and an obstacle marking program.

Boating Safety Brochures/Maps

The intent of this brochure is to provide information that will promote an awareness of the presence of obstacles in Shasta and Trinity Lakes and to encourage safe boating practices. It is intended to illustrate how the features of the lakes might be affected by changes in water levels. This free brochure will be available to the public at major launching facilities, resorts and Forest Service offices.

Boat Ramp Kiosk and Signing Standards

Signs will be located at all developed boat ramps notifying visitors of the presence of obstacles and floating debris and the fact that most obstacles are not marked. Boating safety regulations will also be included in the signing.

Obstacle Marking Policy

The underwater topography of Shasta Lake and Trinity Lake includes a number of features with the potential to become navigational hazards when they lie just below the water surface. The pattern of submerged obstacles varies on a seasonal basis as the lake level goes up and down. The Forest Service began marking these obstacles in 1971. The 1976 NRA Plan (FS 1976b) called for marking "all navigational hazards, both manmade and natural." By 1980, an estimated 500 markers had been installed, most between full pool and then-average drawdown of 50-60 feet. By the early 1980's, however, funds for marking obstacles no longer supported proper maintenance of existing markers or installation of new markers. The 1982 update of the NRA Plan (FS 1982a) called for marking "…all navigational hazards, both manmade and natural the agency feels are serious threats to the boating public in main channels and major use areas…publish and distribute hazard charts for boaters, showing fixed hazards…emphasis will be placed on better informing the public of possible unmarked hazards, as it is impossible to mark all hazards." Approximately 400 markers would be needed to meet this direction. Cost is not the only concern with regard to obstacle marking, however. In recent years, the issue of liability and protection of the U.S. Government against claims has become a major concern. Legal counsel has advised that to reduce liability risks to a minimum and be legally secure, the Forest Service must be able to mark all obstacles and keep them properly maintained. The implications of partial marking are that liability risks are higher since boaters might reasonably expect that all features are

marked; and that they might not, therefore, acquaint themselves with the knowledge needed for safe navigation of unmarked obstacles. The urgency of the liability question led the Forest Service in 1987 to seek temporary relief from the NRA Plan requirement for obstacle marking. A public information program addressing underwater obstacles was initiated at the same time. Signs were erected at all developed boat access points, alerting the public to unmarked obstacles; handout maps representing the underwater topography of the lakes were available. (FS 1988a)

In 2000 the NRA started an Underwater Obstacle Marking Program in partnership with varies marina and resorts on the three lakes. The Underwater Obstacle Marking Program is a part of, and integrated with, the Boating Safety Program. Just as the brochures, maps and kiosk signs provide vital information to the public, the Underwater Obstacle Marking Program is another way of promoting safe, responsible boat operation on the lakes. The program is defined in an Operation and Maintenance Plan (adopted in 2000, and amended in 2001). Our intention was and still is not to mark all underwater obstacles, this would be virtually impossible. The primary objectives of this program are to encourage safe boating practices and to promote an awareness of the presence of obstacles on all of the lakes in the NRA.

The marinas who wish to participate in obstacle marking are signed up on volunteer agreements to maintain an assigned set of markers. This assistance is vital to the success of the program. Each fall, usually in mid-December, the Forest Service does a condition survey of the obstacle markers. The results of this survey are shared with the participating marinas who then perform the needed maintenance as they can. The Forest Service supplies materials for marina employees to do the work. As of the effective date of this guide there are currently 321 obstacles that have been identified, marking the lake to an elevation approximately 100 feet from full pool. Obstacles may be referenced from the Obstacle Marker GIS Map, which includes GPS coordinates for general obstacle locations.

All obstacles are NOT marked. The responsibility for boating safety rests with each individual vessel operator. Obstacles may be added to the program through special request to the Forest Service. Signage, including a lake map and warning sign, is placed at each public boat ramp on the Shasta and Trinity Lakes. Boating Safety Information and Map brochures are provided free of charge to the public and offer important guidelines regulations specific for safe boating on the NRA lakes.

3.3.5 Floating Toilets

The floating toilets are not operated by the concessionaire and recreation staff provides daily maintenance and upkeep during the seasonal deployment. The toilets are flushing units, similarly operated to an airplane toilet, and the waste holding tanks must be pumped periodically. For pump servicing the toilets must be towed by boat back to the administrative facility docks, where a waste management company provides the pump-out. The floating toilets have been provided through a ten-year agreement with the state Department of Boating and Waterways. The units are provided by the state at no cost, with the expectation that the Forest Service provide maintenance and operations for public use.

3.3.6 Boating Safety Enforcement & Search and Rescue

The primary responsibility for public compliance with state boating safety laws lie with the County Boating Safety Units (within the County Sherriff's Departments). The Forest Service's primary responsibility is enforcing the Code of Federal Regulations and Forest Service policies for resource protection.

3.4 Boat Ramps

The NRA has been awarded several grants from the Division of Boating and Waterways (DBW) over the years. The grants have funded capital improvement projects that have provided much needed enhancements to the public ramps. Recent projects include ramp improvements (widening and resurfacing), new flush restrooms, widened sidewalks, new boarding floats and parking area improvements and Bowerman and Clark Springs Boat Ramps. A design grant was completed in 2013 for Trinity Center Boat Ramp improvements, and

design plans are being prepared for capital improvements and low water access at Centimudi and Jones Valley Boat Ramps.

In 2003 the NRA received a 2.5 million dollar grant from the DBW for a low water ramp at Minersville. Planning and design for the project was completed over the next few years. Although ready to construct in 2006, the lake was too high to construct, so an extension was granted from DBW. In 2007-8, during the contract bidding and awarding process, the NRA reapplied for the permits that had expired from North Coast Regional Water Quality Control Board and Army Corps of Engineers. The North Coast Water Board changed their position and refused to issue permits for the project because of new requirements to have 100% containment of petroleum products on the parking area that would be underwater (this is a low water boat ramp.). Forest engineers said they were asking for something that was virtually impossible or economically unfeasible to design. At that point, the Forest Service had to return the grant funds to the State. We hope to revisit this design challenge with DBW in the future, because a low water ramp is a priority for this area of Trinity Lake.

Future management and improvement goals for NRA boat ramps are to continue to make capital improvements that update and enhance the ramps with sustainable and eco-friendly facility site features. This may include solar lighting, automatic fee pay stations, recycling receptacles and low water towable-toilets. A priority will be to seek funding opportunities to improve or develop new low water access facilities on Shasta and Trinity Lakes. Short-term plans are to design low water access ramps at Centimudi and Jones Valley.

A continued management issue at some facilities, such as Jones Valley, is frequent vandalism. Management is considering options to mitigate theft, graffiti and property destruction. Alternatives under consideration include nightly area closures, video surveillance and after hours law enforcement patrols. Coordination between NRA recreation staff, the concessionaire and law enforcement will be critical regardless of the alternative(s) implemented.

3.5 Fluctuating Water Levels – A Management Challenge

In general, the fluctuations in lake level present a challenge to recreation site management and development of new sites. As the water recedes, the developed recreation facilities such as campgrounds and day use areas become more and more distant from the water's edge.

In 1984, when the BOR was considering raising Shasta Dam, criteria (FS 1984a) were developed by the NRA staff to assess site suitability for potential new facilities. They included the following which illustrate challenges related to fluctuating water levels:

- Proximity to Shoreline: Sites immediately adjacent to the shoreline are more desirable to the recreationist. For some facilities it is essential that they be immediately adjacent to the shoreline.
- Slope above High Water: Gentle slopes, where facilities are to be located, are more desirable than steep slopes. Increased slopes adversely affect the construction cost, maintenance, usability of site by recreationists, and aesthetics from within and outside the site.
- Slope under Water (adjacent to site): Slope of the lake bottom adjacent to the developed site is important for several reasons. As lake drawdown increases, the distance between the shoreline and facilities at or above the high water line will be greater on gentle (0-10 percent) lake bottom slopes than on steeper slopes. In other words, the gentler the slope, the greater the distance between high water line facilities and the water at any given drawdown level. The facility can become so distant from the lake that it will not be used. On the other hand, excessively steep slopes make access to and from the water difficult, highly expensive or impractical.
- Vegetation: The presence of a healthy stand of mixed overstory and understory trees and shrubs is highly desirable at all sites for shade, screening, and aesthetics.

- Rock: The presence and size of rock above and below the high water line is important to recreation suitability and construction cost.
- Wind Protection: As experience on Shasta Lake has shown, all facilities need protection from wind, particularly high winds. For marina facilities, wind protection is particularly important.
- Turbidity: Turbidity of the water is directly related to the soil composition of the shoreline. High turbidity is not desirable at any facility because of poor appearance.

Considerations associated with development of low water ramps and associated recreational facilities, or extending the length of existing high water ramps around Shasta and Trinity Lake:

- Topography: at the end of some of the existing ramps there is a significant drop-off or it is too flat (e.g. drop off at Clark Springs, and it is too flat at Bowerman and Trinity Center). Maintaining the necessary slope gradient requirements for the ramps according to marina standards (including State 'Department' standards) would necessitate extensive fill or excavation, which is not cost feasible for the reason stated in the bullet below.
- Contract sequencing: it has proven difficult to match a construction phase with a low water year. Grant funding cycles, permitting and an adequately low lake level need to be aligned for a successful project.
- Cost benefit/ economic feasibility. The costs associated with designing and constructing extensions would not meet the cost-to-benefit feasibility to compete for grants or present a viable business opportunity.
- Resource issues such as archeological sites and Late Successional Reserve.
- Meeting state and federal standards for permitting. See the Minersville low water ramp grant project described above as an example. This effectively means until a system is designed that passes North Coast Water Board permit requirements, we are limited to above high water parking locations only on the Trinity Unit.
- Parking lot size and access requirements. Areas that can accommodate the size and accessibility requirements that still meet the cost-to-benefit ratio are difficult to attain along the lake shorelines.
- Road access. Grants available for low water boat ramps will not fund road construction, therefore limiting potential sites to those with currently established access. Additionally, there are Federal (Corps of Engineers) permitting restrictions on using asphalt for roads and parking lots below high water. This would potentially mean use of concrete for the road and parking lots, which is significantly more costly, and again impacting the cost/benefit ratio requirements for grants.

As the lake level drops each year, flat areas accessible by vehicle are gradually exposed. These areas become favorite camping spots because they are right next to the water. Although many campers use self-contained recreational vehicles, portable toilets and garbage bins are provided during the high-use season at the larger sites to reduce the impacts of human and solid waste. Despite these efforts, the resolution of sanitation and litter problems continues to be a management emphasis.

OHV use below high water has damaged heritage sites and other resources. Effective with the 2010 STNF Record of Decision regarding motor vehicles use on National Forest System lands, only highway-legal vehicles at a maximum speed limit of 15 MPH are allowed to travel below high water on Shasta and Trinity Lakes. All motor vehicle travel is prohibited below the high water mark on Iron Canyon Reservoir.

3.6 Campgrounds

3.6.1 Bear Management

Bear management in NRA recreational facilities is an on- going program. It includes the provision of bear-proof facilities, such as dumpsters and food lockers in most campground facilities, an active education/signing program, and coordination with California Dept. of Fish and Wildlife. If during the season there are bear sightings and persistent bear vs. public problems in a campground or area of campgrounds, the district wildlife biologist should be consulted and an action plan developed.

"One of District Ranger Gilman's duties was putting up signs, which he accomplished by removing the heads from the nails to keep the bears from chewing up the signs." (Sundahl 1995)*
**John Gilman was the Redding District Ranger from 1938 to 1957.*

3.6.2 Boat Access Camping

Each NRA Unit has four boat-access only campgrounds that receive considerable use. The intent of the boat-in campgrounds is to add to the already diverse recreation opportunities on the lake, and support the unique water oriented recreation infrastructure. These campgrounds are not operated by the concessionaire, but instead maintenance is provided by NRA recreation staff.

3.7 Dispersed Camping

The Motorized Vehicle Use Map (MVUM) for the Forest shows the National Forest System roads, National Forest System trails, and the areas on National Forest System lands that are designated for motor vehicle use pursuant to 36CFR212.51. The MVUM also identifies the vehicle classes allowed on each route and in each area; and any seasonal restrictions that apply on those routes and in those areas. Public motor vehicle travel below the high water mark at Shasta Lake and Trinity Lake is restricted to highway legal vehicles with a maximum speed limit of 15 mph. Motor vehicle use to access permitted facilities (e.g., marinas, fee areas, and boat ramps) in open areas has no season of use restrictions. Motor vehicles may be parked within one vehicle length from the edge of the road surface when it is safe to do so without causing damage to NFS resources or facilities, unless prohibited by state law, a traffic sign, or an order (36CFR261.54).

There is no dispersed camping allowed on or within ¼ mile of the shoreline on Lewiston Lake. This is to prevent resource damage caused by too many people camping in too few areas and to reduce wildlife disturbance (Forest Order 14-56-6).

3.8 Off Highway Vehicles

The Motorized Vehicle Use Map (MVUM) for the Forest shows the National Forest System roads, National Forest System trails, and the areas on National Forest System lands that are designated for motor vehicle use pursuant to 36CFR212.51. The MVUM also identifies the vehicle classes allowed on each route and in each area; and any seasonal restrictions that apply on those routes and in those areas. Public motor vehicle travel below the high water mark at Shasta Lake and Trinity Lake is restricted to highway legal vehicles with a maximum speed limit of 15 mph.

3.9 Metal Detectors

3.9.1 Use of Metal Detectors Searching for Gold (or other locatable minerals)

Using a metal detector to locate gold or other mineral deposits is an activity that falls under the General Mining Laws and is subject to the 36 CFR 228A regulations.

With respect to searching for gold nuggets or other locatable minerals metal detecting is not allowed in areas federally withdrawn from mineral entry (includes the NRA). Since they have been removed from the mining laws there is no ability for an individual to locate a claim and metal detecting is mining, be it minimal. This is actually the same for gold panning. The mining laws don't recognize a recreational aspect of mining. You are either mining or you are not mining. Legally the only way a person can look for gold or other locatable

minerals in areas withdrawn from mineral entry is under approved scientific study, and the only way it can be removed is for scientific use.

3.9.2 Use of Metal Detectors for Recreational Pursuits

The most common form of metal detector use is searching for lost coins, jewelry, and incidental metal items having no historical value. Such use is common in developed campgrounds, swimming areas, and picnic areas and requires no permit. However, it is the personal responsibility of the individual to know and understand the applicable laws related to archeological and historical resources. These laws apply to all National Forest System land and do not vary from state to state.

- The Code of Federal Regulations (36 CFR 261.9) states, "The following are prohibited:
  - (g) Digging in, excavating, disturbing, injuring, destroying, or in any way damaging any prehistoric, historic, or archaeological resources, structure, site, artifact, or property.
  - (h) Removing any prehistoric, historic, or archaeological resources, structure, site, artifact, property."
- The Archaeological Resources Protection Act (ARPA, 16 U.S.C. 470cc:) also prohibits these activities, stating, "No person may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resources located on public lands or Indian lands unless such activity is pursuant to a permit..." ARPA exempts the collection of coins for personal use if the coins are not in an archaeological context. In some cases, historically significant coins and other metallic artifacts may be part of an historical-period archaeological site, in which case they would be considered archaeological resources and are protected under law.

Guidelines for Metal Detector Use Requests

No ground disturbing activities will be allowed. If the metal detector goes off and the target appears to be buried (shallow) as opposed to accessed by simply brushing away some dead leaf cover, the Forest Service (NRA Ranger Station) must be contacted before digging so a determination as to whether or not supervision by an archeologist is needed. That determination could take some time depending on staff availability.

If the location is within a developed recreation facility operated by the concessionaire, the concessionaire must be contacted prior to using a metal detector. Campgrounds are designated for overnight use, not day-use, so the concessionaire may require payment of a fee for use of the campsite. All of the concessionaire's Inn-Keepers Rules apply (posted at the facilities).

Individuals using metal detectors cannot infringe on the recreation activities of other users, for example they cannot venture into someone else's campsite or picnic area and use a metal detector if that activity is disruptive to other recreationists already using that area.

All other regulations relating to public use of Forest Service System lands apply.

3.10 District Interpretation and Information Standards and Guidelines

One of the first goals of the interpretive specialist position is to develop an Interpretive Management Plan. This plan, currently in draft, will provide the goals and objectives, interpretive themes, training information, signing and program standards and interpretive resources so that the NRA can implement highly effective programs that foster stewardship of our resources and lend to a heightened recreational experience. The Interpretive Plan will guide all interpretive activities within the NRA. All interpretive signing and program development within the NRA will be coordinated between recreation and other resource program areas. Applicable recommendations from the NRA interpretive plan will be incorporated as opportunities arise.

3.11 Signage and NRA Color Scheme

The NRA has adopted use of a unique color scheme for signage and constructed features outside of the standard forest service brown, which is meant to be indicative of the NRA's water/lake theme. Facilities within the boundary of the NRA have signage and buildings that are painted in the shadow blue and shadow gray color scheme. For facilities outside the NRA boundary, the standard forest service brown color scheme still applies. The standard recipes for color schemes are based on formulas from Sherwin-Williams.

NRA color scheme (shadow blue/gray):

- All facility entrance sign have NRA colors.
  - Includes Family of Shape (FOS) signs for campgrounds, picnic areas, trails and boat ramps.
- All boat ramp interior signs have NRA colors.
  - Includes bulletin boards, frestas and directional signage within the launch facilities.
  - Includes fee envelope box and tube.
  - Excludes regulatory signs such as stop signs, curb markings and no parking.
- All campgrounds, picnic areas and trail interior signing is Forest Service brown, along with table and locker features.
- Boat ramps: restrooms and all buildings/constructed features are shadow blue/gray colors. Other recreation facilities, such as campground restrooms, may be brown buildings or a variation of brown that blends with the surrounding environment (ex. restrooms are Lassen tan exterior color at Lakeshore East and Tannery Gulch Campgrounds).

Signage along Interstate 5 and at the interchanges is the responsibility of Caltrans for upkeep and replacement (with collaboration of NRA staff). NRA recreation information signage along county roads is the responsibility of recreation staff for installation and maintenance. Prior to sign placement an encroachment permit must be attained from the County. A sign plan/inventory is kept by recreation staff at the Shasta Lake Ranger District office.

3.12 Future Facilities and Services

All design opportunities to develop or improve recreation facilities will take into consideration higher development level needs of RV users and accessibility for persons with disabilities.

Occasionally the concessionaire has requested new recreation facility features, or improvements to existing facilities. Examples of such requests include yurts, showers at certain restrooms, platform tents, campground stores and automatic fee pay stations. NRA line and staff officers consider these requests if they are beneficial to the public, support objectives in the Forest's Land and Resource Management Plan, support objectives in this NRA Guide, are authorized by the special use permit terms, are cost-to-benefit feasible and have funding available. These requests are submitted by the concessionaire as a written proposal with a project narrative, conceptual design specifications, cost estimations, photos, etc. Should the project be accepted by the NRA as an item on the annual program of work, environmental planning must be completed prior to implementation. An example of a request that has been denied is floating food and drink services because it is incompatible with the NRA guidelines.

3.12.1 Lewiston Lake Evaluation

An analysis has been completed for Lewiston Lake that will focus on types and amount of services to be provided. This plan recommends lake management to continue to emphasize low impact activities, low boat speed, restrict overnight boat use and maintain current facilities and services at present levels and locations. See Appendix D for a copy of the evaluation.

3.12.2 Recreation Facility Analysis

National forests across the United States are undergoing a Recreation Facility Analysis (RFA) process for developed recreation sites. Facility Analysis is a process of national scope with local forest emphasis. Each national forest will use this process to develop a 5-year proposed "Program of Work" to better manage and improve the quality of recreation sites.

The Forest has reviewed more than 150 developed recreation sites across the Shasta-Trinity National Forest including 83 on NRA. The RFA is a tool to help the Forest Service align its developed recreation sites with the unique characteristics of the Shasta-Trinity National Forest, projected recreation demand, visitors' expectations, and use. This study looked at the operation and maintenance of the campgrounds, picnic areas, trailheads, boat ramps, information stations, and other facilities in the Shasta-Trinity National Forest to assure that sound economic decisions are made that meet current and future visitor and community recreation needs.

Many of the Shasta-Trinity National Forest's developed recreation sites were built 30 to 50 years ago. Since then, visitor preferences and demographics have changed. Some sites no longer serve projected recreation needs; some facilities are in poor shape and do not meet visitors' expectations. The end result of this analysis is a management strategy for recreation sites, with a list of prioritized actions to more effectively manage recreation sites and meet public needs and expectations. The process should be updated in 2014.

3.12.3 Capital Improvement Projects

Future management and improvement goals for NRA boat ramps are to continue to make capital improvements that update and enhance the ramps with sustainable and eco-friendly facility site features.

Evaluate the needs at developed sites for accommodating newer equipment.

3.12.4 Requests

Consider requests for new facilities and services that are otherwise needed and lacking that conform to NRA guidelines for example additional yurts and other services such as septic pump out facilities and minor food and beverage facilities and services in the Gilman Road area. Consider no floating food/drink/services (see "Special Uses" section).

3.13 Meaningful Measures and INFRA

The Forest Service utilizes INFRA and Meaningful Measures to facilitate professional recreation management in the NRA. Meaningful Measures is designed to develop standards and monitor outputs for the recreation program, while focusing on serving our visitors with a dimension of quality. INFRA is the Forest Service's corporate database. It is an integrated software application with modules to support travel routes, land units (i.e. recreation sites, management areas, wilderness areas, etc.), facilities and utilities. Implementation of Meaningful Measures has included:

- Identifying measurable components.
- Establishing standards of quality.
- Determining costs.
- Prioritizing work to be accomplished.
- Allocating the program of work.
- Monitoring.

3.14 Accessibility

The 1968 law, the Architectural Barriers Act (ABA), requires that facilities built, bought, rented, or leased by or on behalf of a Federal agency must be accessible.

The 1973 law, Section 504 of the Rehabilitation Act, requires provision of equal opportunity for individuals with disabilities to participate in all Federal or federally-funded programs and activities.

The 1994 USDA regulation, 7 CFR 15e and 15b, is the USDA implementation of Section 504. It provides specific requirements for ensuring the accessibility of the programs and activities conducted by or for USDA agencies.

The 1990 law, the Americans with Disabilities Act (ADA), prohibits discrimination on the basis of disability in public accommodations and commercial transportation in the private sector and in State and local government. This law includes requirements for accessible new construction and renovation, reasonable accommodation, transportation, and telecommunications. However, the ADA does not apply to the programs and facilities provided by Federal agencies, except for Title V Section 507 of the ADA , which pertains to federally designated wilderness areas. The ADA is modeled on the 1968 Architectural Barriers Act (ABA) and Section 504 of the Rehabilitation Act of 1973.

The Forest Service encourages universal access design. Universal access develops programs, facilities, and products that are useable by people with diverse abilities. The goal is to provide an integrated experience for all visitors without separate or "special" entrances or areas just for persons with disabilities. Such programs and facilities work well for a person who is older, a child in a stroller, a teen on crutches or a person with impaired mobility, sight, or hearing.

3.15 Forest Orders

The Chief, each Regional Forester, and each Forest Supervisor may issue orders which close or restrict the use of described areas and of any National Forest System road or trail within the area over which he has jurisdiction. An order may close an area to entry or may restrict the use of an area by applying any or all of the prohibitions authorized in this subpart or any portion thereof. (36 CFR 261, Subpart B)

Currently there are Regional and Forest orders which apply to the NRA. They deal with occupancy and use, fire, National Forest System roads, National Forest System trails, use of vehicles off National Forest System roads, and special closures. Copies are kept at the Forest Supervisor's office and the NRA offices.

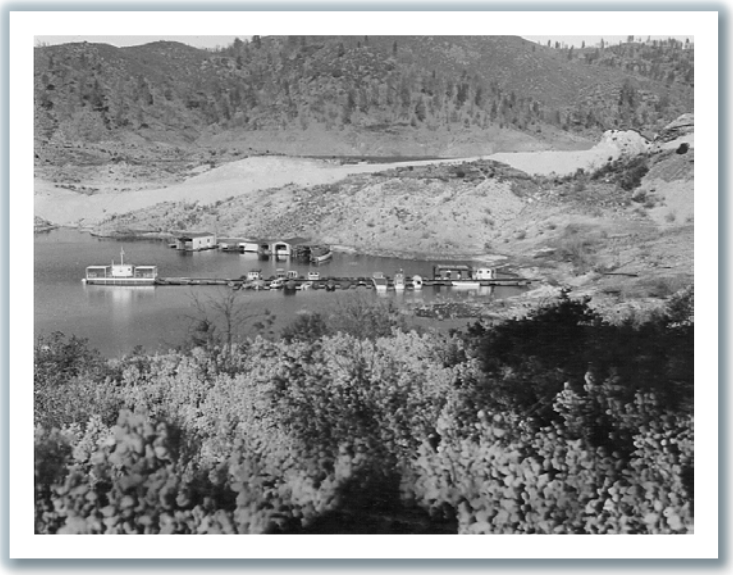
Table 2-19
Forest Orders Specific to the NRA

36 CFR Section	Offense	Order Number
261.53	SPECIAL CLOSURES. **Unless specifically authorized by a permit, the following is prohibited:**	
261.53(a)	Going into or being upon the areas listing around the Shasta Lake shoreline for protection of nesting bald eagles.	14-58-40
261.53(c)	Entering any cave that is posted closed to public entry for the protection of objects or areas of historical, archeological, geological, or paleontological interest.	14-58-35
261.58	OCCUPANCY AND USE. **Unless specifically authorized by a permit, the following is prohibited:**	
261.58(b)	Using public boat ramp courtesy docks for any activity other than the loading or unloading of passengers or cargo, or, in any case, using the dock for a period in excess of 15 minutes.	14-56/58-7

36 CFR Section	Offense	Order Number
261.58(e)	Overnight camping in those areas identified as: 1. Lewiston Unit - (exclusive of developed recreation sites and overflow areas) The area within 1/4 mile of the perimeter of Lewiston Lake. 2. Lewiston Hatchery area - The area 1/4 mile of the Trinity River between Lewiston Dam and the Forest Boundary	14-56-6
261.58(e)	Shasta Lake Ranger District--Camping within 200 yards of a developed recreation site.	14-58-26
261.58(e)	Camping: 1. Camping within 200 yards of any developed recreation site. This order shall not apply to the areas adjacent to Mariner's Point Site or the Ellery Creek Site. 2. West shore of the Sacramento arm of Shasta Lake from Sugarloaf Marina on the South to the Antlers Marina on the North. This will include all exposed land form the water line to Lakeshore Drive. Excluded from this prohibition are developed sited, private land, and the area known as Railroad Point. 3. Bridge Bay Cove.	14-58-10
261.58(e)	Camping in the area to the immediate west and north of Shasta Dam.	14-58-26
261.58(e)	Camping on any area below the high water mark of Shasta Lake in the Jones Valley Cove between November 1st and March 1st of any year.	14-58-32
261.58(f)	Occupy by more than 8 persons at a single camping unit or by more than 12 persons at those units which are designated as a double unit.	14-58-10
261.58(g)	To dock or tie any vessel which is 26 feet or longer to any Forest Service courtesy dock on Shasta Lake.	14-58-10
261.58(j)	Being publicly nude within the Shasta or Trinity units of the Whiskeytown-Shasta-Trinity National Recreation Area.	14-56/58-7
261.58(k)	Being in the waters of Shasta or Clair Engle (Trinity) lakes within two hundred (200) feet of any boat launching ramp except to launch or retrieve a vessel.	14-2
261.58(k)	Shasta Lake Ranger District--Swimming in a lane 200 feet wide from the launch ramp to the 5 mph buoys.	14-58-10
261.58(m)	Discharging a firearm, air rifle, gas gun, or any other implement capable of taking human life, causing injury, or damaging property in the area west of the Sacramento River in the area commonly called Coram Flat, south of Shasta Dam.	14-58-26
261.58(o)	Waterskiing in the following areas: 1. On the Pit River arm, the area above Browns Canyon. On the Sacramento arm, in the Salt Creek Inlet, and above Lakehead from Middle salt Creek Inlet. 2. Within 200 feet of any boat launch facility, floating comfort station, floating information facility, moorage facility, or other similar improvement on the Shasta Lake Ranger District. 3. Within 200 feet of a designated swimming area on Clair Engle (Trinity) Lake. 4. On any area temporarily closed by Shasta County Ordinance or emergency declaration of the Sheriff, due to unusual boating conditions.	14-56/58-7
261.58(p)	1. Storing or leaving a Recreation Occupancy Vessel on Shasta Lake or Trinity Lake for more than 30 days in a calendar year. 2. Storing or leaving any boat which is more than 15 feet in width or 56 feet in length on Shasta Lake or Trinity Lake. A pull-out boarding plank, a swing-out hoist, hinged ladders, and poles which slide out of the side of the boat that are used for attaching and towing a boat such as a ski boat or fishing boat are not prohibited.	14-58/56-38
261.58(u)	Shasta Lake Ranger District--To be in a developed campground between 10 PM and 6 AM, except a person who is camping or who is visiting a person camping in that area.	14-58-10

3.15.1 Proposed New Forest Orders

Stay limit of 14-day for all dispersed camping locations (including shoreline camping sites) in the NRA; it is currently 30 days per Forest Order 14-2.



Early marina on Shasta Lake.

RECREATION SPECIAL USES

1. Historical Overview

Several acts of Congress, beginning with the Organic Administration Act of June 4, 1897, authorize occupancy and use of National Forest System lands by entities other than the Forest Service.

All uses of National Forest System lands, improvements, and resources, except those authorized by the regulations governing sharing use of roads; grazing and livestock use; the sale and disposal of timber and special forest products such as greens, mushrooms, and medicinal plants; and minerals are designated "special uses." (36 CFR 251) Some examples of recreation special uses include: organizational camps, boat docks, recreation residences, houseboats, resorts, private lodging, marinas, recreation events, stores, and RV parks.

As planning for Shasta Dam proceeded, the great recreation potential of Shasta Lake and the need for special uses were noted. "Resorts and recreational developments will probably spring up along the highway and other easily accessible areas as well as on locations having real recreational potentialities" (Brandeberry and Barnum 1938).

The Shasta Lake Recreational Area Master Plan prepared by the National Park Service (NPS 1947) stated, "Concessions are essential at Shasta. Whether or not the Federal Government should build all concession structures and contract for the operation of public services therein was considered in 1945. The decision was to follow the traditional practice of establishing term contracts with directly selected concessioners, which contracts require concessioner investments in structures as well as management and operations." As of September 1, 1947, three authorized concessioners were awaiting approval of their concessions contracts: (1) Lakeshore Resort, at Lakeshore; (2) Shasta Navigation Company, at Bridge Bay; and (3) Shasta Lake Gray Lines, operating from a temporary location near Shasta Dam and eventually moving to Digger Bay.

Prior to the building of Trinity Dam, the Park Service's study of recreational potentialities found that the "Topography dictates that only a small amount of recreational development will be centered near the dam. No recreational development should take place between the dam site and the south boundary of Shasta National Forest on the east bank of the reservoir....It is believed that the areas adjacent to the Stuart Fork branch of this reservoir should receive greatest recreational study for ultimate development of all types of recreation including organized group activities and possibly summer home sites" (Bigler 1951).

With the filling of Trinity reservoir, only three private resorts and service areas within the Recreation Area boundary were not inundated. The Public Use Plan prepared in 1956 stated, "It is expected that several private resorts will be constructed on the private land back of the 300-foot buffer strip. It will be necessary for such resorts to have their boat docking and launching facilities, parking areas, and in some cases part of their main resort buildings within the 300-foot strip and superstorage area. Special use permits will be issued for such use." "Due to the lack of suitable land for private resorts on Lewiston Lake, it will probably be necessary to issue a permit for at least one site here" (FS 1956).

After the creation of the NRA, a Multiple Use Management Guide (FS 1972) was prepared. This guide contained a list of management policies including, "Appropriate commercial public services necessary to support the recreational use of the areas will be provided normally by private enterprises. If located on National Forest land, they will operate under Forest Service special use permits." This policy has continued through the years and remains current.

1.1 Raising Shasta Dam

Over the years, several studies have been done exploring the possibility of raising Shasta Dam with the mid-1980's proposal notable for its proposal to raise the dam 200 feet. In 2005 the Bureau of Reclamation again initiated the exploration of the feasibility of raising the dam to increase the reservoir capacity to promote increased survival of anadromous fish in the upper Sacramento River as well as increased water supply reliability. A modest range of 6.5 to 18.5 feet in elevation change is being considered, which will avoid the need for a realignment of the Union Pacific rail line, or replacement of the Pit River Bridge on Interstate 5.

1.2 Privately Owned Recreation Occupancy Vessels (ROVs) and Commercial Houseboats

Commercial houseboats in1960 and in 2010.

Overnight boating use, by means of commercially available houseboats or privately owned boats, grew in popularity since its beginning on Shasta Lake in the late 1960's and early 1970's to become one of the dominant recreational uses on Shasta Lake. The most important factor in this popularity was the length of shoreline available, with the large number of coves and bays offering secluded mooring opportunities. Although overnight boating was popular on Trinity Lake, it did not develop to the extent that it did on Shasta

Lake. The lower level of use can be attributed to Trinity Lake being less easily accessible by high-speed highway, less well known, the relatively smaller lake size with fewer bays and coves to explore, and to the shorter recreation season.

1.2.1 Private Houseboat Exclusive Uses

Use of public lands/waters for privately owned houseboats is considered an exclusive use of public lands. Generally speaking, an exclusive use of public lands is prohibited by regulations (36CFR251.54(e)(1)(iv)), and policy, except for recreation residences. Since the original decision to issue private houseboat permits in the 1970's, no serious consideration has been given to eliminating their use. The 1976 NRA Plan and Environmental Impact Statement (EIS) stated that the decision to continue use of private houseboats would be specifically reviewed at the regular plan reviews, and the 1982 Plan reaffirmed that decision but there was never any serious study. This private long-term use on both lakes remains a recognized exclusive use not otherwise allowed by law. Forest Service policy does address this unique use and prohibits authorizations for new uses of this type. (FSM 2720)

Private Houseboats = Recreation Occupancy Vessel (ROV) and Definitions

As popularity of overnight private boating increased, the Forest Service found a need to manage the number of boats on the water and to define what constituted a privately owned "houseboat" that required a special use permit. The term "recreational occupancy vessel" (ROV) was coined to describe those private overnight vessels needing a permit. Over time the definition of a ROV evolved to become more inclusive as well as to set size limits, as described below.

Evolution of ROV Definition 1976 Through 1987

The 1976 NRA Plan proposed that "all vessels designed for overnight occupancy and berthed in approved moorage sites" be managed under special-use permit. The Forest Supervisor's order in 1978 implementing the plan direction focused this on houseboats, with the following definition: "A houseboat is herein defined as any watercraft, boat, or motor boat providing, or designed to provide, sleeping or bunk facilities, housekeeping facilities, and enclosed shelter and which, in the judgment of the applicable NRA Unit District Ranger reasonably conforms to the commonly understood meaning of the term houseboat" (FS 1988a). There were no limits initially placed on boat size.

With this definition in place, management of overnight vessels was tied directly to houseboats, overlooking other vessels such as v-hulls (cruiser type boats) and large patio boats that were designed and used for overnight occupancy. The 1982 NRA Plan update (FS 1982a) reaffirmed the 1979 decision to focus management primarily on "houseboats."

Evolution of ROV Definition 1988 Through 1995

The decisions made by both the 1976 and 1982 plans to manage only houseboats under permit were based on the assumption that the small number of other overnight vessels did not represent a significant impact on other users or on the environment. However, by the late 1980's the number and size of overnight vessels other than houseboats on Shasta Lake had grown considerably, and that assumption was no longer valid. Consequently, in the 1988 NRA Plan the definition of an overnight boat needing a permit became more inclusive, intentionally leaving out the term "houseboat," thus incorporating other overnight vessels whose use had grown. The new definition was: a recreation occupancy vessel (ROV) is any watercraft that is designed for overnight occupancy on the water. (FS 1988b) The District Ranger needed to apply the following guidelines to determine what was and was not an ROV:

- designed for /or contains permanent or portable sleeping facilities;
- designed for and/or contains permanent or portable housekeeping facilities (refrigeration, cooking, water supply);

- designed for and/or contains permanent or portable sanitation facilities;
- had a shelter that provides the occupants with a reasonable amount of privacy, comfort, and protection from the elements.

Any vessel that met the above definition and was used or stored on Shasta or Trinity Lakes more than 30 days per calendar year needed to be authorized under special use permit.

Permits were to be issued in two categories: one category included all ROVs designed to use pontoons for flotation and the other category included non-pontoon boats. ROV permit holders for a boat in one category were not allowed to transfer the permit to a vessel in another ROV category.

In addition to the uncertainty on what should be considered a houseboat prior to the 1988 plan, there was confusion regarding the maximum size. The 1988 Plan defined the maximum allowable size as 15 feet wide and 56 feet in length (i.e. the boat could fit in a 15-by-56 foot box). There could be nothing attached to the boat that extended beyond this size limitation except the boarding plank which is pulled out of the front of the boat to allow access to the boat from shore. This size limit was established using the following rationale:

- The houseboat should easily and reasonably be transported to and from the lakes. Width limitations on highways and freeways are an important aspect of being easily and reasonably transported.
- The larger the houseboat the more people it will accommodate. Activities associated with larger groups of people tend to require more space and take on more of a presence in a cove. Larger boat sizes therefore could affect the carrying capacity and recreation experience by deterring use of coves by multiple overnight boats.
- The existing docks and moorage are built to accommodate a maximum size houseboat of 15 feet x 56 feet. Increase in boat size will require additional docking, and spacing of docks. The area of lake surface for boat moorage will probably increase.
- Many people operating a houseboat are inexperienced and have never driven a boat the size of a commercial ROV, and some have never driven any kind of a boat. Larger boats will increase the risk of accidents for these inexperienced boaters.

Evolution of ROV Definition 1996 Through 2011

The 1996 NRA Guide retained the 1988 Plan definition of an ROV and maximum size limit of 15 feet wide by 56 feet in length but with the following changes to the extensions allowed: "Nothing permanently or semi-permanently attached to a houseboat may extend beyond 15' x 56' except a pull out boarding plank at the front of the boat, hinged ladders, and swing out hoist. Poles which slide out at the side of an ROV and are used for attaching and towing a boat such as a ski boat or fishing boat are allowed. These poles may not be extended while the ROV is moored at a dock and may be extended only when there is a boat attached to the pole. Boats may have wood or other similar rigid material bolted to the side of the boats main floor frame to protect the boat against dock damage when the boat is moored or being docked. These bumpers may not exceed 10 inches in height and may not be more than 2 inches thick, allowing an additional 4 inches to the boat width" (FS 1996). Additionally, ROVs were required to have an operational engine commensurate with the size of the vessel and ROV sailboats must have an engine capable of maneuvering the vessel into marinas and moorage areas.

Since the 1996 NRA Guide was published, boat design and manufacturing continued to evolve and patio boats started to come with features that were previously only on fully enclosed houseboats. This blurring of the lines between houseboat and patio boat and the difficulty in consistently interpreting the amenity based definition prompted the redefinition of a recreation occupancy vessel to simplify the determination of what was and was not an ROV, while still maintaining the maximum size limit. In 2004 and 2005 a focused review and analysis of the definition was completed. This review and analysis included extensive surveys of vessels, public meetings and a public comment period. The result was the development of an updated ROV definition

that focused solely on size, excluding any amenity requirements. ROVs were redefined as: any watercraft that is greater than 31 feet in overall length and/or greater than 12 feet in width. Any vessel that meets the definition and is used or stored on Shasta or Trinity Lakes for over 30 days per calendar year must be authorized by special use permit.

In implementing the 2004/2005 definition it was recognized that a number of unpermitted vessels on both Shasta and Trinity Lakes that had previously not met the amenities-based ROV definition now met the definition of an ROV under the size-based definition. Realizing a transition was needed for these vessels, the Forest Service offered these vessel owners a "provisional" ROV permit as a transition from the old ROV definition to the new. To qualify for a provisional permit a vessel had to meet the new definition, not currently have a permit, and must have maintained moorage for at least 30 consecutive days during the 2004 summer season at an authorized marina on Shasta or Trinity Lakes. Permits were initially issued for a one-year period. These permits are not transferable, and are reissued on 2-year intervals. Provisional permits were only available until December 31, 2005. The intent was to eventually phase these vessels out of the permanent ROV permit allocation.

1.2.2 ROV Permit Fees

Prior to 1988 the special use permits for private houseboats/ROVs were free. In April of 1986 the Forest Supervisor signed a Decision Notice that required a fee be levied on ROVs to align with national policy. That decision was appealed and the implementation of the decision was deferred for further review and public input. In May of 1988, after extensive public meetings and review of alternatives, a new decision was published that implemented a $150.00 annual fee effective January 1, 1989.

As required by policy, a periodic review of these fees was made in 1998. To align with laws and policy it was decided to hire an independent appraiser to determine the fair market value of the right and privilege to operate and maintain a private houseboat, under permit, on Shasta and Trinity Lakes. The appraisal concluded that fair market value of a ROV permit on Shasta Lake was $4,500.00 and the fair market value of a ROV permit on Trinity Lake was $3,150.00. According to policy, the fees charged were 5% of the appraised value resulting in annual fees of $225.00 and $157.50 respectively.

During the periodic review of ROV fees in 2010, a second independent appraisal was completed. The 2010 appraisal determined the fair market value of a ROV permit on Shasta Lake was $9,000.00 and the fair market value of a ROV permit on Trinity Lake was $6,300.00. Again applying policy of 5% of the appraised value the fees effective January 1, 2011, were $450.00 and $315.00 respectively. Additionally, starting in 2012 these fees were indexed as required by policy.

1.2.3 Allocation of ROV and Commercial Houseboat Permits

The 1976 NRA Plan/EIS stated, and the 1982 Plan confirmed, that there was a need to limit the total number of houseboats on Shasta and Trinity Lakes. The reasons for limiting houseboats without directly limiting day-use boats included:

(1) Without regulation, houseboats could easily become a single dominant use, especially on Shasta Lake. The desire for a balance of other uses (waterskiing/water sports, small-boat fishing, shoreline camping, etc.) has led to limiting houseboats. Public comments in 1976 and 1982 also clearly supported the concept of limiting houseboat numbers.

(2) Houseboats are costly to own or rent, and the range of people who are able to enjoy them is limited by cost. There is concern that the lake user unable to afford a houseboat experience not be crowded off the lake by uncontrolled houseboating. (NRA goals from 1976/1982 include "Provide for recreation opportunities for people from all economic levels...").

(3) Another key factor has been the parallel drawn between privately owned houseboats and recreation residences as exclusive uses (extended private use which excludes or limits use of the same lands or

waters by the general public). Most houseboats are permanently moored on the lake similarly to recreation residences being permanently located on the land. As exclusive uses have low priority relative to more public uses of National Forest lands, they are limited in number. The 1976 and 1982 NRA plans limited private houseboats to the number actually berthed on Shasta Lake when the 1976 plan was implemented.

Commercial houseboats had been under permit since the mid-to-late1960's but it was the 1976 Plan and EIS that instituted permits for private ROVs and recognized a maximum number of houseboats that could be in use on an average day and still maintain a quality recreation experience. To keep within this maximum, a limit was set on private and commercial houseboat numbers. The intent and purpose of the plan was to keep houseboat use well within the capacity of the coves and lakeshore to accommodate houseboats overnight and still maintain a quality recreation experience for all lake users.

Shasta Unit

In 1976, the capacity of Shasta Lake for overnight moorage was calculated using the following data and assumptions based on observation of use patterns:

	Miles	Acceptable Density	Calculated Capacity
Primary shoreline	109	4.0 boats/mile	436.0 boats
Secondary shoreline	153	2.5 boats/mile	382.5 boats
Total	262		818.5

Based on user preference primary shoreline was considered the most desirable for overnight moorage; secondary shoreline was acceptable, but less desirable and the remaining shoreline was considered either unsuitable or unavailable for overnight use. This calculated total capacity of 818.5 was subsequently reduced to 780 boats to account for average (less than full pool) lake conditions.

The 1976 EIS/NRA Plan called for limiting average daily peak-season houseboat use to 450, and the 1982, 1988, and 1996 plan updates adopted that direction unchanged. The mechanism chosen for limiting use was to issue a limited number of special-use permits for houseboats occupying the lake more than 30 days per calendar year. Inventories indicated that commercial houseboats were in use approximately 85 percent of the time and private houseboats 15 percent of the time during the peak recreation season from Memorial Day through Labor Day. In order to manage for average daily peak-season use of 450, the following formula was applied:

	Permitted Vessels	Use Rate	Average Daily Use
Private	476	0.15	71
Commercial	446	0.85	379
Total	922		450

Observed average daily houseboating use was reported as 330 in the 1976 plan and 400 in the 1982 update. Observations during the 1982-1987 period indicated an average of 430 houseboats on the lake when counted at midday. Early-morning counts, however, which are intended to represent actual overnight use, showed an average of only 350 (indicating that use-rate assumptions for average daily use by houseboats may well be valid but may not accurately reflect actual overnight occupancy). The highest observed use figure from 1982 to 1987 was 592 at midday on May 29, 1983. Due to low water conditions from 1988 to 1993, the aerial counts of ROVs are not considered meaningful, and because of low lake levels during the primary recreation season, both commercial and private ROV use was below average.

Although the 1976 and 1982 NRA Plans maintained a limit on houseboat permits (with significant public support), overnight vessels other than houseboats were not subjected to direct control. Management direction in both plans called for controls to be imposed on such vessels only after the theoretical capacity level (780 average daily peak-season use) for total overnight use was reached. In 1986 approximately 300 privately owned overnight vessels other than houseboats were moored on Shasta Lake and the theoretical capacity for the lake was coming closer.

By 1988 with permitted private houseboats still held at 476 and approximately 300 other private overnight use vessels on the lake (including large v-hull cruisers and large patio boats), the Forest Service revisited the decision that tied management of overnight vessels to only houseboats. New direction broadened the definition to include all recreation occupancy vessels (ROVs) and brought under permit those newly defined vessels that had been moored on Shasta Lake in the past (October 1985 to December 1987) and contributed to existing use levels. Management intent was to keep the number of ROVs static in the Shasta Unit. The 1988 Plan stated an upper limit of 900 (600 in the pontoon class and 300 in the non-pontoon class), knowing that the actual number of permitted ROVs would be below that figure. The final numbers of permitted private ROV permits resulting from the 1988 decision were 553 ROVs in the pontoon class and 95 ROVs in the non-pontoon class, for a total of 648 ROV permits. The 1988 plan rounded the number of commercial allocations from 446 to 450. The 1996 Plan retained the commercial houseboat limit of 450 and the existing 648 permitted ROVs as the upper limit for these vessels.

In 2005 a carrying capacity study was done by the Pacific Southwest Research Station for both Shasta and Trinity Lakes (Graefe et al. 2005). The study used aerial and ground counts (parking lots) of boats as well as on-site and mail in visitor surveys. The study indicated that visitors felt that crowding was occurring on Shasta Lake and the number of boats on the lake detracted somewhat from the quality of experience; however, they did not want to see further limits on the number of boats on the lake. Lake users preferred to see educational and regulatory options that addressed lake issues. This study reaffirmed the Forest Service's current use limits on commercial houseboats and private ROVs. Additionally, in the early 2010s the maximum ROV number was lowered to 613 due to attrition, as once existing permits are removed from use, new permits by national policy cannot be issued. This number could potentially reduce over time if additional permits are terminated or abandoned, although those circumstances are extremely rare.

Trinity Unit

In 1976, the capacity of Trinity Lake for overnight moorage was calculated using 80 miles of prime houseboating area, and 72 miles of secondary use area indicating a total maximization capacity of 500 houseboats for the lake. However, in the 1982 Plan update, the capacity calculation was reviewed and revised utilizing the following numbers.

	Miles	Acceptable density	Calculated Capacity
Primary shoreline	32.0	4.0 boats/mile	128 boats
Secondary shoreline	18.5	2.0 boats/mile	37 boats
Total	40.5		165

The management objective of the 1982 plan was to limit use to the 128-boat capacity represented by primary shoreline. The mechanism chosen for limiting use was the same as for Shasta Lake: limit the number of houseboats authorized to occupy the lake for more than 30 days per calendar year. Unlike Shasta Lake, a portion of the targeted average daily use was held in reserve to provide for short-term use by vessels not covered by special-use permit. Eventually, that portion also accommodated unpermitted non-houseboat overnight vessels.

It was assumed on Trinity Lake that commercial houseboats were in use approximately 95 percent of the time and private houseboats 20 percent of the time during the peak recreation season from Memorial Day through Labor Day. In order to manage for average daily peak-season use of 128, the following formula was applied:

	Permitted Vessels	Use Rate	Average Daily Use
Private	74	0.20	14.8
Commercial	80	0.95	76.0
Short-term vessels	0	N/A	37.0
Total	154		127.8

In 1987, all 74 private houseboat permits and 51 of the 80 commercial houseboat allocations were actually in use. In addition, approximately 35 privately owned overnight vessels other than houseboats were moored on the lake. The intent in 1988 was to increase the number of private ROVs to 150 to allow for additional use (under the broadened ROV definition), yet still remain within a conservative distance from the previously accepted theoretical capacity. The number of commercial houseboats allocations would also be increased to 120 to optimize public opportunities. Additional private houseboat permits could be issued by lottery at a gradual rate. In order to discourage speculation, a permit issued to an individual by lottery would not be reissued to another party within three years. Forest Service policy after 1988 no longer allowed for any new exclusive uses and the lottery was eliminated before the 1996 Guide update.

The 1996 Guide set the limit for commercial houseboats to 120 and private ROVs to 102 which reflected the current number of vessels. However, in the years following 1996 the Forest Service recognized that there was never a demand for 120 commercial houseboats on Trinity Lake and in fact, there was not a demand for the then existing 85 commercial boat allocations. In the mid-2000s with completion of the carrying capacity study by the Pacific Southwest Research Station confirming that existing use was near capacity limits, under the guidance of the NRA Guide the unused commercial houseboat allocations were removed and the limit was set to the existing 85 allocations. The ROV limit was set to the existing 99 permits and as in the case of Shasta Lake, this number could potentially reduce over time if additional permits are terminated or abandoned, although those circumstances are extremely rare.

The 2005 carrying capacity study indicated that some visitors felt that crowding was occurring on the lake but not to the extent that visitors experienced it on Shasta Lake. Like Shasta Lake visitors, Trinity Lake visitors expressed an aversion to a limit on the number of boats on the lake and would prefer to see educational and regulatory options that addressed lake issues.

Table 2-20
Houseboat/ROV Permits 1976 Through 2010

Year	Shasta Lake		Trinity Lake	
	Commercial	Private	Commercial	Private
1976	380	Initiate permit system and limit to existing	50	Initiate permit system and limit to existing
1982	446	476	80	74
1988	450	900[a]	120	150[b]
1996	450	648[c]	120	102
2010	450	613	85	99

Notes:

[a] 600 in pontoon class, 300 in non-pontoon class

[b] 100 in pontoon class, 50 in non-pontoon class

[c] The 1996 Plan says the 1988 Plan limited ROVs to 553 in pontoon class and 95 in non-pontoon for a total of 648

1.3 Resort/Marinas

Jones Valley Resort, 1958 and 2010.

Due to factors such as extreme lake fluctuations, varying economic situations or poor management, the numbers of resorts/marinas within the NRA have decreased over time leaving the remaining facilities more economically viable.

The 1976 Plan and EIS retained the number of resorts and resort/marinas at Shasta Lake at the then current level with the exception of Riverview Resort permit which was set to expire in 1976. The plan allowed for expansion of existing resorts, marinas or combinations of facilities under certain guidelines. On Trinity Lake the plan retained existing resorts and resort marinas and recommended planning for one additional marina in the northeastern portion of the lake when use expanded to the point that a development could become economically viable and is needed by the public.

The 1982 NRA Plan and EA stated that "All [resort] expansion must be integrated with and utilize the surrounding environment in its natural state. Carnival type activities will not be permitted. Uses on the land surface surrounding the lake must serve to complement the outdoor water and forest oriented recreation activities rather than being an end in itself."

The 1988 Plan expanded on the 1982 guideline: "All commercial uses must be integrated with and utilize the surrounding environment in its natural state. Commercial activities should focus the attention of the visitor primarily on the natural environment, not on manmade features or entertainment. Commercial uses on National Forest lands in the NRA must complement recreation activities oriented toward the natural environment, rather than being ends in themselves. Consider no proposals for floating food and drink concessions outside of resort/marina permit boundaries." The 1988 Plan limited the total number of full-service resort/marinas in the NRA to the 1976 level: Shasta Lake 13, Trinity Lake 4, and Lewiston Lake 1.

The 1996 Plan limited marinas to the existing 11 on Shasta Lake and 6 in the Trinity Unit. Direction was that only merging, consolidation, and/or relocations of existing resorts would be considered.

1.3.1 Permit Termination/Expirations

Shasta Unit

Riverview Resort

Permit expired and was not renewed in 1979 due to failed county health inspections.

Salt Creek Resort/Marina

In November 1981 the marina was substantially damaged in a storm and due to public safety issues was closed until repairs could be made. Mid-summer 1982 most of the marina reopened to the public. In July 1982 the Forest decided to not allocate 10 commercial houseboats to Salt Creek Marina until the marina relocated to a new site out of the Salt Creek Inlet due to operating problems during low lake levels. In the fall of 1982 the marina was warned to discontinue moving forward with supporting the timesharing/leasing of private houseboats under the Great American Houseboat Company (GAHC) as it appeared in violation of the private houseboat permit system. In 1985 GAHC sued the Forest Service for the right to operate houseboats on Shasta Lake and was denied on appeal, as their timeshare program was deemed commercial in nature. (780 F2d 741 Great American Houseboat Company v. United States) The marina permit terminated in 1988, however; the resort portion of the business remains today, although at a much smaller scale. A majority of the resort is on private lands adjacent to the lake.

Lakeshore Marina

The permit for this marina expired in 2003 and was not re-issued due to accumulated structural and operational deficiencies including loss of adjacent private lands, access issues, lack of a boat ramp, and inadequate parking. Prior to expiration, a Master Development Plan process had been initiated to address the repairs and modifications needed to bring this marina to standard but it was never completed due to site challenges and financial distress. Upon expiration the owner sold some of the floating improvements and allocations to Antlers Marina and the remaining improvements were removed and the site restored. The location was not suitable for a new marina due to topography and developable area.

Shasta Yacht Club

The Shasta Yacht Club (SYC) was a collection of 71 privately owned boathouses located on an assortment of docks and operated as a private club in Turntable Bay. The facility was originally authorized by the National Park Service in 1945 in an area near Bridge Bay as a temporary location. The Park Service permit was followed in 1948 by the first Forest Service permit which was issued for a 15-year term. A subsequent permit relocated the facility to Turntable Bay with a new 20-year permit issued in 1959. Over the course of these 20 years the Forest Service further developed policy stating that private exclusive uses of public lands and waters would no longer be authorized. Additionally, over these 20 years the facilities had evolved from open slips, to enclosed boathouses and by 1979 most had become floating cabins. Therefore, in 1980 individual permits were issued to the 71 owners with the intent of phasing out the use within the 15-year term of the permit. From 1996 through 2000 a series of temporary permits were issued amongst significant political and legal controversy. During this time the boathouses were authorized under the name of Turntable Fisheries

and Moorage Corporation and an attempt was made to combine the facility with Antlers Resort. Eventually, notice was given to have all facilities removed from national forest lands and waters by June 30, 2001, which was accomplished. Two lawsuits were filed, however by April of 2002 both lawsuits had been dismissed and the facilities were removed from the lake. In May 2002 a prospectus was released for a new public marina development to be located in Turntable Bay.

Point McCloud Resort to Packers Bay Marina

The 1976 EIS (pg. 55) recommended a review of the continued need for a facility at Point McCloud due to the lack of deep-water moorage and corresponding inability of the resort to provide summer-long resort/marina services. In 1976 the Point McCloud Resort changed ownership and a condition of the new permit was to restore the resort site to its natural state which was done during the 1977 drought. Also during the 1977 season the resort was renamed Shasta Dam Marina and temporarily relocated to the west side of Shasta Dam. In 1978 the resort was given temporary authorization to operate out of Packers Bay where it was renamed Packers Bay Marina and in 1980 permanent relocation to this site was authorized as a result of a 1980 Environmental Assessment.

Turntable Bay Marina

In 2002 a prospectus was issued offering the opportunity to relocate an existing marina operation on Shasta Lake to the Turntable Bay location. In 2003 Seven Crown Resorts, owner of Bridge Bay Resort and Digger Bay Marina, was the selected proponent. Seven Crown proposed to relocate Digger Bay to Turntable Bay. After development of site plans and an Environmental Impact Statement (EIS), Seven Crown Resorts was issued a permit in 2007 for construction and operation of a marina at Turntable. By 2009 however, Seven Crown Resorts was unable to construct the marina as planned due to inflated construction costs and the permit terminated in 2009. Turntable Bay remains the preferred site for any future development.

Lakeview Marina

Upon termination of the permit in December 2002 due to a change in ownership, a series of two-year temporary permits were issued to the new holder, Shasta Lake Resorts, L.P., between 2002 and 2008. A 2006 needs assessment identified numerous challenges to future use of the Lakeview Marina site. One of the most challenging aspects was the realization that a portion of the primary access road into Lakeview from I-5 was privately owned with no legal easement for public access. From 2009 to 2012 a series of non-operating one-year temporary permits were issued while the permit holder attempted to get legal access across the private land and contemplated a Master Development Plan. In 2012 the permit holder relinquished the permit with Forest Service concurrence, relocating facilities and services between their other marinas on Shasta Lake (Sugarloaf and Jones Valley). A site restoration plan was developed, approved and implemented.

Trinity Unit

Estrellita Marina

Upon expiration of their term permit March 1, 2008, and prior to issuance of a new permit, a Needs Assessment Report was developed for the marina that identified site suitability issues including: the lack of a legal public right-of-way across private land to access the marina location, overall lack of adequate parking, lack of public restrooms, offshore moorage issues, ADA accessibility issues and economic viability. Additionally, the area was within a Late Successional Reserve for the Northern Spotted Owl, which limited overall development capability. In 2004 a 20-year term permit was issued for Estrellita Marina allowing two years for the holder to prepare a Master Development Plan (MDP) to demonstrate site suitability and economic feasibility or the permit would be terminated. In 2008 the holder decided not to complete a MDP due to costs associated with its preparation and implementation and the permit terminated and the site was restored with the exception of the boat ramp removal which is pending. The holder subsequently sold most of the marina improvements to Trinity Lake Resorts and Marinas. The Estrellita moorage customers generally relocated either to Trinity Alps or Cedar Stock marinas. Moorage allocations to accommodate these

relocations were made to these two marinas with the stipulation that they prepare MDPs within two years to show adequate on-land facilities in support of the additional on-water allocations.

1.3.2 Locations/Relocations/Proposed Locations

The 1953 Shasta Lake Development Plan (FS 1953) recommended that the selection of sites for development should be on the basis of minimizing lake fluctuations. On Shasta Lake this could be attained by choosing sites with steep offshore conditions backed by gentle to moderate onshore terrain. The same held true for Trinity Lake where the northern end of the lake was hampered by gentle offshore slopes but southern end had steeper slopes, minimizing lake fluctuations. Lewiston Lake, on the other hand has only small fluctuations, which is favorable to recreation. In the late 1970's Shasta Lake saw its first marina relocation due to problems encountered under low-water conditions.

The1976 Plan allowed expansion of existing resorts and resort/marinas under the following guidelines:

- Existing facilities or new facilities must be for the purpose of furthering the recreation potential of the lake and its environs within the limits of total use as projected by the entire plan.
- All expansion must be integrated with and utilize the surrounding environment in its natural state to the greatest extent possible with minimal site modification.
- The facilities proposed must be for the purpose of fulfilling a then-existing need by the public for utilizing the natural recreation resources of the area for short term recreation (periods of 30 days or less).

The 1982 Plan retained the 1976 direction for resort/marina expansion but provided two new pieces of direction: (1) Resorts that maintained a marina in a shallow water port should relocate in order to provide a viable economic entity and consistent good public service. Until the resort could be relocated a plan should be developed for low water operations showing areas resorts could relocate for short periods of time. The District Ranger would work with these resorts to find a permanent relocation site with deep water capabilities. (2) Plan for one additional marina in the northeastern portion of Trinity Lake when use expands to the point that a development could become economically viable and is needed by the public.

The 1988 Plan does not address resort/marina locations or expansion. However, the 1996 Guide provided more explicit direction for resort/marina relocations than in the 1976 and 1982 plans. New direction stated that upon approval by the Forest Service, resort/marinas could merge, or consolidate to one location, or a resort/marina could move to a new location based on the following criteria:

- Maintained or improved dispersion of services around the lake.
- Accommodated low water conditions.
- Removed or eliminated the threat for threatened and/or endangered species.
- The site could adequately support both land and water-based facilities and services.
- Road access was feasible and reasonable (location and cost).
- Utilities (electricity and telephone) were reasonably available to the location.
- Compatible with existing commercial resort/marina locations.
- Compatible with natural resources, such as preservation of watershed or fish habitat values.
- Compatible with public recreation sites or facilities.

With lake drawdown levels remaining a constant issue for most marinas on Shasta Lake, the 1996 NRA Guide included the following table:

Table 2-21
Potential Resort Locations on Shasta Lake per 1996 Guide

Evaluation Criteria	Site				
	Clikapudi	Water's Gulch	Dekkas Rock	Turntable Bay	Shasta Caverns
Conflict to Existing Resort	Yes	Yes	No	Yes	Yes
Conflict to Existing Recreation	Yes	Yes	No	Yes	Yes
Low Water Access/Capabilities	Yes	Yes	Yes	Yes	Yes
Road Access	No	No	Yes	Yes	Yes
Utilities	No	No	No	Yes	Yes
T&E Eagles	Yes	No	Yes	Yes	Yes
Conflict to Existing Commercial Service	No	No	No	No	No
Maintains Service Coverage	Yes	Yes	Yes	Yes	Yes
Land Base	No	No	Yes	Yes	[Yes]

In 2007 with publication of the Standards and Guidelines for Shasta-Trinity Marina Facilities, merging and consolidation are to be considered based on the following criteria:

- Proposal is consistent with existing laws and regulations relative to Forest Service management.
- The proposal is consistent with the purposes identified in the National Recreation Area legislation.
- The proposal is feasible and viable as demonstrated in a Business Plan or other similar document.
- The proposal is consistent with the desired Water Recreation Opportunity Spectrum (WROS) class for the location.
- The site can adequately support the required land and/or water based facilities.
- If the proposal does not utilize an existing marina location, the land required for the service has been minimized to the extent possible.
- The proposal is compatible with existing and planned public recreation sites, facilities, and marina operations.

1.3.3 Moorage

Since the 1976 Plan residential occupancy on lake surfaces for continuous and/or intermittent periods in excess of 30 days per season has been prohibited. Additionally, the plan required that all vessels unoccupied for periods in excess of 24 hours be stored only at approved moorage sites.

In the 1976 Plan commercial moorage on Shasta Lake was permitted to expand from 1500 slips to a total of 2800 slips and existing private moorage was to be maintained but reviewed periodically to determine if it was interfering with public use, no new private moorage was allowed. The 1988 NRA Plan/EIS reviewed the 1976 NRA Plan/EIS data and the 1982 plan and determined that the commercial moorage limits could be increased to 3000 from 2800 to provide for increasing commercial moorage as exclusive-use moorage was phased out.

The 1996 NRA Guide kept the moorage limit to 3000 slips; including moorage slips serving resorts/marinas and exclusive uses. Most of these moorage slips have been allocated with about 2600 constructed and in use. The Forest Service monitors moorage slip sizes and types to provide an adequate mix of slips for large and small boats.

On Trinity Lake the 1976 NRA Plan provided for a maximum of 500 (up from 260) commercial slips and prohibited the authorization of docks serving homes or businesses on private land in the Trinity Unit. The 1982 update retained the 500 slip limit, but private docks were permitted if they were "an important adjunct to a commercial resort serving the general public." The 1988 NRA Plan/EIS reviewed the 1976 NRA Plan/EIS data and the 1982 plan and determined that the commercial moorage limits on Trinity Lake could be increased to 1000 from 500 to respond conservatively to the public desire for additional moorage.

The 1996 NRA Guide kept the moorage limit to 1000 slips. Existing offshore moorage buoys (approximately 185) were phased out because of the large amount of lake surface they required and liability of ownership.

Table 2-22
Moorage Limits Pre-1976 Through 2012

Year	Shasta Lake	Trinity Lake
pre-1976	1500	260
1976	2800	500
1982	2800	500
1988-2012	3000	1000

1.3.4 Accessibility

The 1976 Plan recognized the challenge Shasta and Trinity Lakes afforded to persons with disabilities with the following statement "Ensure that the needs of the handicapped are met by (1) attempting to modify up to 30% of existing facilities, (2) giving full consideration to their needs in planning additional facilities." In the 1988 Plan, direction was to provide for the needs of the handicapped by a) modifying existing facilities to meet the anticipated number of handicapped users, b) giving consideration to handicapped users' needs in planning new facilities. By 1996 the concept of universal access (access by disabled persons, such as but not limited to persons with impaired mobility, sight, or hearing) was in effect and marinas needed to make provisions in compliance with Section 504 of the Rehabilitation Act and the American Disability Act.

Some of the existing recreation facilities at special use sites do not meet current accessibility standards. The facilities were constructed before current accessibility standards were in effect. One of the greatest challenges in meeting accessibility standards for access routes to the resort/marinas is due to the large fluctuation in lake levels and steep slopes.

In 2006, during planning for the proposed Turntable Bay Marina, the Forest Service requested from the U.S. General Services Administration (GSA) a modification to the Architectural Barriers Act Accessibility Standards for access routes from the parking areas to the gangways. The request was based on the average annual lake fluctuation at Shasta Lake of over 77 vertical feet and the resulting need for floating docks to be moved frequently, sometimes daily. If the new facility was built to standard, the accessible route would be over a mile in length. The GSA concurred with the request and granted the modification. (See Appendix E for official correspondence.) Unfortunately, GSA would not consider lake-wide exceptions to this policy for all of the existing marinas on Shasta and Trinity Lakes; each marina must request and receive an exception.

1.3.5 Withdrawn Land Permit Requirement

The 1965 Master Plan for the Shasta Lake Recreational Area (SCRC and FS 1965) required permits to have a clause stating that: "The lands described in this permit have been purchased or withdrawn from entry for reclamation purposes under the Act of June 17, 1902 and therefore are subject to such use at any time. This permit is issued, therefore, with the specific understanding and subject to the condition that its exercise shall not interfere with the use of the land for reclamation purposes and that it may be terminated upon ninety (90) days written notice when the lands are to be used for such purposes…."

In later years it was determined that only those permits actually located in the designated withdrawn area needed this clause.

1.3.6 Waste Discharge Requirements

Shasta Unit

The Central Valley Regional Water Quality Control Board regulates the discharge of wastes through the Waste Discharge Requirements (WDR) Program. WDRs implement the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, which designates beneficial uses, establishes water quality objectives and contains implementation plans and policies adopted by the State Water Resources Control Board. All marinas on Shasta Lake are regulated under the WDR program. Additionally, storm water from these facilities discharge to Shasta Lake is regulated separately under the General National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges Associated with Industrial Activities.

On September 6, 2001, the Central Valley Water Board adopted Resolution No. 05-01-211, authorizing the Executive Officer to enter into a memorandum of understanding (MOU) with the Forest Service, to eliminate gray water discharges from houseboats to Shasta Lake after September 6, 2006. In January 2004, the Executive Officer and Forest Supervisor signed the MOU No. 04-MU-11051458-004. The permitted marinas complied with the MOU by retrofitting commercial houseboats to capture gray water discharges, and if necessary made improvements to on-site disposal/treatments systems to handle the additional waste load generated from the capture of gray water.

Trinity Unit

Trinity Lake marinas must comply with the NPDES but the North Coast Regional Water Quality Control Board has not implemented a gray water collection requirement resolution at this time.

1.3.7 Other Commercial Services

The 1976 Plan recognized a need for lake facilities (e.g. docks) for those privately owned commercial facilities which were located and developed on private land. Plan direction was to consider granting lake access and facilities to these private land facilities where existing commercial marina facilities could not adequately and reasonably provide for their needs.

The 1982 Plan states commercial services at existing resorts will be allowed to expand, furthering the recreation potential of the lake, but staying within the total use and environmental controls projected by the plan. Carnival type activities will not be permitted. Uses on the land surface surrounding the lake must serve to complement the outdoor water and forest oriented recreation activities rather than being an end in itself.

The 1988 Plan said it would authorize appropriate new commercial services under the permits of existing resort/marinas, but would not allocate additional land base for new commercial uses outside of established operations. The 1988 Plan also stated: Consider proposals for new commercial uses on a case-by-case basis, using the following guidelines:

- All commercial uses must be integrated with and utilize the surrounding environment in its natural state.
- Commercial activities should focus the attention of the visitor primarily on the natural environment, not on manmade features or entertainment.
- Commercial uses on National Forest lands in the NRA must complement recreation activities oriented toward the natural environment, rather than being ends in themselves.
- Consider no proposals for floating food and drink concessions outside of resort/marina permit boundaries.

In the 1996 Plan direction was to authorize new commercial services under existing special use permits when appropriate. Requests for services or facilities requiring a land base for new uses would be considered based on the following criteria:

- Maintains or improves dispersion of services around the lake.
- Site can adequately support both land and/or water based facilities.
- Allocation of land for commercial services is kept to a minimum.
- Compatible with existing and proposed resort/marina operations.
- Compatible with existing and proposed public recreation sites and facilities.
- Does not conflict with the natural recreation experience.

1.4 Recreation Residences

"In 1948, in order to meet the demand for recreation residences, four summer home tracts were set aside on Shasta Lake but it was not until three years later when fishing began to improve that the lots began to sell. By the end of 1952 nearly all the lots were taken" (FS 1953). By 1965, there were five summer home tracts, Salt Creek, Campbell Creek, Didallis #1, Didallis #2, and Silverthorn around Shasta Lake with a total of 160 lots. In 1965 the decision was made that no additional acreage would be allocated for this use since there was sufficient private land available to fulfill this need and it was recognized that recreation residences were an exclusive use of federal lands. Recreation residences remain the one nationally sanctioned exclusive use of Forest Service lands.

In 2002, the Pacific Southwest Region of the Forest Service entered into a Programmatic Agreement with the California State Historic Preservation Officer and Advisory Council on Historic Preservation. This agreement was designed to preserve the existing historic integrity of recreation residences in the Pacific Region by providing guidance to ensure undertakings authorized to these improvements are in compliance with Section 106 of the National Historic Preservation Act of 1966. The agreement applies both to tracts which have been evaluated and determined to be eligible for inclusion in the National Register of Historic Places (NRHP), and tracts that have not been evaluated. Tracts that have not been evaluated must be managed as though they are potentially eligible for inclusion in the NRHP until they are determined to be ineligible. The Salt Creek and Silverthorn tracts have been evaluated and were determined to be ineligible for inclusion in the NRHP. The Campbell Creek and Didallis tracts have not been evaluated.

In 2006, the Forest Service initiated a nationwide compliance review of existing recreation residences in preparation for issuing new 20-year term permits. The review process included field inspections of each lot and residence. Site maps of each lot were updated, and the size and condition of the improvements were assessed for policy compliance.

Following the inspections performed on the STNF in 2007, individual letters were sent to permit holders describing noncompliance issues and the actions required to bring them into compliance. Permit administrators coordinated individually with cabin owners to achieve full compliance in most cases. However,

Region 5 policy allows for conditional acceptance of some improvements that cannot be reasonably brought into compliance due to time constraints or exorbitant cost of implementation. These improvements were conditionally accepted for limited time periods and must come into compliance when triggered by varying events such as transfer of ownership, a certain date, upon complete or partial destruction, etc. In many cases, the STNF worked cooperatively with local Homeowner's Associations through the permit renewal process to develop the conditional triggers and alternative methods to achieve compliance to reduce the burden of implementing policy. Cabins and other improvements continue to be monitored and inspected, and noncompliance issues are resolved on an ongoing basis.

1.5 Recreation Events

Recreation events in the form of fishing tournaments have been a mainstay on the lakes for years. An effort to coordinate/combine the issuance of the California Department of Fish and Wildlife fishing permit and the Forest Service event permit was unsuccessfully attempted by the Forest Service.

1.5.1 "Boardstock"

"Boardstock" was a competitive wakeboard event held from 1996 through 1999 on Shasta Lake. The event evolved from a professional wakeboarding event with 1,200 attendees to a large three day party with over 8,000 attendees. In 1999 law enforcement could not respond to situations due to safety and mobility issues, amplified music was heard by adjacent communities, public nudity was a problem, and spectator safety was at risk. A request for Wakeboard 2000 was denied based upon concerns from the 1999 event and the fact that the event had evolved beyond the scope of objectives for management of the NRA i.e. commercial uses should focus the attention of the visitor primarily on the natural environment, not on the event itself.

2. Setting

The recreation special uses program within the NRA is one of the largest, most diverse and complex programs in the National Forest System. At the present time there are approximately 970 recreation special use permits in the NRA including houseboats (ROVs), recreation residences, resorts, marinas, campgrounds, trailer courts or camps (RV parks), outfitter and guide services, concessionaires (Granger-Thye), boat docks, recreation events, a cavern and a target range. The majority of commercial recreation use however, occurs at the 13 full-service resort/marinas. Private recreation uses are concentrated primarily in the recreation residence tracts and with private houseboat/ROV ownership.

Table 2-23
2013 Snapshot of Recreation Permits

Type	Shasta Unit	Trinity Unit
Boat Docks	5	3
Campgrounds/Picnic Grounds	3	0
Resorts	2	1
Cavern	1	0
Trailer Court	1	0
Target Range	0	1
Recreation Events	31	2
Marinas	9	4
Recreation Residences	156	0
ROVs - Tenure Permit	613	99
ROVs- Provisional Permit	11	4
Campground Concessionaire	1[a]	0
Boat Ramp Concessionaire	0	1
Outfitter/Guides	8	4

Notes:

[a]Serves both Shasta and Trinity Units

2.1 Recreation Occupancy Vessels

As of 2013 there were 613 permitted ROVs on Shasta Lake and 99 on Trinity Lake. This does not include additional "provisional" permits, 11 on Shasta and 4 on Trinity. These provisional permits are temporary transitional permits and will be phased out. The range in ROV sizes, appearance and amenities vary significantly although over time most of the vessels have been upgraded to a fairly high standard. The majority of the vessels fall into either the more traditional pontoon "houseboat" model, with the second most popular being in the category of a "large patio boat." The third most popular would be the large v-hull cruiser type boats. Common amenities include kitchen facilities (including oven/range, refrigerator, sinks), beds, toilets, showers, and provisions for internet, television or satellite TV. Some have hot tubs, washer/dryers, fireplaces, high-end state room type accommodations, multiple enclosed decks and flying bridges. Moorage for these vessels is primarily spread across seven of the nine marinas on Shasta Lake and two of the three marinas on Trinity Lake. The vessels are inspected annually for compliance with the special use permit and State and Federal safety requirements. The special use permit authorizing these vessels is unique and applies only to the Shasta Trinity National Forest.

The current appraised value of an ROV permit, determined from the 2010 appraisal, is $9,000 on Shasta Lake and $6,300 on Trinity Lake amounting to fees in the amount of $450 and $315 respectively.

2.2 Resorts/Marinas

There are 13 long-established marinas within the Shasta-Trinity NRA: nine are located on Shasta Lake, three on Trinity Lake, and one on Lewiston Lake. These marinas serve as gateways to the NRA and at a minimum must have the capability to launch and retrieve vessels, septic pump out, restrooms, adequate parking, boat rentals and/or long-term moorage for private vessels (See Marina Standards). Of the nine marinas on Shasta Lake there are seven owners. Of the three marinas on Trinity Lake there are two owners. Shasta Lake has the largest number of marinas per lake surface area than anywhere else in the nation. In more recent years

this competition has challenged the economic viability of some individual marinas and impacted their ability to provide upper-end, high-quality facilities and services.

All but one marina on Trinity Lake offer commercial houseboat rentals as a primary portion of their operating revenue. Only one marina (on Shasta Lake) does not offer moorage for privately owned vessels. Many of the marinas also offer for rent various boating or water related equipment including personal watercraft, pleasure runabout vessels, fishing boats, canoes, water tow toys, etc. Although many of the marinas offer some sort of food services, only a couple offer full service sit-down restaurants. Generally speaking, due to the extreme fluctuations in the lake surface, marina owners have designed their facilities to provide the majority of their services from the water (floating). This includes offices, stores, fuel barges, septic barges and restrooms. Bridge Bay marina offers the most comprehensive "resort" setting by including a full service restaurant and bar with conference facilities, hotel with swimming pool, and store. Antlers Resort and Marina includes a compliment of cabins in addition to the full service marina and Silverthorn Marina offers a full service bar/restaurant and cabin rentals along with their marina services. Cedar Stock on Trinity Lake also offers cabins and a full service bar and restaurant on adjacent private land.

A significant portion of annual revenue for marina operators is derived from their commercial houseboat rentals. The 450 commercial rental houseboat allocations on Shasta have remained unchanged since the 1988 Environmental Impact Statement. Over the years some marinas, specifically Digger Bay on Shasta and Cedar Stock on Trinity, have not fully utilized their rental houseboat allocations. The Forest Service has accommodated some requests for additional temporary allocations by providing those unused allocations to those marinas on a temporary basis that have maximized their occupancy. Removing allocations for nonuse is provided for elsewhere in this guide.

The Forest Service generally manages to provide for commercial facilities and services to be at one of the designated marinas. This not only maximizes the return on their significant investments on public lands, but also minimizes the impacts to the resources. Some of the marinas hold sub-lease agreements with others to provide a suite of services including water ski schools, and food and drink services.

Operations of a marina on Shasta and Trinity Lakes present challenges unique to this NRA. The lake fluctuations, which annually as part of "normal" operations vary from zero to 100 feet below full pool, means that the marina owner is constantly, often daily, moving their floating facilities. This is a complex combination of anchors, winches, cables, utilities and skills. During drought years the moves are even more exaggerated and complex. Additionally, a series of below full pool roads and parking lots are maintained as customers follow the facilities where topography allows.

Table 2-24
2013 Marinas and Allocated Commercial Houseboats

Marina	Permanent Allocation
Shasta Lake	
Antlers Resort & Marina	35
Bridge Bay Resort	92
Digger Bay Marina	50
Holiday Harbor	70
Jones Valley Marina	64
Packers Bay Marina	26
Shasta Marina	24
Silverthorn Resort Marina	35
Sugarloaf Marina	21
Total Allocated:	417[a]
Trinity Lake	
Cedar Stock Resort & Marina	10
Trinity Alps Marina	25
Trinity Center Marina	0
Total Allocated:	35[b]
Lewiston Lake	
Pine Cove Marina	0

Notes:

[a] 33 boats unallocated, available for use in temporary allocations or future permanent allocations

[b] 50 boats unallocated, available for use in temporary allocations or future permanent allocations

2.2.1 Moorage

Moorage allocations are limited to 3000 slips on Shasta Lake and 1000 slips on Trinity Lake, including both commercial and private vessels see Table 2-25 for distribution and type. The Shasta Unit is near the capacity limit and has approximately 400 slips that have not been allocated whereas the Trinity Unit has only used a little more than half of their allocations and can almost double its allocations with approximately 400 slips. Any additional slips beyond the current upper limits would require new capacity studies and analysis. Furthermore, any facility that requested additional slip allocations would need to prove they had the land base to support them. Moorage slips located outside of marinas are associated with recreation facilities located on private land and are ancillary to that use. Slip use at these docks is restricted to customers only and length of stay restrictions apply.

Table 2-25
2013 Moorage Facilities and Slips

Marina	Commercial Fleet Slips	Private Owner Slips
Shasta Lake		
Antlers Resort & Marina	101	200
Bridge Bay Resort	140	7773
Digger Bay Marina	75	145
Holiday Harbor	95	330
Jones Valley Marina	90	99
Packers Bay Marina	51	0
Shasta Lake RV Resort	0	22
Shasta Marina	54	139
Silverthorn Resort Marina	59	113
Sugarloaf Cottages	0	16
Sugarloaf Marina	41	40
Tsasdi Resort	0	30
Total:	706	1907
Trinity Lake		
Cedar Stock Resort & Marina	31	220
KOA Campground	15	110
Pinewood Cove Docks	0	52
Trinity Alps Marina	31	63
Trinity Center Marina	0	80
Total:	77	525
Lewiston Lake		
Lakeview Terrace Docks	14	7
Pine Cove Marina	20	34
Total:	34	41

Decreases in each facilities available allocated moorage slips can occur due to drops in water levels requiring facility relocation or during the off season with dry docks (docks allowed to go dry) or temporary off shore moorage of commercial vessel (only).

2.3 Other Commercial Services

Currently there are:

- Six boat docks that support recreation operations on adjacent private lands: three on Shasta Lake, Lake (Tsasdi Resort, Shasta Lake RV Resort and Campground, Sugarloaf Cottages), two on Trinity Lake (KOA and Pinewood Cove), and one on Lewiston Lake (Lakeview Terrace Resort).
- Four commercial RV parks/campgrounds on Shasta Lake (Antlers RV Park & Campground, Lakeshore Inn & RV, Salt Creek Resort & RV Park, Shasta Lake RV Resort & Campground and one on Trinity Lake (KOA).

- Twelve outfitter guides within the NRA including hunting and fishing guides, a wakeboard school, kayaking, and youth camps. There are no restrictions on the number of outfitter guide permits issued within the NRA.
- There are subleases located at commercial marinas on Shasta Lake for personal water craft rentals, and food services.

2.4 Recreation Events and Non-Commercial Group Events

Approximately 30 fishing tournaments are held each year within the NRA with the majority of use on occurring on Shasta Lake. These fishing tournaments are typically held in the spring and fall seasons and can vary widely in size and complexity with some of the annual events hosting as many as 250 participants with prize money in the range of $30,000. Additionally, there are a number of non-commercial group use events, again in a wide range of size and complexity including weddings, runs/marathons, ATV club rides, and bike rides.

2.5 Recreation Residences

The Shasta Unit of the NRA manages four recreation residence tracts with 156 individual recreation residences on Shasta Lake. The tracts and number of recreation residences per tract (in parentheses) are as follows: Salt Creek (47) Silverthorn (74), Campbell Creek (28) and Didallis (7). The Salt Creek and Silverthorn tracts are accessible by road; the Campbell Creek and Didallis tracts are accessible by boat. Though set up as two separate tracts in 1948, Didallis #1 and Didallis #2 are managed as one tract.

Forest Service policy is to manage the recreation residence program to the extent practicable, to preserve the opportunity for individual and family-oriented recreation while also maintaining the national forest setting and preventing a trend towards urbanization. Consequently, modifications to the structures and lots are authorized in consideration of safety, visual and environmental resources, and retaining the rustic character of these improvements whenever possible. Approved structural modifications require Shasta County building permits. Shasta County environmental health permits are required for septic systems.

New 20-year term permits were issued in 2008. Prior to issuance, all permit holders had to be in compliance with the terms and conditions of their permits. The consolidated issuance of these permits came about as a result of approximately two years of extensive work with the permit holders, including removing unauthorized structures, painting with approved colors, removing non-native plants, removing unauthorized gravel and decks, preparing defensible space, and generally making repairs and doing a backlog of maintenance throughout. Thorough monitoring and permit administration is critical to maintain the progress made during this effort.

3. Management Guidance

All uses authorized by permit must be integrated with and utilize the surrounding environment in its natural state. Activities should focus the attention of the visitor primarily on the natural environment, not on manmade features or entertainment. Uses on National Forest lands in the NRA must complement recreation activities oriented toward the natural environment, rather than being ends in themselves. Consider no proposals for floating food and drink concessions outside of resort/marina permit boundaries. Consider no proposals for "carnival type"/"amusement park" activities.

Authorize no new exclusive uses on National Forest land within the NRA (36CFR251.54 (e)(1)(iv)). An exclusive use is an extended private use of National Forest land or water, which excludes or limits use of the same land or water by the general public. This includes but is not limited to private docks, membership-only organizations, time-share facilities, and private clubs. Existing exclusive uses include recreation residences and

private Recreation Occupancy Vessels (ROVs). Management of these uses is addressed elsewhere in this section of the guide.

3.1 Privately Owned Recreation Occupancy Vessels (ROV) & Commercial Houseboats

3.1.1 Universal Vessel Requirments

- Vessels must meet all Federal, State, and local regulations, including water quality laws, California Boating Law, and county ordinances.
- Moorage shall be in approved commercial marinas or other designated Forest Service approved facilities.
- Vessels may occupy shoreline areas for up to 14 consecutive days at any one area per calendar year. An area, for purposes here, is a general location such as a particular cove or length of shoreline not less than ¼-mile in length.
- Styrofoam or other non-rigid material may not be used for flotation unless it is encased in a material approved by the Forest Service.
- Vessels greater than 31 feet in overall length and/or greater than 12 feet in width are prohibited on Shasta, Trinity, and Lewiston Lakes for more than 30 days per calendar year except by permit. Vessels may not exceed two levels in height, with not more than one enclosed level, except by permit. Nothing permanently or semi-permanently attached to the vessel may extend beyond the maximum size limits.

3.1.2 ROVs Authorized by Special Use Permit

Exclusive Use

The long-term use and authorization of private ROVs within the NRA is unique within the Forest Service and is considered an exclusive use of National Forest System lands. Laws, regulations and policy do not allow for any new exclusive use authorizations (36CFR251.54 (e)(1)(iv)) on federal lands. Existing ROVs under special use permit are managed very much like recreation residences and the national policy that exists regarding their management is largely based on recreation residence policy. Special Use Permits for ROVs will only be issued to current, existing uses in compliance.

The permit for privately-owned ROVs functions as a management tool for managing capacity of large overnight vessels on the lake, and for maintaining compliance with health (sanitation systems), safety, and appearance standards. Any change in the current policy of allowing this non-conforming use within the NRA should be carefully considered and would likely have significant impacts. Consequences include potential impacts to the overall recreation experience and the resources if the use is uncontrolled, and the likely shift of the "commodity" interest from the boat with a permit to moorage slips. These potential impacts will not only negatively impact existing permit holders, but will have cascading impacts to all boat users as moorage becomes a valuable "asset." Additionally the entire spectrum of recreation opportunities on the lake may be impacted if a balance between small boats and large overnight vessels is not maintained. Any serious consideration of changing the current ROV policy would require a significant comprehensive analysis and alternatives for management of capacities linked to the desired recreation opportunity/experience and resource values.

ROV Definition

An ROV is defined as any watercraft that is greater than 31 feet in overall length and/or greater than 12 feet in width.

Vessel Requirements

- Any vessel that meets the definition of an ROV and is used or stored on Shasta or Trinity Lakes must be authorized by special use permit.
- Vessels must be currently registered with the California Department of Motor Vehicles (DMV) in the name of the permit holder. "Documented vessels" as defined by DMV are not allowed.
- Vessels must have an operational engine commensurate with the size of the vessel. Sailboats must have an engine capable of maneuvering the vessel into marinas and moorage areas.
- Unless otherwise authorized by the Forest Service, ROVs shall only be used for overnight occupancy when such use is associated with recreational boating. ROVs or other watercraft, whether under permit by the Forest Service or not, shall not to be used as a residence or for long-term occupancy.
- ROVs may be owned by a corporation or a partnership only if the entity is established solely for the purpose of operating and managing the ROV. ROVs may not be owned by a trust. ROVs are for personal recreation use only. Personal recreation use is defined as noncommercial use by the holder, members of his or her immediate family, and guests.
- Ownership of an ROV is limited to six (6) owners. An owner is defined as a person or persons who would reasonably and normally use the ROV at the same time such as a husband and wife.
- ROVs shall not be rented or offered for rent on a commercial or business basis, or used as barter, compensation, speculation, or remuneration. Timeshare of vessels is prohibited.
- Marinas shall verify that an ROV has a permit from the Forest Service before entering into moorage agreements for vessels greater than 31 feet in overall length and/or greater than 12 feet in width.
- ROVs on Shasta Lake must comply with the gray water discharge prohibition instituted by the Central Valley Water Board.
- When required by the Forest Service, all ROVs must pass an annual compliance review by June 1 each year on Shasta Lake and July 1 each year on Trinity Lake. If an ROV has not passed the required compliance review by the required date, it may not be used and the permit will be subject to revocation or termination. At the discretion of the Forest Service, on-site inspections by a Forest Service representative or self-inspections with monitoring may be used to meet this requirement.
- Annual certification stickers shall be displayed in a location specified by the Forest Service.

Permit Issuance/Renewal/Termination

An ROV permit is issued with a 10-year term and extended annually for a term of 10 years under its own terms and conditions when monitoring indicates the vessel and the permit holder are in compliance with current standards and the special use permit fee is paid. The owner of a permitted ROV may remove their ROV from National Forest lands and waters, and transfer the permit to a new qualifying ROV. If a permitted ROV is sold to a new owner, the new owner may be issued a non-competitive permit for the vessel if ownership qualifications are met, the permit to the previous owner is relinquished, and the authorized officer approves.

ROV permits must be in continuous use to remain valid, i.e. the permit is attached to an existing vessel in compliance or it is in transfer status to a new vessel or it is the process of reissuance through a sale. ROV permits that are relinquished voluntarily, or are terminated or revoked through adverse action will not be reissued. If an ROV is abandoned, the permit associated with the ROV will not be reissued. These guidelines align with national policy to not allow new exclusive uses. As permits expire, new permits will be issued for the continued existing use upon acceptance and approval of an application by the existing permit holder.

A permit is valid only for the lake for which it was authorized. Only one ROV permit will be authorized to a person or entity within the NRA.

Size Restrictions

The maximum allowable size is fifteen feet (15) wide by fifty-six (56) feet long. This category of permitted vessel may not exceed three levels in height, and may not exceed two enclosed levels. Nothing permanently or semi-permanently attached may extend beyond the maximum size except fixtures such as a pull out boarding plank at the front of the vessel, hinged ladders, swing out hoist, or slide offset as needed for safe use (not to exceed 12 inches). Vessels may have "bumpers" attached to protect the vessel when it is moored or being docked. These "bumpers" may not exceed two (2) inches in depth, allowing an additional four (4) inches to the vessel width or length. Poles that slide out of the side of an ROV and are used for attaching and towing a vessel such as a ski boat or fishing boat are allowed. These poles may not be extended while the ROV is moored at a dock and may be extended only when there is a boat attached to the pole.

Provisional (Transition) ROV Permit

To facilitate the transition to the new definition of a boat needing a permit in 2005, a temporary permit was developed to transition those boat owners that had been on the lake without a permit with vessels that were greater than 31 feet in overall length and/or greater than 12 feet in width. These vessels had to provide proof of moorage for at least 30 consecutive days during the 2004 summer season at an authorized marina on Shasta or Trinity Lakes. This type of permit will be issued only while completing the transition from an amenities-based ROV definition to the size-based definition. Permit stipulations include the following:

- Permits are not transferable. A new permit will not be issued upon sale or transfer of ownership of the vessel. The permit will not be transferred to a different vessel. If the current owner ceases to retain ownership or increases the size of the specified vessel it must be removed from the NRA.
- If the vessel is damaged beyond repair, the vessel must be removed from the lake.
- Permits are issued for a period of 2 years to coincide with the California DMV registration period. The owner must submit a current DMV registration when applying for a new 2-year permit. Permits are only issued to the owner(s) of record at the time the provisional permit was initially issued.
- A Forest Service sticker will be issued; the sticker will be positioned 12 inches from the DMV registration sticker.
- The permit shall stipulate the maximum height, length, width and legal identification of the permitted vessel. The owner is required to sign a statement verifying and acknowledging correct measurement of the permitted vessel. The size of the vessel cannot be modified.
- The minimum annual fee was $58.54 in 2013. The annual fee is indexed annually in accordance with the IDP and the base fee may be adjusted periodically based on appraisal.

ROV Permit Fees

Initial fees for ROV permits were implemented in 1989. As required by policy, a periodic review of these fees was made in 1998, and again in 2010. To align with laws and policy both the 1998 and the 2010 fee reviews were based on an independent appraisal to determine the fair market value of the right and privilege to operate and maintain a private houseboat, under permit, on Shasta and Trinity Lakes. The 2010 appraisal concluded the fair market value of a ROV permit on Shasta Lake was $9,000.00 and the fair market value of a ROV permit on Trinity Lake was $6,300.00. Fee amounts were determined by using 5% of the value as directed by national policy. Effective January 1, 2011, fees were $450 and $315 respectively. Additionally, as required by policy, starting in 2012, these fees are annually indexed according to the Indexed Price Deflator (IPD). The IPD is a byproduct of the current year's GDP/GNP (Gross Domestic Product and Gross National Product ratio) as compared to the prior year's GDP/GNP ratio. For 2011 the IPD was 1.024.

3.1.3 Capacities and Limitations

The 2005 Carrying Capacity Study done by the Pacific Southwest Research Station (Graefe et al. 2005) confirmed the numerical limits imposed by previous NRA Plans on houseboats and ROVs on both Shasta and

Trinity Lakes and they remain: 450 commercial houseboats and up to 613 private ROVs on Shasta Lake, and 87 commercial houseboats and up to 99 private ROVs on Trinity Lake. Limits on lake capacities are facilitated largely by moorage space and land base parking above high water. Moorage slips are limited to 3000 on Shasta Lake and 1000 on Trinity Lake unless a capacity impact analysis is completed. Prior to adding parking capacity above high water, evaluate potential impacts and consequences to lake use.

3.1.4 Commercial Houseboats

Resort/Marina Allocations

Each resort/marina has an allocation of commercial houseboats specified in their permit which represents the maximum number the resort may rent unless otherwise authorized by the Forest Service. A major factor used to determine allocations was the land base available for parking (see *Standards and Guidelines for Shasta-Trinity Marina Facilities* for guidelines). The number of commercial houseboats permitted to each resort varies from a minimum of 25 to a maximum of 92. Some resort/marinas do not currently have houseboats to fill their commercial allocation, while other resort/marinas have filled their allocation and have requested additional temporary and/or permanent allocations. Temporary increases in allocations have been granted annually according to management guidelines. Permanent re-allocation of commercial houseboat allocations has not been seriously considered since the 1980's. Houseboat rentals are a significant factor in the economic feasibility of an operating marina, and allocations historically have added significant market value to the marina. Except during periods of extended low lake levels and/or times of severe economic recession, most resort/marina allocations were filled or close to being filled with relatively high occupancy rates. Over the last decade there have been enough changes in demand and in use of the allocations among marinas that a reallocation of available permits should be considered.

Permanent Allocation Authorization: Commercial houseboats must be rented and managed from the marina permit area which has the allocation unless otherwise authorized by the Forest Service.

Marinas are required to have boats, ready to rent, to fill their commercial houseboat allocation each year. "Ready to rent" means the boats are in good condition, fully operational, and have passed inspection. Marinas which do not have enough commercial houseboats to fill all of their allocation will be reviewed to determine if their allocation should be reduced. The review will evaluate the following considerations:

- Low water conditions exist or are projected for the coming recreation season.
- Pre-existing or existing extenuating circumstances, new ownerships, manufacturing capabilities.
- Ability to provide quality public service.
- Resorts record of compliance with the terms of their special use permit.
- Occupancy rate of existing commercial houseboats.
- Duration of unfilled allocations.
- Public demand for commercial houseboats.
- Financial and operational capability of the resort to respond to the purchase of additional houseboats.

If further review determines that the resort must provide their full allocation of commercial houseboats, the resort will be given written notice and a reasonable time to acquire the houseboats. If the resort does not respond by acquiring the houseboats within the time frame, allocations will be withdrawn and may, at the discretion of the Forest Service, be redistributed to other marinas. Criteria for determining which marinas will be considered for receipt of additional permanent commercial houseboat allocations will include, but are not limited to, the following:

- Receiving marina must have, or be able to acquire within a given time frame, adequate support facilities to accommodate additional allocations. Support facilities include, but are not limited to,

parking, moorage, fueling, septic and gray water pumping and storage, and maintenance capability. If increased allocation is based on installation of additional facilities, the allocation will not be approved for use until the additional facilities are operational. Depending on extent of change, a Master Development Plan may be required.

- Financial capability to acquire additional houseboats, and support facilities.
- Current number of commercial houseboats and occupancy rates.
- Quality of existing facilities and services provided during both normal and low lake levels.
- Record of compliance with their special use permit.

Temporary Allocation Authorization: Non-use of commercial houseboat allocations must be approved in advance by the Forest Service, and must be for a specified period of time. The Forest Service may temporarily authorize unused allocations to be utilized by another resort. This consideration must be authorized on an annual basis. Approval will be based on the following considerations:

- The Forest Service must verify with other resorts that there will be unused allocations for a specific time period.
- Record of compliance with their special use permit.
- Ability to provide adequate support facilities for additional allocations.
- Demonstrated ability to provide quality public services.
- The number of existing allocations at each requesting resort, and occupancy rates.
- Financial capability of the requesting resort to acquire additional boats on a temporary basis and provide support facilities.

Permit Allocations Held in Reserve: While in a Master Development Planning process, or prior to a planned Master Development Planning process, or during the implementation phase of a Master Development Plan, it may be necessary to hold a certain number of commercial houseboat allocations in reserve. While in reserve, the marina to which they are allocated will have a specified period of time to reclaim the allocations or they will be redistributed according to the criteria outlined above. During the time they are in reserve, they may be allocated on a temporary basis to another marina according to the criteria outlined above.

Commercial Houseboat Size

Unless otherwise approved by the Forest Service, a commercial houseboat will not exceed 15 feet wide by 56 feet long. Houseboats may not exceed three levels in height, and are limited to two enclosed levels. Nothing permanently or semi-permanently attached to a houseboat may extend beyond the maximum size limit except a pull-out boarding plank at the front of the boat, hinged ladders, swing-out hoist, and slide offset as needed for safe use (generally not to exceed 12 inches). Boats may have "bumpers" attached to protect the boat when it is moored or being docked. These "bumpers" may not exceed 2 inches in depth, allowing an additional 4 inches to the boat width or length.

Each marina is allowed up to 10% (rounding up) of their allocation at a larger size not to exceed 16 feet wide by 65 feet long. Written requests for larger boats must be made to the Forest Service, and approval must be granted prior to vessel's occupancy of National Forest lands and waters. Approval will be based on the following considerations:

- Any increase in capacity, from the vessel being replaced, is matched by similar increases in support facilities, e.g. parking, sanitation.
- Record of compliance with their special use permit.
- Available moorage capacity for larger boats.

- Adequate area and operating guidelines to allow for safe maneuvering within the boundaries of the marina.
- If any marina chooses not to exercise this option, another marina may be authorized to increase their number beyond 10%, as long as the total number on the lake does not exceed 10% of the total allocation.

This consideration is based on the need to allow the marinas a limited number of larger boats to meet public demands, and to be competitive nationally with other commercial houseboat operations. The use of larger vessels in the commercial rental fleet will be monitored to evaluate effects, if any. As a result of monitoring, additional larger boats (not to exceed 16 feet by 65 feet), within existing permit allocations, may be approved.

Inspections

The marinas shall annually inspect all commercial houseboats for compliance with state and federal laws, regulations, and policy. Qualified resort personnel inspect the resort/marinas boats and sign the inspection form. The inspection reports are sent to the Forest Service for review and annual authorizations for operation will be issued. A commercial houseboat cannot be rented until it displays a current National Recreation Area (NRA) sticker.

3.1.5 Waste Discharge Requirements

On September 6, 2001, the Central Valley Water Board adopted Resolution No. 05-01-211, authorizing the Executive Officer to enter into a memorandum of understanding (MOU) with the Forest Service, to eliminate gray water discharges from houseboats to Shasta Lake after September 6, 2006. In January 2004, the Executive Officer and Forest Supervisor signed MOU No. 04-MU-11051458-004. The permitted marinas complied with the MOU by retrofitting commercial houseboats to capture gray water discharges, and if necessary made improvements to on-site disposal/treatments systems to handle the additional waste load generated from the capture of gray water.

The Resolution prohibits discharge of gray water; it does not require the capture of grey water. Private ROVs were asked to retrofit their vessels to comply with Resolution and compliance is documented annually during monitoring and inspections.

Trinity Lake marinas must comply with the NPDES but the North Coast Regional Water Quality Control Board has not prohibited the release of gray water.

3.1.6 Monitoring

Periodically review the mix and utilization of private and commercial ROV permits available with the goal of meeting the intent of quality recreation opportunities and resource management in the NRA.

Monitor use by overnight vessels on the lakes less than 30 days a year to determine if the effect on such use continues to be negligible. If use in this category increases to the point that average overnight use exceeds acceptable levels, consider the need for additional controls.

Monitor compliance with vessel size and other permit requirements, including safety requirements via annual compliance reviews/inspections.

Monitor peak season overnight boating on both lakes to determine the effectiveness of permit number limitations and the validity of estimated use rates for managing overnight vessels within the expected range.

Monitor use of oversized (65-foot) commercial houseboats and determine if there are no adverse impacts to the recreation opportunity or the resource, consider expanding the number of larger commercial boats. Keep persons/boat limited to align with historical capacity of the land base. Keep privately owned ROVs at the maximum of 15 feet x 56 feet in size.

3.2 Resort/Marinas

3.2.1 Marina Standards and Guidelines

The *Standards and Guidelines for Shasta-Trinity Marina Facilities* (Marina Standards), published October 2007, as amended, is the companion document to this guide. The Marina Standards document is a compilation of all the applicable laws, standards, guidelines and policies governing marina operations within the Shasta-Trinity National Recreation Area. The following categories are addressed in depth:

Accessibility	Marinas – including merging and consolidation
Built Environment	Mooring Systems
Parking	Booms and Buoys
Restrooms	Operating Plan
Roads, Trails and Signs	Electricity and Drinking Water
Launch Ramps	Fuel
Gangways	Sewage
Moorage and Dock Facilities	Fire Protection and Hazardous Materials Storage
Channels	Stormwater Treatment
Fairways	Solid Waste Maintenance and Repair
Berths	Vessel Rentals (including houseboats)
	Business Operations

3.2.2 Capacities and Limitations

The NRA has the largest concentration of marinas/lake surface in the nation. Current trends in recreational boating and economics have made it increasingly difficult for some existing marinas to remain economically viable while providing the quality of facilities and services expected for a National Recreation Area.

No additional marinas above the existing nine on Shasta Lake, three on Trinity Lake, and one on Lewiston Lake will be authorized unless a capacity/economic analysis demonstrates the need and viability, and it is determined that expansions of existing marinas is not feasible. If it is determined additional capacity is needed and a new marina is viable, the opportunity will be offered with a prospectus. Consideration should be given to limiting, or giving priority to existing permit holders in the event of a prospectus.

3.2.3 Resort/Marina Locations/Relocations/Proposed Locations

Additional reference provided in the Marina Standards. Also note section in Historical Overview.

Only merging, consolidation, and/or relocation of existing resorts will be considered. Turntable Bay remains the most feasible new location on Shasta Lake for a resort/marina operation and/or public boating facility (see table 2-15 for Shasta Lake site evaluations) and has an Environmental Impact Statement complete with a Record of Decision to implement. Viable relocation/development opportunities have not been identified on Trinity Lake, and are further complicated with land allocations in the Forest Land and Resource Management Plan. Ideally, the existing marinas on Trinity Lake would be able to accommodate the displaced use from the defunct Estrellita Marina (ROV and commercial allocations) through the Master Development Planning process, and their permits would be amended to approve the additional allocations. If the demand for moorage cannot be accommodated through the existing marinas, the Forest Service may request proposals for additional facilities on the lake through a prospectus. Strong consideration should be given to limiting this competition to existing marina permit holders, or giving existing marina owners priority, as increased completion on Trinity Lake would result in additional economic burden to the existing holders.

Marinas must have public or private land above the high water line and immediately adjacent to the marina that is capable, suitable and readily available for development of support facilities for the marina operation.

Marina facilities should be designed to match the visual theme of the marina in color, shape and materials and level of service and development should correspond with the appropriate Opportunity Class designated in the Water Recreational Opportunity Spectrum (WROS). (WROS, Shasta Lake and Trinity Lake National Recreation Area, 2008).

In 2007 with publication of the Standards and Guidelines for Shasta-Trinity Marina Facilities, merging and consolidation are to be considered based on the following criteria:

- The proposal is consistent with the purposes identified in the National Recreation Area legislation.
- The proposal is feasible and viable as demonstrated in a Business Plan or other similar document.
- The proposal is consistent with the desired Water Recreation Opportunity Spectrum (WROS) class for the location.
- The site can adequately support the required land and/or water based facilities.
- If the proposal does not utilize an existing marina location, the land required for the service has been minimized to the extent possible.
- The proposal is compatible with existing and planned public recreation sites, facilities, and marina operations.

3.2.4 Marina Operating Plan

Each resort and marina is required to prepare an annual operating plan utilizing the NRA protocol/format provided. Generally, operating plans must be approved by April 1 each year on Shasta Lake and May 1 each year on Trinity Lake.

3.2.5 Occupancy and Use

Marinas are managed and authorized as primarily as access points to the lakes and surrounding environments, rather than as final destinations in themselves. Residential (as opposed to recreational) occupancy is prohibited on the lake surface. Extended occupancy, defined as consecutive overnight occupancy of boats while moored at marinas, is also prohibited. Marina operators are responsible for monitoring compliance of overnight use at the docks, and when extenuating circumstances warrant, may on a case-by-case basis, authorize exceptions to this policy. These exceptions will be documented by the marina owner and monitored by the Forest Service. When appropriate for security, designated marina hosts may be authorized to occupy boats at marinas on an extended basis. The Forest Service must approve the number and locations of hosts prior to extended occupancy.

Unless otherwise authorized, a resort may not have more than two administrative residences at the resort site.

3.2.6 Facilities and Services

Manage the marinas to provide for the substantial majority of commercial facilities and services needed by the recreating public. Consolidated facilities/services minimizes the impacts on resources and visuals while helping to maximize the marinas returns on their investments on public lands.

3.2.7 Utility Services on Docks

Additional reference provided in the Marina Standards.

Electric, water, and septic utility services at moorage slips will be authorized only when safeguards exist to guarantee that these services do not promote extended occupancy of boats at a marina. Prior to authorizing utility services, the marina must develop procedures and policies acceptable to the District Ranger that prevent extended occupancy of boats while moored at the facility. Marinas offering utility services must:

- Be in compliance with the terms and conditions of their special use permits to the satisfaction of the authorized officer.
- Possess specific authorization for utility services at docks.
- Incorporate procedures and policies related to utility services within Operating Plans and implement these plans year-round.
- Post and maintain signage, flyers, and other information approved by the Forest Service that advises boaters of occupancy procedures, policies, and enforcement.
- Monitor overnight occupancy at the marina and report this use to the Forest Service upon request.
- Hold violators of procedures and policies concerning utility services accountable in writing including warning, suspension, and termination of moorage rights.

3.2.8 Availability of Facilities and Services

Authorized facilities and services must be readily available through an equitable reservation system or on a "First come – First served" basis. Marina operators, boat dealers, and/or moorage speculators will not be allowed to hold moorage slips in abeyance. Boat owners and marina owners are strictly prohibited from "selling" a preference, right or opportunity for moorage.

3.2.9 Accessibility

Additional reference in the Marina Standards.

As recreation facilities at special use sites are constructed and/or reconstructed, they will be built to meet current universal accessibility standards which comply with the Architectural Barriers Act (ABA) for facilities on National Forest Lands plus the American Disability Act (ADA) for privately owned facilities. The more stringent standard will be utilized for privately owned facilities. The Architectural Barriers Act requires that 'barriers' to people accessing facilities be removed. Thus, all privately owned facilities which do not meet accessibility standards need a 'Transition Plan' that identifies the actions needed to bring the facility into compliance with current standards. Plans submitted for new or remodeled facilities are required to meet the current applicable accessibility standards. The goal is to offer equal opportunities to people of varying abilities. For more information see the Access Board website for guidelines on buildings and facilities (http://access-board.gov/ada 2Daba/final.cfm).

3.2.10 Access Routes and Gangways

Access routes from the parking area to the gangway are one of the largest barriers to accessibility for NRA marinas due to combinations of extremely steep or shallow slopes and being located under water for much of the time. To be accessible these routes might be extremely long and their hand rails, unless detachable, would be an underwater hazard. In 2006 the Forest Service requested and received a modification to the ABA Accessibility Standards for the proposed Turntable Bay Marina. See Appendix E for official correspondence. Additionally, gangways (the bridge from the access route to the marginal walkway) pose problems due to steepness caused by lake level drawdowns; however, if a gangway is over 80 feet in length it is exempted from accessibility standards.

3.2.11 Transition Plans

All facilities that are used by the public that do not meet current accessibility standards are tracked in an annually updated Transition Plan that identifies remaining accessibility barriers and timelines for replacement.

3.2.12 Underwater Roads and Parking Areas

Additional reference in the Marina Standards.

See historical water levels charted in Appendix F.

Maintaining the below full pool network of routes that provides access to the marinas, boat ramps, and docks to standard is challenging considering the large drops in lake elevations that both Trinity and Shasta Lake undergo. Additionally, during lake drawdowns customer parking almost always expands to below full pool. These routes and parking areas can remain underwater for years at a time, slowly deteriorating due to water currents in the narrower fingers, wave action from receding or advancing water levels, and siltation. As lake levels drop, more and more of this network becomes exposed: sections of road near the full pool elevation are used on a yearly basis but other sections are not exposed until severe lake drawdowns. Only small portions of these routes and none of the parking areas are paved. Although Marina Standards address these facilities, current historical locations may be too narrow and/or too steep to provide adequate access for public use. All underwater routes need to be identified and mapped with condition surveys. These routes must be included in the marina special use permit and the marina will be held responsible for maintenance and safety. Development planning must include addressing use below full pool with recognition of the need to meet standards when economic conditions allow. Standards for below full pool improvements are continually evolving with input from the State Water Quality Control Boards and the Corps of Engineers.

3.2.13 Moorage

Moorage limits are 1000 slips on Trinity Lake and 3000 slips on Shasta Lake, excluding exclusive use docks at recreation residence tracts on Shasta Lake.

Marinas shall verify that an ROV has a permit from the Forest Service before entering into moorage agreements for vessels greater than 31 feet in overall length and/or greater than 12 feet in width.

Resorts on adjacent private land (Refer to "Other Commercial Services" section on page 2-116) with docks that provide short-term moorage under existing authorizations, may continue to provide moorage to their customers only. New short-term moorage will be restricted to existing full-service marinas. "Short-term" use refers to activities limited in duration to not more than 14 consecutive days and not to exceed 30 days in a calendar year.

When moorage changes or additions are proposed by a marina, consider the need for a balance of slip sizes serving a variety of moorage customers. Do not authorize changes or additions that would, in effect, substantially increase the number of large boat slips at the expense of slips for small boat owners.

Open and covered moorage is allowed. Open or covered moorage with sidewalls (e.g. boathouses) is not allowed. No proposals for permanent offshore moorage will be approved. Temporary offshore moorage will be considered on a case-by-case basis e.g. in winter months.

3.2.14 Boat Storage

Long-term boat storage on land will not be allowed unless approved in advance and/or the resort/marina permit designates an area for long-term boat storage.

3.2.15 Nighttime Access

Marinas may restrict or limit nighttime access by vehicles if they can demonstrate that such action is necessary to protect people and property.

3.2.16 Miscellaneous

Other Agency Permitting

Additional reference in Chapter 1, Section "Other Management Agencies—Roles and Authorities" beginning on page 1-16.

Additional reference in the Marina Standards.

Generally, all permit holder activities within the NRA must comply with ever changing external agency permitting requirements including but not limited to:

(1) Army Corp of Engineers (for any activities below full pool and in wetlands)

- Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States. Waters of the United States (33 CFR Part 328) include essentially all surface waters including impoundments of these waters and wetlands adjacent to these waters.

(2) Bureau of Reclamation (for any activities that may affect reservoir volume)

- Lake Fill Quantities
  - Generally, if material such as soil, rock, concrete, or asphalt is added below the high water line of the lake which may affect reservoir volume, a like quantity of material must be removed from below the high water line of the lake to an approved location unless otherwise approved by the Bureau of Reclamation. All additions or removals must be approved by the Forest Service in advance.
- Raise the Dam and Permit Holder Construction
  - While the Bureau of Reclamation is investigating the possibility of raising Shasta Dam the Forest Service will consider each permit holder request for construction or reconstruction on a case-by-case basis. If it is viable for a permit holder to build above the 1090 elevation (the lowest elevation construction would be allowed if the dam was raised 18.5 feet) it would be further evaluated. Topography, permit boundaries, existing facilities, cost of investment, cost of replacement, and cost/benefit of the development must be taken into consideration. As an example, a new road would probably be permitted below the 1090 elevation whereas a new cabin may not be permitted.

(3) Regional Water Quality Control Boards (for activities that may affect water quality)

- Shasta Lake falls within the jurisdiction of the Central Valley Regional Water Quality Control Board and Trinity Lake falls within the jurisdiction of the North Coast Regional Water Quality Control Board.
- The Regional Boards issue permits which govern and restrict the amount of pollutants that can be discharged into the ground or a water body. National Pollutant Discharge Elimination System (NPDES) permits, also referred to as Waste Discharge Requirements (WDR), are issued to regulate the discharge of pollutants to surfaces waters. All marinas discharging or proposing to discharge pollutants from a point source into any waters of the state are required to apply for and have a permit under the NPDES to discharge. The State has two NPDES permit programs, one for wastewater and one for storm water.
  - All marinas on Shasta Lake have Waste Discharge Requirements which they must comply with. The WDRs include elimination of gray water discharges from houseboats in compliance with Resolution No. 05-01-211. Additionally, storm water from these facilities discharges into Shasta Lake and is regulated separately under the General National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water Discharges Associated with Industrial Activities.
  - Trinity Lake marinas must comply with the NPDES but the North Coast Regional Water Quality Control Board has not prohibited discharge of gray water from houseboats.

(4) California Department of Fish and Wildlife

- Fishing Tournaments

- ◊ Permits are required.

(5) U.S. Fish and Wildlife Service

- ♦ Bald Eagles
  - ◊ Marinas are required to cooperate with the Forest Service and the U.S. Fish and Wildlife Service to protect bald eagle nesting sites along the lake shore during the nesting/fledgling period of January 1 to July 31. This may include the installation and maintenance of floating boom closures within or near the dock area and informational signing on land within the permit area. Potentially limited operation periods may need to be implemented. Expansion of some resorts has been restricted due to the potential for the resort's activities to affect the success of bald eagles nesting in close proximity to the resort. Marinas may choose to cooperate with survey and monitoring programs and the watchable wildlife program. Marinas may also participate in fish enhancement by hosting fish rearing cages in cooperation with the Forest Service and the California Department of Fish and Wildlife.

- ♦ Northern Spotted Owl
  - ◊ Expansion of some resorts has been restricted due to the potential for the resort's activities to affect northern spotted owl or its habitat in close proximity to the resort.

(6) Shasta and Trinity Counties

- ♦ Building permits, solid waste, water, septic systems, etc.

(7) CAL FIRE

(8) Alcohol and Beverage Control

Resort Constraints and Late Successional Reserves

Resorts located within areas designated as Late Successional Reserve (LSR) must comply with all requirements of the Northwest Forest Plan (See "Wildlife" section 3.6.3).

Fuels Management

As fire management activities are planned or executed within or adjacent to permitted facilities or activities, information is shared between the fire management staff, special uses administrator, and the permit holder. The goal is to keep the permit holder informed of intent, coordinate actions, and provide for any needs that may arise. Additionally, any management activities not within or directly adjacent to the lands or activities under permit that may affect the holder's operation(s) are communicated to the permit holder through the special uses administrator with assistance from the fire management staff.

Obstacle Marking Program

Many of the marinas voluntarily participate in marking underwater obstacles, both man-made and natural. The Forest Service supplies materials and GPS coordinates of sites that need marking. The obstacle marking program was entered into with strict guidelines provided by the Office of General Counsel, and is managed within the conditions of the Obstacle Marking Plan, which must be adhered to and kept current.

McCormick-Saeltzer Mercantile in Delamar near Bully Hill.

3.3 Other Commercial Services

Consider new unsolicited proposals for commercial services when appropriate under existing special use authorizations. Proposals must first meet the following minimum requirements before receiving further consideration:

- Proposal is consistent with existing laws and regulations relative to Forest Service management.
- Authorize no new exclusive uses on NFS land within the NRA.
- The proposal is consistent with the purposes identified in the National Recreation Area legislation.
- The proposal is feasible and viable as demonstrated in a Business Plan or other similar document.
- The proposal does not appear to have competitive interest and would not require a prospectus. (Proposals with competitive interest must be offered under a bid process that would require further review).
- The proposal is consistent with the desired Water Recreation Opportunity Spectrum (WROS) class for the location.
- The site can adequately support the required land and/or water based facilities.
- If the proposal does not utilize an existing resort/marina, the land required for the service has been minimized to the extent possible.
- The proposal is compatible with existing and planned public recreation sites and facilities, and resort/marina operations.
- The proposal does not allow for floating food and drink concession outside of resort/marina permit boundaries.
- The proposal is not for a "carnival type" or "amusement park" activities.

Consider offering a prospectus for new commercial services in areas shown to be currently lacking showers, RV dump facilities and groceries. See Table 2-26 below for the evaluation of potential sites that currently lack but need certain common services.

Table 2-26
Distribution and Need for Common Services

Location	Service							
	Showers	RV Dump	Convenience Store	Gas	Cabins	RV Park	Food Service	Small Boat Rentals
Shasta Lake								
Gilman Road	No	No	No	No	No	No	No	No
Jones Valley	No	No	Yes	Boat-Yes Car-No	Yes	No	Yes	Yes
Upper Pit River (Fenders Ferry)	No	No	No	No	No	No	No	No
Shasta Dam	No	No	No	No	No	No	No	No
Lakehead	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lower McCloud	No	No	No	Boat-Yes Car-No	No	Yes	Yes	Yes
Salt Creek	No	No	No	No	Yes	Yes	No	No
Trinity Lake								
North Lake	Yes	Yes	Yes	Boat-Yes Car-No	Yes	Yes	Yes	Yes
East Fork	No	No	No	No	No	No	No	No
East Side South Lake	No	No	No	No	No	No	No	No
Trinity Center	Yes	Yes	Yes	Boat-Yes Car-Yes	Yes	Yes	Yes	Yes
Bowerman	No	No	No	No	No	No	No	No
Tannery Hayward Main South Fork	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dam Southwest	No	Yes	Yes	Boat-Yes Car-No	Yes	Yes	Yes	Yes
Lewiston Lake								
North Lewiston Lake	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
South Lewiston Lake Hatchery	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

In general, special use authorizations will not be required for essential services within the NRA. "Essential services" are defined as those services that are necessary to support, operate, and maintain the existing permitted or authorized uses. Examples include but are not limited to:

- Bulk food delivery to marina stores and restaurant.
- Service contractors performing repairs on marina facilities.
- Taxi service.
- Mechanic hired to repair a private vessel on the water.
- Tow service for disabled vehicle.

Special use authorizations or sub-lease agreements with existing resort/marinas will be necessary for services of convenience that are not required for use and operation, but augment or enhance the existing use. Examples of "services of convenience" include but are not limited to:

- Dockside delivery of groceries or "take out" food to houseboat owners/ renters.
- On-site franchise food operations.
- Housekeeping and provisioning services.
- Boat livery.

The District Ranger is responsible for determining if a proposed use is considered essential or a convenience.

3.3.1 Food and Drink Concessions

Consider no proposals for floating food and drink concessions outside of resort/marina permit boundaries. Food or drink sublease agreements involving chain or franchises will prohibit prominent displays of commercial signing and/or logos.

3.3.2 Airplane or Helicopter Rides

Consider no proposals for airplane or helicopter rides which land or take off from National Forest lands or waters within the NRA.

3.3.3 Advertising Houseboats For Sale

Advertisements for houseboat broker services will not be allowed on boats or at the marinas. "For Sale" signs placed on boats on the lakes shall not exceed 24" by 18" in size and shall be limited in content to vessel price and contact information. Signs shall not include business names or logos. To prevent speculative commerce of permitted vessels, a limit of two ROV permit transfers per 12-month period for each per person will be enforced, barring extenuating circumstances as determined by the authorized officer.

3.3.4 Outfitters and Guides

Outfitters and guides that offer services within the NRA must obtain a special use authorization. Examples of outfitter guides are fishing & hunting guides and boat tours. The number of outfitter and guide permits may be limited if resource impacts or capacity limitations warrant.

3.3.5 Water Ski & Wakeboard Activities

Water ski and wakeboard schools must operate under agreement with an authorized marina, subject to review and approval by the Forest Service. Commercial water ski and wakeboard facilities, such as slalom courses and jumps, will only be allowed in locations designated by the Forest Service prior to use and approved in annual operating plans or sub-lease agreements.

Private and commercial portable slalom courses may be installed and used on the lakes for short term recreation use under the following guidelines:

- The slalom course must be installed in a location out of the way from other lake users.
- The slalom course may be used only during daylight hours. If deemed necessary by the Forest Service, the use of the slalom course may be further restricted to low-use periods such as weekdays or morning hours.
- The individual or group that installed the course is responsible for keeping the general public from using the slalom course.
- The individual or member of the group that installed the course must be in attendance whenever the course is used.
- During night time hours or any other time the slalom course is not being used, it must be removed from the surface of the lake or sunk to a depth safe for boating.
- Private slalom courses shall not be used for commercial purposes.

The Forest Service will monitor the use of private slalom courses for conflicts with other lake users. If deemed necessary by the Forest Service, permits for private slalom courses on specific areas of the lakes may be required.

3.4 Recreation Events

The following is supported by FSM 2355.35 WO AMENDMENT 2300-91-3 as well as the 2004 Region 5 letter of direction regarding motorized competitive events.

Permit Issuance Restrictions. Do not issue permits for:

- Competitive or group events in a closed zone.
- Competitive or group events in a restricted zone where the event would violate the established restriction.
- Individuals or companies filming or promoting vehicle use that would encourage improper use of vehicles on National Forests.
- Inappropriate events for National Forest use, such as obstacle courses, hill climbs, drag or acceleration events, weight or vehicle-to-vehicle pulls, or some events based on minimum times (FSM 2302 and FSM 2303).
- Competitive events with reasonable available alternative locations off National Forests.

Appropriate events minimize adverse effects, promote vehicle operation in harmony with the natural terrain, and enhance the experience with and appreciation of the forest environment. Examples include events based on driver's ability to travel without environmental or machine abuse, travelling in a predetermined safe time over an environmentally acceptable route, or following such a route by map and compass.

3.4.1 Fishing Tournaments

Also see "Commercial Recreation Events" below.

California Department of Fish and Wildlife has its own permitting requirements for angling events and organizations arranging a fishing event must obtain a permit from Fish and Wildlife as well as the Forest Service. Use of public boat ramps for fishing tournaments is discouraged unless held at times of extremely low recreational use. Authorizations at public facilities must be coordinated with the Forest Service campground concessionaire permit holder. Encourage using existing marinas for events.

3.4.2 Use of Amplified Sound Systems

Manage noise in accordance with the Code of Federal Regulations, Chapter 36 Part 261.10 (i) which prohibits operating "any device which produces noise, such as a radio, television, musical instrument, motor or engine in such a manner and at such a time so as to unreasonably disturb any person." Specific areas within the NRA may be subject to additional seasonal restrictions. Public-address systems may be authorized under special-use permit if the District Ranger determines that noise levels will not affect Forest resources significantly, including wildlife, and visitor experiences. Bands and/or musical instruments or equipment using amplified sound (e.g. amplifiers) conflict with the natural setting and will not be allowed.

3.4.3 Non-Commercial Events

Refer to Forest Service regulations and policy for direction on permits for non-commercial group use events. Several recurring non-commercial group use permits are issued annually for various religious and tribal events.

3.4.4 Commercial Recreation Events

A special use authorization is required for all commercial recreation events on National Forest land within the NRA.

The use of public boat ramp parking areas may be considered for staging areas for minor short-term events. Consideration will be given based on numbers of participants, season of year, and potential conflicts with other uses. Generally, large events with more than 50 participants plus spectators will be required to use an existing resort/marina. If use of public boat ramp parking area is authorized, the event must not restrict the flow of traffic within the boat ramp area. Docks may only be used to launch and retrieve boats. Seasonal restrictions may be imposed.

The authorized officer must approve recreation event locations and any advertising within the NRA, including the display of logos and event sponsors.

Unless specifically authorized, fishing tournament participants may not fish within 200 feet of marina docks. Fishing tournaments must also be permitted by the California Department of Fish and Wildlife.

Product demonstration activities at the NRA, such as "Demo Days", must be sponsored by marinas and approved in advance by the authorized officer.

3.5 Recreation Residences

Recreation residences are existing exclusive uses which are addressed and managed in accordance with laws, regulations, and national and regional policy which provides for the recurring issuance of permits to new owners of existing improvements. In the event a recreation residence is abandoned, relinquished without a subsequent applicant or revoked, the improvements will be removed from National Forest System lands.

Recreation residences are intended for personal recreation use only; they shall not be used as a permanent residence and on the Shasta Trinity National Forest they shall not be rented.

"Recreation residence tracts are managed in compliance with present and future federal laws and regulations, and present and future state, county and municipal laws, regulations, and other legal requirements that apply to the permit area, to the extent that they do not conflict with federal law, regulation or policy" (FS-2700-3a; Term Special Use Permit for Recreation Residences, Feb. 2007; Ref. FSM 2710). Management direction includes:

- Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan)
- Forest Service Manual (FSM 1920)

- Forest Service Manual (FSM 1950)
- Forest Service Manual (FSM 2340)
- Forest Service Manual (FSM 2710)
- Forest Service Manual (FSM 2720)
- Forest Service Handbook (FSH 2709 Chapters 10-50)
- Forest Service Handbook 2709.11 - Special Uses Handbook, Region 5 Supplement (2709.11-2000-1)
- Shasta County, California Building and Sanitation Codes
- Uniform Building Code
- Shasta County Zoning Code, Chapter 17.18
- Title 36, Code of Federal Regulations, section 251.50 (36CFR251.50)

3.5.1 Rental Policy/Permanent Residency

Recreation residences may not be used as a primary residence and may not be rented. However, there are two exceptions to this direction: Lot 7 in the Salt Creek Recreation Residence Tract and Lot 18 in the Silverthorn Recreation Residence Tract. These permit holders were granted life tenure early in the history of their special use permits and are allowed to occupy their residences on a full time basis. These permits will continue in this status until the current permit holders no longer occupy their homes. At that time, the permits will revert back to type site code 123 (recreation residence) from type site code 351 (life tenure).

3.5.2 Paint Color

Forest Service policy requires the use of paint colors that are neutral and generally darker than the surrounding landscape, and colors with low light reflectivity that blend more naturally with the forest setting. The forest maintains a list of approved colors developed by the Forest Landscape Architect which are approved for use within the NRA and recreation residence tracts. The range of colors was selected to conform to policy and to harmonize with seasonal foliage variation. The main body of the cabin must be painted with the darkest approved colors. Trim colors include both the main body colors and many lighter colors in shades of tan, green and gray. Clear or natural-colored stains or wood sealer applied over wood are also approved. A small number of cabins in the tracts are painted with conditionally accepted paint colors. All cabins should be in color compliance by January 2014.

Unless prohibited by local vendors, propane tanks in the recreation residence tracts are painted light tan or light green to reduce their visibility on the landscape. In the event that the propane vendor allows only white paint, the tanks are screened with approved materials and setbacks.

3.5.3 Roofing Colors and Materials

Asphalt composite shingle roofing or color-impregnated metal roofing (not painted) in shades of medium to dark brown, green or gray are approved roofing materials. Other roofing materials may be proposed for review and approval. Roof replacement is a modification to the exterior of the cabin and requires prior Forest Service approval. The forest maintains a list of approved roofing materials and colors.

3.5.4 Outdoor Lighting

To implement the Region 5 outdoor lighting policy, lighting is divided into two categories: essential and convenience.

Essential lighting is approved for installation at each entry point into the structure, and where there is a legitimate safety issue such as accessing the cabin via a steep or precarious trail or a long or steep stairway. Additional lighting may be approved on a case-by-case basis. Lights that are approved for locations other than

entry points are mounted as near to the ground as possible to focus light on the walking surface. This alleviates broadcast illumination of the adjacent forest, yet still provides for safe footing. Authorized lights not attached to the cabin are mounted on a pole, and wiring is buried unless the lights are solar powered and wiring is not required. Lighting is controlled by switches and not by motion sensors to eliminate unintended activation which can unfavorably impact wildlife and neighboring cabin occupants. Approved light bulbs are 40 watts or less, or yellow "bug" lights.

Convenience lighting is considered decorative or non-essential, and is commonly redundant with other existing light sources. Examples of decorative or non-essential lighting typically include lighted trails to neighboring residences and to the lake, lights that shine off of the deck or cabin towards the lake, lights along the edge of the driveway, string lights, or those that illuminate an entire driveway. Examples of redundant lighting include a light at the cabin entries combined with: lights on the corner of the house, the fascia, the deck rail, at or near the peak of the roof, on posts around the cabin or driveway, and multiple lights that illuminate the same or similar areas. These situations are considered on a case-by-case basis, but are generally not allowed.

The Forest Service supports a lighting policy exception in the Salt Creek tract. The Salt Creek Homeowner's Association has an agreement with the Lakehead Volunteer Fire Department, where permit holders leave a light on when the cabin is occupied so that in the event of an evacuation, emergency personnel can more readily determine which residences are occupied, facilitating a streamlined evacuation process. In the case where a cabin is not visible from the road, one roadside light may be left on all night when the cabin is occupied.

3.5.5 Deck and Patio Furniture Storage

Decks must be kept clean and uncluttered. White, very light or brightly colored patio furniture is not authorized. Until such furniture is replaced, it must be stored under dark brown or dark green covers on the deck, or stored in an enclosed space when the cabin is not in use. Brown, dark green or natural wood colored furniture is approved and may be stored neatly on the deck.

3.5.6 Satellite Dishes and Antennas

One satellite dish measuring two feet in diameter or less and mounted as inconspicuously as possible on the cabin or deck is approved. In lieu of a satellite dish, one antenna measuring five feet long or less and mounted as inconspicuously as possible on the cabin or deck is approved. Permit holders are limited to one dish or one antenna. If it is not possible to receive reception from the dish mounted on the cabin or deck, permit holders are required to provide a written description of the issue from the installer and a variance will be offered. Antennas are not generally authorized if not attached to the cabin or deck.

3.5.7 Accessibility

Recreation residences are not public facilities and as such are not subject to the Americans with Disabilities Act (ADA) requirements. However, upon request, permit holders are authorized to install an accessible ramp to one cabin entry. The square footage of accessible ramps is exempt from the maximum combined deck/porch/patio/walkway square footage described in policy.

3.5.8 Building Materials

Forest Service policy approves the use of rocks, logs, rough-sawn lumber or wood panels. In addition to these materials, the Forest also approves finished milled lumber (vs. rough-sawn). Composite decking may also be approved in tracts that have had historical evaluations with a determination that the tract is not eligible for listing on the National Resgister of Historic Places (NRHP). The following building materials are not approved for new construction: decorative iron railings and gates; brick chimneys, cabin facing or retaining walls; railroad ties; white vinyl window frames; and vinyl siding.

3.5.9 Retaining Walls and Safety Barriers

Retaining walls constructed of approved materials and serving a bona fide need to retain soil and maintain slope stability are approved. New retaining walls that are greater than four feet tall require Forest Service approval, engineering and a Shasta County building permit. Safety barriers attached to tall retaining walls where there is a falling hazard may be approved if appropriate materials are used in construction. Existing safety barriers constructed with unapproved materials must be upgraded upon replacement.

3.5.10 Chain Link or Other Fenced Pet Enclosure

Regional policy does not permit permanent pet enclosures. Chain link panels or other types of fencing used to enclose pets may only be used on a temporary basis. If the cabin is not occupied, the pet enclosure must be stored out of sight.

3.5.11 Gravel, Asphalt Paving and Concrete

Native ground surface retention is preferred. Gravel may be authorized when qualified personnel have determined that it is needed to mitigate resource damage such as erosion and sedimentation. Approved gravel is a natural dark color with natural textures. Asphalt paving is only authorized in extraordinary circumstances where a qualified engineer has determined that it is best suited for mitigating erosion and sedimentation, and is typically only authorized for very steep driveways which are prone to excessive rutting and sedimentation. The use of concrete may be approved for certain applications on a case-by-case basis.

3.5.12 Non-Native Plants

The Forest works with permit holders to eradicate nonnative plants and noxious or invasive species, and encourages replanting with approved native plants. Removal of nonnative plants that cover an excess of 50 square feet requires prior Forest Service approval. Herbicides are not approved for use without a completed NEPA analysis. Existing redwood trees do not have to be removed, but they are not approved for new plantings.

3.5.13 Mailboxes

Mail service is not available in the Campbell Creek or Didallas tracts. Mail service is available in the Salt Creek and Silverthorn tracts; however, roadside mailboxes are not approved. Mail will either be delivered to cluster boxes located in an inconspicuous location in the tracts, or permit holders will receive mail at the nearest local post office.

3.5.14 Motor Vehicle, Recreational Vehicle, Boat, and Utility and Boat Trailer Storage

Boats, trailers, waverunners/personal watercraft and off-highway vehicles may be stored seasonally, only on the lot and in designated parking areas. The peak season of use established on the forest is April 1-September 30 each year. However, because year round recreational opportunities are available at Shasta Lake, the forest provides an exception to regional policy: permit holders may complete a written application for authorization to store either one small ski boat or aluminum fishing boat during the off-season if they are being used frequently. If the boats are not being used, they must be stored offsite from October 1-March 31. Large boating-related equipment such as patio boats, pontoon boats, and associated large trailers may not be stored on the lot at all as they detract significantly from the natural forest setting. RV's and camp trailers may stay on-site for two weeks unless otherwise approved by the authorized officer.

3.5.15 Golf Carts

Region 5 policy states that "unregistered or inoperable vehicles are not allowed on the premises" (Special Uses Handbook, Region 5 Supplement 2709.11-2000-1.41.23f (6)). In addition, the California Vehicle Code (CVC) does not allow for the use of golf carts on public roads except in established golf communities or within one mile of such a community on travel ways developed specifically for the use of golf carts. The

California Department of Motor Vehicles (DMV) does not register golf carts for on-road use, consequently they cannot be used or stored in recreation residence tracts.

3.5.16 Trams

Existing trams are conditionally accepted in boat-in only tracts if they are pulled up above the high water line and stored inconspicuously after each use, and if they are in safe operational condition. For safety reasons, they must be locked when not in use. Regional guidelines prohibit permanent attachment of any kind to trees. If trees are used to anchor tram cables, the bole must be protected by covering the cable with rubber hose or a similar material and the cable must be removed and adjusted annually to accommodate increasing tree girth. Authorizations to install new trams or replace existing trams are determined on a case-by-case basis.

3.5.17 Trails to Lake

For boat-in only tracts, existing user-created trails to the lake are limited to one per lot, providing that the trail is not creating erosion or other resource impacts. For drive-in tracts, existing trails are conditionally accepted providing that the trail is not creating erosion or other resource impacts, and except where more than one lot can reasonably share the same trail. If more than one lot can share a trail, other trails will be obliterated or allowed to self-restore as required by the Forest Service. Trails may not be developed or improved without Forest Service authorization. The goal is to reduce the number of trails wherever possible.

3.5.18 Detached Carports and Storage Sheds

Detached carports are not authorized. Existing detached carports may be reduced to 40 square feet and remodeled into enclosed, detached storage upon approval, or they must be removed. Detached storage sheds in excess of 40 square feet are not permitted unless they are existing, built under the existing deck, and not attached to the residence. Storage sheds that meet these criteria are brought into compliance when they require major repairs or replacement. Plastic storage sheds are not permitted. Plastic storage bins that are lower than the deck railing height are permitted if the color blends with the surrounding forest.

3.5.19 Portable Shade Structures or Gazebos

Portable shade structures or gazebos are permitted if they are dark green or dark brown, easily assembled and disassembled, and stored when the residence is not in use.

3.5.20 Detached Wood or Concrete Stairs to Lake

Developed, detached stairways to the lake are generally not authorized. The visual effect of these stairways detracts from the national forest setting. Unless qualified personnel determine that these improvements provide a resource benefit or reduce a resource impact, they are not authorized.

3.5.21 Docks

For Salt Creek and Silverthorn recreation residence tracts, dock systems will be authorized to each respective homeowner association and limited to one slip per residence. For Campbell Creek and Didallis recreation residence tracts, allow one dock per residence with total area not exceeding 120 square feet or 240 square feet if the dock is shared by multiple permit holders. New docks must be approved by the authorized officer and be constructed with encapsulated floatation.

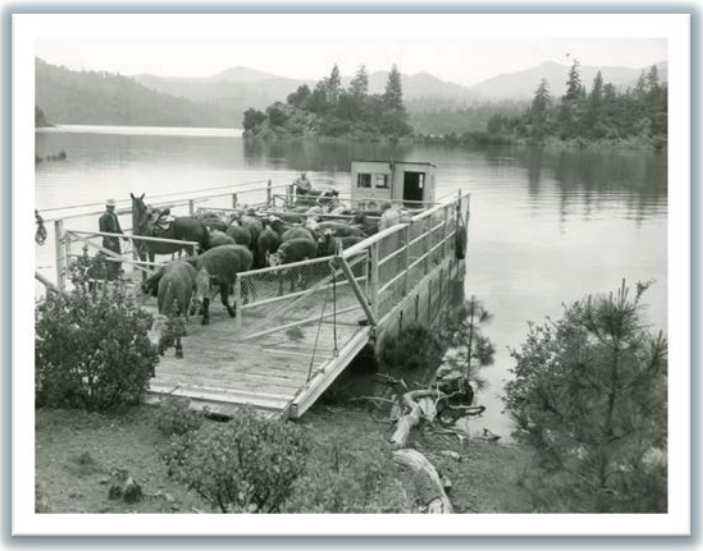
3.5.22 Water Systems

The Silverthorn tract receives public potable water from Shasta County Service Area 6. The Salt Creek tract has a private, potable water system that is owned and maintained by the Salt Creek Homeowner's Association. The Campbell Creek and Didallas tracts have non-potable water supplies only, which are drawn from Shasta Lake or nearby springs. Individual water tanks are approved in the Campbell Creek and Didallas

tracts. The maximum tank size is 1500 gallons, and must be dark green, dark brown or black. Typically, only one tank is authorized per lot. Additional existing tanks may be authorized if needed for fire prevention.

3.5.23 Fire Clearances

Existing policy (i.e., 30-foot clearance) is now authorized and monitored, however under new Regional policy the Forest Service will align with State Resources Code requiring 100-foot clearances around structures. See also Fire and Fuels Section 3.3



Cattle being transported on barge across Shasta Lake to grazing lands.

VEGETATION (AND GRAZING)

1. Historical Overview

Both the Shasta and Trinity Units lie almost entirely within the Eastern Klamath Mountains ecological subregion. This subsection is located in the southeastern part of the Klamath Mountains. It is bordered by the Sacramento Valley on the south, the Cascade Ranges on the east, and the Scott Mountains on the northwest. The predominant natural plant communities are mixed conifer series, Douglas-fir - ponderosa pine series, and Ponderosa pine series. Blue oak series and mixed chaparral communities occur on south-facing slopes at lower elevations. Canyon live oak series is common on very steep rocky slopes with stony soils. White fir series occurs at higher elevations.

Vegetation patterns may have been altered prior to European settlement by natural and human-induced events. Natural and human-caused fires have been a source of disturbance to vegetation for thousands of years, influencing the development of plant characteristics and vegetative patterns on the landscape. Fires started naturally by lightning strikes and spread by hot dry winds could quickly burn large areas of land. Naturally caused fires occurred frequently due to annual weather patterns and seasonal climatic extremes and would have kept the accumulation of woody debris and brush to a minimum. Frequent, low-intensity fires burn out quickly, preserving large trees, and maintaining diverse, multi-story forests. Mixed conifer forests are typical of short-interval, low-intensity surface fires.

Manipulation of fire by Native Americans was probably used to increase wildlife habitat diversity and to increase the "edge effect" (the open space/woodland interface) as well. Burning served to rid an area of unwanted insects and disease, encouraged berry production, and cleared ground under oak trees to enhance acorn collection. Fires also encouraged new growth of plant species that were used in basketry as well as attracting foraging ungulates. (FS 2005)

1.1 Vegetation

Shasta Unit

In 1947, Reclamation developed a land management plan for the Shasta Lake Area (Burrows 1947). To set up a management plan the authors felt it was necessary to develop a vegetative type map. In preparing the map, they recognized five types as follows:

Grassland:	The principal grasses of the area are annual bromes and fescues, wild oats, perennial rye and some stipa.
Brush:	Along the Sacramento drainage manzanita, buckeye, and poison oak are dominant. Along the southside ranges and extending from Big Squaw Creek up the Pit River, bluebrush, poison oak, and interior scrub oak form the principle brush species. The northside ranges from Big Squaw Creek to the Sacramento drainage are characterized by interior scrub oak, manzanita, scattered wedgeleaf ceanothus, with gradual infiltrations of bluebrush on north slopes and in general as one progresses northward.
Woodland:	Woodland type is characterized by Digger [(foothill)] pine, live oak, blue oak, with scatted occurrences of maple, black oak, and Oregon ash. This type supports an understory of annual grasses, bluebrush, wild grape, California snowdrop, and poison oak.
Mixed Broadleaf-Conifer:	This type was set up especially for the Shasta Area. At present it is characterized by the presence of black oak, maple, yellow [(ponderosa)] and Jeffery pine, with occasional scatted Digger [(foothill)] pine and Douglas-fir. The understory is composed of sparse coverage of annual grasses and browse plants.
Timber:	The characteristic species of this type are Jeffery and yellow pine, Douglas-fir, with occasional stands of knobcone pine. Understory vegetation is characteristically sparse.

The 1947 plan also noted,

> The past history of the Shasta Area definitely presents a picture of uncontrolled multiple use. Mining, grazing, and logging activities were all practiced with apparently but a single purpose—profit. Of these three activities, mining has left the most visible record of its past.
>
> Grazing has been a dominant factor in the economics of the area because it is a time honored practice of ranchers in California of grazing herds in the valley during the winter and then with the advent of spring moving into the higher summer range.
>
> Logging activities in the region can be summed up by the single statement to the effect that all the merchantable timber has been removed, with the exception of a few scatted stands. . . . Past logging activities were carried on to provide limber as well as railroad ties, timbers, and other needs of the mines in the vicinity.
>
> As aforementioned, mining has left a visible stamp on the area. . . .The principle damage due to mining activities was seen in the denudation of the west side of the Sacramento River in the vicinity of Little Squaw Creek, and Big and Little Backbone Creeks.
>
> In the Kennett area, E. N. Munns in 1921 found that complete smelter fume denudation of approximately 67,000 acres accompanied by partially denudation of an additional 86,000 acres had resulted in an estimated loss of more than 35 million cubic yards of soil during a period of 10 to 15 years.

"Before the smelters began operating, the mountains above the Sacramento River Canyon were covered with a lush coniferous forest. The major species of this forest were ponderosa (yellow) pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga taxifolia*). At lower elevations along the river, the forest gave way to a chaparral belt of which white-leaf manzanita (Arctoshophylos viscida) was the dominant species" (Kristofors 1973).

Restoration of the fume-damaged area began in 1922, when E. N. Munns (Forest Service) planted twenty-five small experimental plots of various grasses, brush species, and hardwood species on denuded land. Only a small percentage of these plantings survived. This may have been due to poor site selections. Between 1932 and 1938, Charles J. Kraebel of the California Forest and Range Experiment Station made more extensive plantings between Squaw Creek and Backbone Creek. None of the grasses planted survived, but the majority of willow cuttings and ponderosa pine plantings were successful. Between 1939 and 1947, no experimental reforestation work was done because of lack of funds. Between 1948 and 1957, the Bureau of Reclamation provided most of the funds and supervision for the erosion control work while the Forest Service supplied the work crews. Crews averaged between forty and fifty men and worked in the field from the first autumn rains until the beginning of March. A special device known as the Dawson tool was invented to dig a twelve inch hole in the rocky Keswick soil so that trees could be more easily planted. In 1957, another cooperative erosion control program by the Bureau of Reclamation and the Forest Service was started on the Shasta watersheds using techniques which had been previously employed around Keswick Reservoir. As of May 31, 1961, the following work had been completed in the Shasta reservoir watersheds:

Check dams constructed	18,016
Pine seedlings planted	1,470,444
Broadleaf seedlings planted	166
Broadleaf see planted (other than acorns)	1,025 pounds
Willow and other broadleaf cuttings planted	24,605
Acorns planted	14,501 pounds

Trinity Unit

The timber industry commenced in the mid-1850's when numerous small sawmills began operating sporadically, usually in conjunction with mining activities. The timber companies at that time used very selective harvest techniques, taking only the largest and most easily accessible trees for the supply of a very localized market associated with the settlement of Weaverville and with local mining efforts. Though logging became an important industry by the mid 1940's, significant volumes were not taken until after WWII, when modernization and improved technologies occurred. Production peaked countywide (Trinity County) in 1959. (FS 2005)

The 1951 project report (Bigler 1951) for Trinity and Lewiston reservoirs described the existing vegetation in the area:

> The predominate tree of the vast timbered areas involved is the Douglas fir (55%), especially on the rugged slopes and higher grounds. Ponderosa pine (25%), sugar pine (13%), white fir (6%), incense cedar, and red fir are also of importance as a source of lumber. Due to the rugged terrain and the lack of accessibility, many areas as yet have never been subjected to logging. Black, white, and live oak are the predominate trees of the more or less meadow and upper flat land areas, while ravine and stream banks support healthy growths of ash, alder, dogwood, maple, and azalea. Manzanita grows will on the higher slopes, while considerable buck brush and chaparral is encountered in the high, more dry, open areas.

1.2 Grazing

Shasta Unit

Prior to the construction of the dam, the 1938 Land Use Study of the Kennett Area (Brandeberry and Barnum) indicates that "a large proportion of the land [was] used for some form of seasonal grazing of livestock." The report goes on the say:

> The best field estimates indicate that 1100 to 1150 head of cattle and 4000 to 5000 head of sheep and goats are grazed on lands up to the ridge tops with the National Forest. . . . Some of the best cattle ranges are found along the main streams and rivers which will be flooded by the reservoir.
>
> With flooding of the reservoir a considerable readjustment in range practice must be made. All grazing will be forced back on the higher more rugged country which is less desirable range. In several cases these areas are not so accessible as those now used, and as a result may involve increased grazing costs. Relatively definite allotment boundaries have been determined in the proposed management plan with due consideration to the numbers and kind of stock now using the land as well as to the most practical use of the forage. Seven areas have been set aside for grazing, two of which are for sheep and five are for cattle.

According to a grazing management plan prepared by District Forest Ranger John Gilman in the 1940's, some 7000 head of cattle were grazed on the McCloud, Squaw Creek and Pit River between 1870 and 1905. The stockmen routinely burned the vegetation to increase accessibility and promote new growth of grasses. With the establishment of the National Forests came regulations prohibiting this activity, beginning a bitter conflict between the stockmen and Forest Service employees.

"Reynolds Basin was noted as a hangout for a tough, bold and desperate gang of cattle rustlers, who took an annual toll from the struggling cowmen" (Gilman1945).

One of the early responsibilities that the Forest Service received along with the responsibility for Shasta Lake was the task of barging animals across the lake to reach grazing permit areas in the McCloud, Squaw Creek and Pit River drainages. Ranger Gilman also wrote in his *Grazing Management Plan* (Gilman 1945),

> On the Shasta Dam reservoir we shall need motor boats for administration and fire control. If we could secure a barge, one of these motor boats could be used in the spring and fall to transport the stock across the arm of the reservoir in the vicinity of the old Silverthorn Ferry.
>
> Within a few days, the Bureau of Reclamation is putting into operation, a ferry system consisting of a fairly large barge which will be moved by a motor boat. It will operate in the vicinity of the forks of the Pit and McCloud Rivers, and will be specifically used to transport iron ore trucks. This is a war measure and the barge may be available to us after the war. For the present it might be possible to use this ferry, outside of the trucking hours, for transporting the stock. I am taking the matter up with the Reclamation Bureau.

According to 1966 Forest Service Functional Plans (FS 1966b),

> Grazing use by domestic livestock under Forest permit . . . rapidly declined [after] 1950. This downtrend is quite apparent when comparison is made of the grazing use for the 1950 and 1965 seasons. During 1950, the Shasta Unit had more than 900 head of cattle under permit to 17 ranchers on 13 grazing allotments. . . . By 1965 the seasonal use had voluntarily dropped to 150 cattle under permit on three allotments . . . . Some of the causes for this decline [were] (1) rising costs of overall ranch operations, (2) losses of principle forage producing areas by brush encroachment, and (3) more extensive use of permanent pastures and feed lots.

> All indications show that grazing will be a very minor use in the Shasta Unit. It appears to be just a matter of time because of economic reasons, before all commercial grazing will be discontinued and the remaining allocations closed out.

By 1972, "changing economic conditions, home ranches and feed areas inundated by the reservoirs, access problems, and other encroachments, all have contributed to a decline in commercial cattle grazing in this area to the point where there no longer are any active grazing permits in effect" (FS 1972).

Trinity Unit

Numerous ranches were present in the Upper Trinity River watershed (which includes the Trinity Unit) in the late-1800s and early 1900s. However, grazing of cattle was limited in scope due to the steep terrain. Most of the grazing activity occurred on the flat terraces along the Trinity River in the Trinity Reservoir Watershed. Many of the best rangelands were inundated by Trinity Lake in 1963.

Reclamation's 1951 project report (Bigler 1951) notes that, "

> Only a small amount of grass covered meadow will be inundated by Lewiston Reservoir. In the wider portions of the Trinity Reservoir, on the Stuart Fork, East Fork, and Trinity branches, considerable acreage of meadow grazing areas will be inundated. These areas are at present used by ranchers who bring in cattle and sheep in the spring to consume the lush grass growth that provides good grazing. The red granitic soils characteristic of the wooded mountain sides also support a healthy ground cover of grass that provides considerable grazing even into late summer.

By about 1966 there were no active grazing allotments within the Unit boundary. Additionally, all federally owned land had been classified as unsuitable for cattle or sheep grazing and would not be used for this purpose. (FS 1966b)

2. Setting

2.1 Vegetation

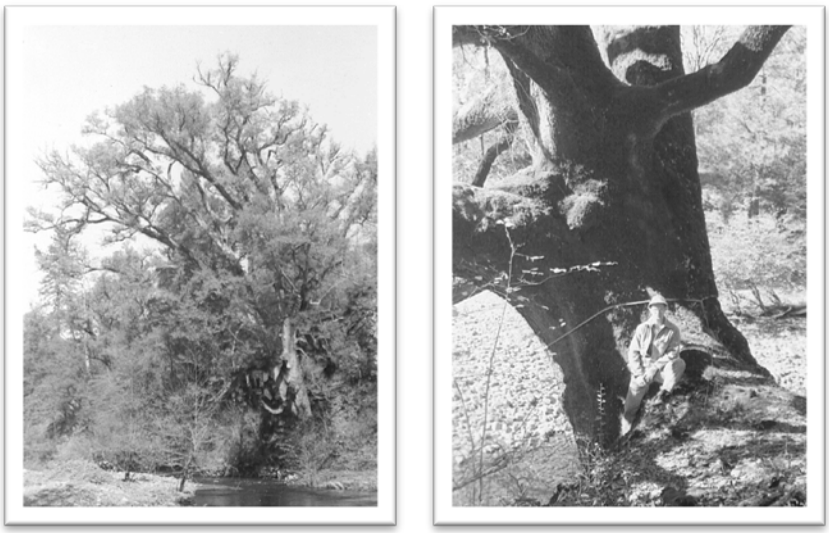
"The diverse pattern of climate, topography, and parent materials in the Klamath Mountains create heterogeneous patterns more complex than that found in the Sierra Nevada or the Cascade Range" (Skinner 2006 et al. 2006).

"Northwest California's flora is diverse at many levels. It is the home of 3,540 taxa, more than in all of New England and adjunct Canada. Only one other region of roughly equivalent size in the nation, the southern Appalachian Mountains, is comparable" (Sawyer 2006).

Distinctive substrates, such as the outcrops of limestone or serpentine rock found in the NRA, often have patchy or island-like distributions and support unusual plant communities (Harrison et al. 2000).

2.1.1 General

Shasta Unit



Giant live oak (24 foot circumference) on Squaw Creek in 1957.

Shasta Lake is surrounded by mountainous terrain forested primarily by brushy, hardwood stands, chaparral, oak woodlands, mixed conifer forest and ponderosa pine-dominated conifer stands. Vegetation diversity tends to be high in the area, due largely to the favorable climate and varying geology. Elevation and sun exposure create variation in the forest stands around the lake. Vegetation types include: Douglas Fir-Mixed Conifer Forest, Mixed Conifer, Ponderosa Pine, Canyon Oak Woodland, Black Oak Woodland, Gray Pine Woodland and Chaparral.

On north aspects or deep well-drained soils, the vegetation is primarily a mixed conifer forest with Douglas-fir being the principal species. The forest stand composition ranges from large diameter sized trees to young plantations which resulted from past timber harvesting activities. Within the forest stands hardwoods and shrubs are the principal understory species with black oak, dogwood, big-leaf maple, California hazelnut, and deerbrush occurring at different densities.

On south aspects or shallow rocky soils, there is a dramatic change in the vegetative communities. Hardwoods and shrubs become the predominant cover, principally white oak, live oak, and manzanita. Foothill pine, knobcone pine, ponderosa pine, and Douglas-fir also occur intermittently.

Logging and fumes from copper smelters destroyed many low-elevation forests, today the slopes are clothed in whiteleaf manzanita and a scattering of knobcone and ponderosa pines. Chaparral is less extensive upriver away from historic mining districts, where individual chaparral shrubs grow under the conifers.

The few commercial timber stands in the Shasta Unit are found in remote sections of the Unit on steep terrain, such as the narrow confines of the Upper Pit River arm of Shasta Lake. As these stands are an important scenic backdrop for the lake, and as access is difficult, there has been no regulated (programmed) timber harvest in the Shasta Unit. Some small salvage sales have been offered in areas accessible by road and hazard trees are removed from developed sites and from road corridors for safety reasons.

Trinity Unit

The dominant vegetation community in the Trinity Unit is Mixed Conifer, with ponderosa pine, sugar pine and Douglas-fir being the predominant species. Many of the stands are composed of mature trees. The slightly higher elevation somewhat higher rainfall, and overall lower temperatures relative to the Shasta Unit have resulted in an almost uniform coniferous forest cover except on some south-facing slopes dominated by oak and brush. Mixed hardwood communities occur at lower elevations and include species such as black oak,

madrone, tanbark oak, canyon live oak and big leaf maple. The shrub community includes an array of chaparral species such as deerbrush, wedgeleaf, manzanita, chamise and bitterbrush. Several south facing slopes on Trinity Lake contain shrub fields that are prime winter range for the Weaverville deer herd (FS 2005).

2.1.2 Communities of Limited Range (found in the NRA)

Limestone

The Hosselkus and McCloud Limestones within the Shasta Unit represent a unique limestone ecosystem. The unique biotic attributes of this ecosystem include a new shrub species discovered in 1992, a localized endemic plant discovered in 1958 and wider-ranging plants endemic to limestone.

The Shasta ageratina (*Ageratina shastense*) is a shrubby composite endemic to the Hosselkus and McCloud Limestones north of Shasta Lake. It is listed by the California Native Plant Society as a member of List 4 (plants of limited distribution-a watch list). It is locally restricted to the shady north slopes of limestone outcrops in the Gray Rocks and Devils Rock area. The species was discovered by G.L. Stebbins in 1958.

In 1992 a new species of shrub in the rose family was discovered growing off Highway 299 on limestone. The new plant, Shasta snow-wreath (*Neviusia cliftonii*), is presently known from fewer than 20 occurrences near Shasta Lake. Most of the known populations are within the Shasta Unit and were primarily found in locations where streams meet the lakeshore. This species, whose closest relative occurs in the southeastern part of the United States, is essentially a living fossil, thought to be a relic from the Arcto-Tertiary (65-15 MYA) period. It is listed by the California Native Plant Society as a member of List 1B (Plants rare, threatened or endangered in California and elsewhere).

Several species of plants including the ferns *Cheilanthes cooperae* and *Adiantum capillus-venerus* are widespread limestone endemics, which occur here. These species illustrate the unique chemical and physical environment of limestone.

Serpentine

"California has one of the world's richest serpentine endemic floras, rivaled only by Cuba, Turkish Anatolia and New Caledonia" (Harrison et al. 2000). "Northwest California has the distinction of having the most diverse serpentine flora and vegetation in western North America. [Serpentine] outcrops occur over a wide range of elevations and climatic conditions, and they contribute significantly to the region's uniqueness" (Sawyer 2006).

Serpentine, like most igneous rocks, contains iron and magnesium mixed with silica, but iron and magnesium are unusually high in these substrates. Serpentine soils are also high in heavy metals such as chromium, cobalt and nickel. While serpentine outcrops differ in their concentrations of these metals, many sites contain levels that are toxic to many plant species. Another challenge serpentinic soil poses is a lack of nutrients. Finally, serpentine soils are thin. This means there is less substrate on which nutrients and water can be held and made available to plants. Nonetheless, many species, equipped with unique physiologies to withstand the stress, thrive on these soils.

Serpentine habitats are geologic islands in a sea of other soil types. When these rocks were initially exposed, plant species dispersed onto them from the surrounding substrates. Eventually, those plant species that could colonize and survive on serpentine evolved on a separate trajectory from their non-serpentine relatives. In many cases, the new species survived on a patch of serpentine because they were poor competitors on other substrates. As a result of this island effect, serpentine substrates house a large number of species that are found only on serpentine and have highly restricted ranges. By enduring the unfavorable chemical ratio, they benefit from the absence of competing plants.

2.1.3 Sensitive Plants

Each Regional has a list of plant and animal species identified by the Regional Forester for which population viability is a concern. The intent of the sensitive species program is to avoid actions which may cause a species to become threatened or endangered. The Region 5 Sensitive Plant List is updated periodically.

Forest Plan Endemic species are rare species confined wholly or mostly to the Shasta-Trinity National Forests. These are afforded the same protection as sensitive species by mandate of the Shasta-Trinity Land and Resource Management Plan.

Currently, the following plants known to occur within the Shasta Unit are listed as Sensitive and/or Endemic species: Shasta snow-wreath (*Neviusia cliftonii*), Shasta ageratina (*Ageratina shastensis*), Shasta County arnica (*Arnica venosa*) and northern clarkia (*Clarkia borealis* ssp. *borealis*). Two other plants are known to occur just outside the unit and can be expected to grow here as well, Cantelow's lewisia (*Lewisia cantelovii*) and Butte County morning-glory (*Calystegia atriplicifolia ssp. buttensis*).

Currently, the following plants known to occur within the Trinity Unit are listed as Sensitive and/or Endemic species: Shasta County arnica (*Arnica venosa*), Shasta chaenactis *(Chaenactis suffrutescens*), *clustered lady's slipper (Cypripedium fasciculatum*), mountain lady's slipper (*Cypripedium mantanum*), dendriscocaulon lichen (*Dendriscocaulon* intricatulum), Oregon willow herb (*Epilabium oreganum*), Scott Mountain fawn lily (*Erythronium citrinum* var. *roderickii*), Elmer's lupine (*Lupinus elmeri*), thread-leaf beardtongue (*Penstemon filiformis*), and English Peak greenbriar (*Smilax jamesii*). Scott Mountain fawn lily is geographically restricted to the upper Trinity River watershed and is found in numerous places in this unit. The plant blooms very early and dies back to the ground before the summer recreation season starts. Thread-leaf beardtongue is present in Fawn and Stoney Point campgrounds.

2.1.4 Invasive Plants

Non-native plants were introduced with the arrival of the first European settlers. Originally their rate of spread was slow and the number of species low. Over time, however, the number of invasive plant species that have become established has increased dramatically and their rate of spread has become exponential. As a result, millions of acres of public lands are rapidly undergoing degradation and ecosystem health is threatened by the displacement of native species.

Invasive plants are distinguished from other non-native plants by their ability to spread (invade) into native ecosystems. A species is considered invasive if it meets these two criteria: (1) it is non-native to the ecosystem under consideration and (2) its introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112 issued February 3, 1999).

Some of the known effects of invasive plant growth on native plants include:

- Reduction of biodiversity.
- Loss of endangered, threatened and sensitive species, and their habitats.
- Loss of food sources and habitat for native insects, birds, and other wildlife.
- Changes to natural ecological processes such as plant community succession.
- Alterations to the frequency and intensity of natural fires.
- Disruption of native plant-animal associations such as pollination, seed dispersal and host-plant relationships.

The Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.), requires cooperation with State, local and other Federal agencies in the application and enforcement of all laws and regulations relating to management and control of noxious weeds.

The spread of weed plant populations in the NRA is a management concern. At the present time, populations of the following species have been identified and mapped in the NRA: Scotch broom, French broom, Spanish broom, tree of heaven, yellow star-thistle, bull thistle, Italian plumeless thistle, rush skeletonweed, American pokeweed, common mullein, fig, common St. Johnswort, oleander, Johnsongrass, Dyer's woad and Dalmatian toadflax. Insufficient funding over the years has hindered the development of a systematic program to effectively deal with invasive species. Although, some areas have been treated, for example, Scotch broom is a management problem in the Fairview area of Trinity Lake and has been manually removed several acres at a time since 2004; repeat treatment is needed because of resprouting and a long-lived seed bank. Dyer's woad *(Isatis tinctoria)*, also known locally as Marlahan mustard, has spread down Hwy. 89 and the Trinity River from its source in Scott Valley to the north, and is now well established on river bars and roadsides. Plants have been hand pulled in the Carrville area since the year 2001 to protect sensitive plant habitat and to keep the woad from spreading.

The Forest is a signatory to the Shasta County Weed Management Area Memorandum of Understanding and the Trinity County Weed Management Cooperative Memorandum of Understanding. The Shasta County Department of Agriculture, Caltrans and Western Shasta Resource Conservation District have been effective weed program partners in the Shasta Lake unit.

2.1.5 Insect and Disease Program

Susceptibility to insects and diseases tends to be a function of forest structure, stocking, and composition. Minimizing stress and maximizing vigor are basic strategies for healthy trees and forests. Forest structure is the vertical and horizontal arrangement of trees or the arrangement of size classes. Structural diversity makes a forest interesting. Structure is a particularly important consideration for the spread of dwarf mistletoes, root diseases, and defoliating insects. For example, dwarf mistletoe seeds shed from infected overstory trees infect understory host trees. Multiple layers or mixed sizes of trees are conducive to mistletoe spread. Composition is the mix of tree species. Composition is important because different tree species tend to have different susceptibilities to insects and diseases. Stocking or forest density is another forest characteristic that effects susceptibility to insects and diseases. Trees compete for limited site resources specifically water, nutrients, and light. As the number of trees increases, the probability of each tree getting enough resources diminishes and vigor declines. As vigor declines, trees become more vulnerable to insects and diseases and less able to recover from damage. The effects of overstocking are made worse by drought. Thinned stands tend to be vigorous because fewer trees are competing for site resources.

Forest composition, structure, and stocking can be manipulated to minimize incidence of pest insects and certain diseases. This is the foundation of long-term management for "healthy" forests. Don't manage the pest; rather, manage forest conditions to avoid inviting or encouraging the pest.

Review of historical records for the NRA found one reference (Burrows 1947) to insect infestation in the Shasta Unit: "Localized infestations of *Ips* and pine beetles in portions of the timber area have been determined already based upon a cursory examination conducted during the current season. To what extent the brood which emerged has spread this infestation will not be known until a field examination is made during the coming fall in conjunction with the annual fall examination of the U.S. Bureau of Entomology and Plant Quarantine." The 1947 Plan goes on to recommend that "every effort should be made to hasten the clearing of the flooded area, with special attention being given to the removal and disposal of infested trees. If possible, sanitation cuts of infested trees above the high water line should be included in the clearing operations. The slash resulting from clearing operations should, insofar as is possible, be completely burned before the opening of the next year's fire season. This will reduce the possibility of further infestation through reduction of probable brood sites."

Today, most of the insect and disease situations in the NRA (particularly bark beetles and root diseases) result from tree stress brought on by overstocking, poor site characteristics or both, and are exacerbated by drought. Specific insects and disease pathogens delivering the final death blow in these situations include

western pine beetle (*Dendroctinus brevicomis*), red turpentine beetle (*Dendroctinus valens*), pine engraver beetle (*Ips* spp.), fir flatheaded borer (*Melanophila drummondi*), annosus root disease (*Heterobasidion annosum*) and black stain root disease (*Leptographium wageneri*). Other problems such as high levels of tree decay, including red ring rot (*Phellinus pini*) and dwarf mistletoe (particularly western dwarf mistletoe (*Arceuthobium campylopodum*)), have resulted from a lack of vegetation management through the years.

Insects and diseases have had several major negative impacts affecting management of developed recreation areas including: (1) increased tree hazard levels; (2) reduced visual and aesthetic quality; (3) increased fuel/fire potential and (4) predisposing trees to additional insect and disease problems (e.g., dwarf mistletoes contributing to high stress levels, predisposing infected trees to increased root disease and bark beetle attack). Sanitation thinning, to reduce disease levels, competition for limited resources and tree stress, has been recommended on many occasions over the last 20-30 years, but has only been implemented in a limited number of campgrounds.

Many of the insect and disease assessments done by the Forest Health Protection staff have been informal site visits where advice and assistance are given on the spot. However, many are more detailed, and result in the submission of a formal evaluation report. The following evaluation reports are on file at the Northern California Shared Service Area Office and detail insect and disease conditions on the NRA:

Table 2-27
Pest Evaluation Reports Available for NRA

Location	Type of Evaluation	Date
Tannery Gulch Campground	Hazard trees	May 1979
Tannery Gulch & Hayward Flat Campgrounds	Pest conditions	December 1982
Stoney Point Campground	Dwarf mistletoe	October 1989
Alpine View Campground	Pest conditions	January 1990
Hirz Bay Campground	Ponderosa pine mortality	March 1991
Shasta Lake	Bald eagle nest trees	April 1993
Shasta Lake	Tree mortality	June 1993
Lakeshore Campground	Tree mortality	March 1994
Near Holiday Harbor	Oak failure	May 1999
Near Alpine View Campground	Pole Burn Plantation	June 2000
Tannery Gulch & Fawn Group Campgrounds	Hazard Trees	February 2003
Clark Springs, Alpine View & Hayward Flat Campgrounds	Pest conditions	August 2005

As mentioned earlier, the focus of the insect and disease program in the NRA has been developed recreation sites. As an illustration of the current situation, the following is an excerpt from the August 2005 evaluation report. "Tree disease and insect pest conditions at Alpine View and Hayward Flat have been addressed in previous evaluation reports dating back to the early 1980's. The insect and disease problems described in these reports still exist today, and have only intensified with time. In summary, the stands in the campgrounds are overly dense, and the trees have many of the insect and disease problems that are common in older, stressed stands. These include widespread high levels of tree decay (red ring rot in Douglas-fir, and some sugar and ponderosa pines; occasional schweinitzii butt rot in Douglas-fir); occasional scattered instances of black stain rood disease in Douglas-fir; scatted bark beetle and wood borer activity (red turpentine beetle, western bark beetle and pine engraver beetle in the pines, and flatheaded fir borer in white fir), and widespread dwarf mistletoe in the ponderosa pine at Hayward Flat Campground."

It should be noted that because the physical and biological conditions at the Trinity Unit are similar to those at the Shasta Unit many of the forest health conditions, issues and challenges are the same. However, because more Douglas-fir is present at the Trinity Unit, several additional forest pests have had significant impacts. Additionally, management opportunities are limited particularly on the east side of the Unit due to current northern spotted owl habitat requirements.

While much has been done through the years to address vegetation, insect and disease management issues on the NRA, more remains to be done. Unfortunately, many vegetation, insect and disease management situations require more resources than are normally available to the Forest. There is a need to develop vegetation management plans detailing current vegetation conditions for each developed recreation area, and containing scheduled treatments and follow-ups.

Port-Orford-Cedar

Concern regarding Port-Orford-cedar (POC) in northern California and southwest Oregon is great, due to the spread of the exotic root disease pathogen, *Phytophthora lateralis*. Once infected with the pathogen trees die rapidly. Long distance spread of *P. lateralis* results from moving infected seedlings or infested soil into previously disease-free sites. Humans have been the primary transporters of the pathogen. Major spread in forests has occurred via earth movement in road construction, road maintenance, mining, logging, and traffic flow on forest roads. In general, the pathogen has not spread into areas where a lack of access has prevented human activity. Once infested soil is deposited along a road or trail, *P. lateralis* can travel down slope in water.

Port-Orford-cedar is not found in the NRA, but is nearby. The nearest POC to the Shasta Unit is a single tree north of Pollard Flat on a gravel bar on the east shore of the Sacramento River, approximately six miles north of the Unit's northern boundary. Groups of POC become more common upstream from there. The closest Port-Orford-cedar root disease to the Shasta Unit is located near the mouth of Shotgun Creek, approximately 11 miles north of the northern boundary of the Unit. Although POC is absent from the Trinity Unit, it is present in scattered groups along the Trinity River and its tributaries starting approximately 2½ miles north of the northern boundary of the Unit, near Trinity River Campground. POC root disease is not present in the Trinity River drainage.

2.1.6 Late Successional Reserve (LSR)

The Northwest Forest Plan designated late-successional forest reserves on some federal lands, within the range of the northern spotted owl, in Oregon, Washington and California. Northwest Forest Plan guidelines require land managers to protect these reserves from large-scale natural and human disturbances.

The Northwest Forest Plan Record of Decision (FS and BLM 1994) adopted seven land allocations. Objectives for the LSR land allocation are to "protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest related species including the northern spotted owl." These reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem.

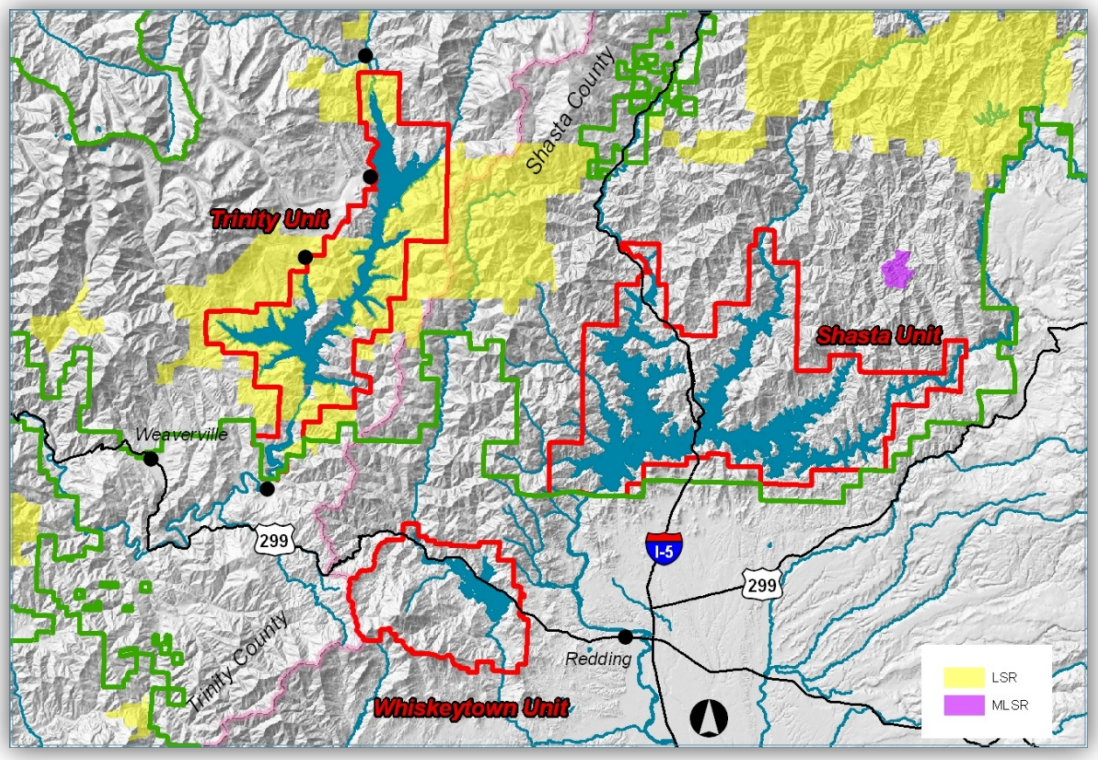


Figure 2-4. Late Successional Reserve.

2.2 Grazing

Currently there is no authorized grazing on either unit.

3. Management Guidance

The NRA Legislation gives basic guidelines on management of natural resources, which would include vegetation. The NRA is to be administered "to best provide for such management, utilization and disposal of renewable natural resources as in the judgment of the respective Secretary will promote or is compatible with and does not significantly impair public recreation and conservation of scenic, scientific, historic or other values contributing to public enjoyment." Therefore, vegetation in the NRA has been and continues to be managed to maintain and enhance forest health, scenic quality, wildlife habitat and public health and safety.

3.1 Threatened, Endangered and Sensitive (TES) Plant Species and Habitat

Protect known populations of threatened, endangered and sensitive plant, lichen, and fungi species and their habitats, and implement mitigation measures if necessary to maintain or enhance their continued viability. Conservation strategies for these species will be utilized as they are developed. Survey for TES plants, lichens and fungi prior to ground-disturbing projects.

3.2 Native Plant Use in Revegetation

Follow the national direction (FSM 2070) for the use of native plant materials in the revegetation, restoration, and rehabilitation of National Forest System lands. This includes making native plant materials the first choice

in revegetation for restoration and rehabilitation of native ecosystems where timely natural regeneration of the native plant community will not occur.

3.3 Invasive Plants

3.3.1 Prevention

In accordance with Executive Order 13112 (Invasive Species), do "not authorize, fund, or carry out actions that [the agency] believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."

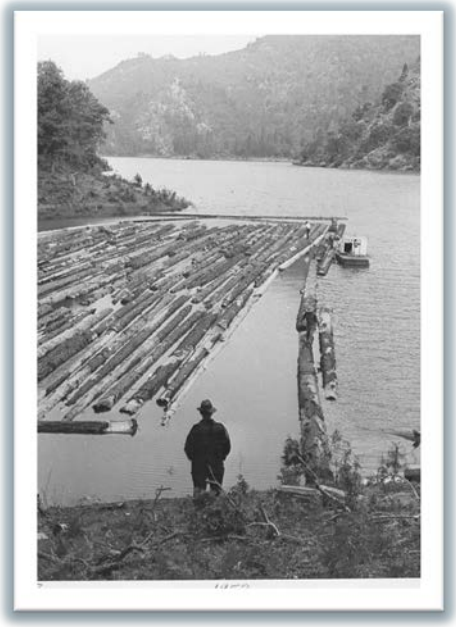
Follow national direction (FSM 2080) which includes:

- When any ground disturbing action or activity is proposed, determine the risk of introducing or spreading noxious weeds associated with the proposed action.
- For projects having moderate to high risk of introducing or spreading noxious weeds, the project decision document must identify noxious weed control measures that must be undertaken during project implementation.
- Use contract and permit clauses to prevent the introduction or spread of noxious weeds by contractors and permittees.
- Ensure that all seed, feed, hay and straw used on National Forest System lands is certified weed-free. These products include livestock feed, erosion control and reclamation materials. All new contracts shall include a clause requiring the use of certified weed-free hay and straw products.

3.3.2 Treatment

An integrated approach for addressing invasive plant problems will be explored since it offers the most thoroughly effective treatment of invasive plants by using a variety of treatment options to eradicate, control, or contain invasive plants where they occur. The combination of treatment methods, including manual, mechanical, biological, controlled grazing, prescribed burning, cultural, and herbicidal methods, will be tailored to fit each site-specific situation and each type of invasive plant. By proposing several methods for invasive plant control, this approach recognizes that using only one management method is unlikely to be effective in all situations.

This strategy is consistent with Forest Service guidelines on applying adaptive management to site-specific environmental analysis for invasive plant management projects.



Rafting logs on Shasta Lake in 1952

3.4 Timber Harvest

The NRA Legislation (Section 4(a)) provides for "such management, utilization, and disposal of renewable natural resources as in the judgment of the respective Secretary will promote or is, compatible with, and does not significantly impair, public recreation and conservation of scenic, scientific, historic, or other values contributing to public enjoyment. Such administration shall be carried out under land and water use management plans which each Secretary shall prepare and may from time to time revise in consultation with the other."

The first NRA Plan and EIS (1976b & 1976a) refined this direction. These documents state that in the Shasta Unit "plan no regulated timber harvest and limited unregulated timber harvest to accessible areas. No roads, either temporary or permanent, will be constructed for timber harvesting." And in the Trinity Unit "continue to harvest the timber resource of the unit, recognizing the special values of the National Recreation Area by varying the method of harvest."

Management direction in the 1988 NRA Plan and EIS (1988b & 1988a) was similar. These documents stated that "Any timber management activity must meet the conditions of management prescriptions (including visual quality objectives) assigned by the Forest land and resource management plan." "Plan no regulated timber harvest in the Shasta Unit. Apply unregulated harvest only as needed to enhance NRA objectives (including prevention of significant losses to insects and disease)." And in the Trinity Unit "Conduct regulated harvest in a manner that is compatible with NRA objectives. Treat slash from timber harvest activities to meet adopted Visual Quality Objectives (VQOs) or fire hazard reduction objectives, whichever is the more restrictive standard."

Management direction for the NRA in the current Forest Plan (FS 1995) states: "plan no regulated timber harvest in the Shasta Unit. Unregulated harvest will occur to maintain a healthy, diverse, esthetic, residual stand. In the Trinity Unit, conduct regulated harvest in a manner that is compatible with NRA objectives." Additionally, "vegetation [in the Shasta Unit] is managed to a level that results in healthy forest stands, maintenance of wildlife habitat, good scenic quality, public health and safety, and reduction of fire hazards. Within designated conservation areas and bald eagle and peregrine falcon nest territories, vegetation is managed for habitat enhancement to retain critical habitat elements over the long term." Within the Trinity

Unit, "forest vegetation is managed to maintain and enhance forest health, visual quality, recreational opportunities and wildlife habitat within the NRA. Regulated yields of wood fiber are provided."

NRA standards found in the Code of Federal Regulations (36 CFR 292.13) also includes a subsection (c) on "Protection of Roadsides" which reads, "Provisions to protect natural scenic qualities and maintain screening along public travel routes will include: (2) Retention of trees and shrubs in the above-prescribed roadside strips to the full extent that is compatible with needs for public safety and road maintenance. Wholesale clearing by chemical or other means for fire control and other purposes will not be practiced under this standard."

3.5 Firewood (Fuelwood)

The Code of Federal Regulations (36 CFR 261-Prohibitions) states: "Cutting or otherwise damaging any timber, tree, or other forest product, except as authorized by a special-use authorization, timber sale contract, or Federal law or regulation." As well as, "Removing any timber, tree or other forest product, except as authorized by a special-use authorization, timber sale contract, or Federal law or regulation."

Personal use fuelwood cutting permits (special-use authorization) are issued for portions of the Trinity Unit. Each year a "Personal Use Fuelwood Map" is issued for the Forest listing fuelwood cutting conditions and designating areas open to fuelwood cutting.

However, the Shasta Unit is normally closed to fuelwood cutting. With over a million visitors a year, this policy was developed to provide protection for the dead and down material on the Unit. The limited amount of material that is available is needed for recreational use and wildlife habitat. Occasionally there are requests from individuals to remove a single dead and down tree, in these cases the Recreation Officer or their acting can issue a 30-day site-specific fuelwood permit. Before issuing a permit a review is done to make sure the tree is not useable for recreation or wildlife.

The gathering of dead and down wood for campfires is allowed without a fuelwood cutting permit. (36 CFR 223.7) Note that a campfire permit may be required depending on location and season.

3.6 Insects and Diseases

Based on the NRA Legislation, protection of the scenic and recreational values associated with forest stands is important. Timber stands provide an important scenic backdrop for the lakes and recreation facilities. Insect and disease-caused injury and mortality may increase in campgrounds because campers cause tree stress and damage through soil compaction and tree scarring. Treatments may be considered to ensure healthy and safe vegetation complexes are maintained over time. On reviewing the evaluation reports from the last thirty years, it is readily seen that several issues tend to repeat themselves. Foremost among these is the need to aggressively thin in order to reduce tree stress and susceptibility insects and diseases. Schedule treatments during seasons of low recreational use where feasible and desirable.

Nesting sites utilized by bald eagles in this area are generally restricted to live, prominent trees located adjacent to a source of freshwater fish. Ponderosa pine nest trees have a risk of being killed by the western pine beetle. A quantifiable increase in the risk of ponderosa pine mortality is associated with stress factors, such as dwarf mistletoe, and by a high amount of biomass (basal area) on the site (Schultz, David E. April 13, 1993. Shasta Lake Bald Eagle Nest Sites (3700 File Letter)). Treatments may be considered to ensure suitable nest and perch trees are maintained over time.

3.6.1 Port Orford-Cedar

As mentioned above, Port-Orford-cedar does not occur within the boundaries of the NRA but can be found nearby. Port-Orford-cedar root disease has been identified in POC along the Sacramento River

approximately 11 miles north of the northern boundary of the Shasta Unit, but is not present in the Trinity River watershed.

An integrated approach to deal with the spread of Port-Orford-cedar root disease includes prevention, restoration, detection, evaluation, suppression, and monitoring. Guidance on the management of POC may be found in the Forest Plan and in the 2006 publication *Managing for Healthy Port-Orford-cedar in the Pacific Southwest Region* (prepared jointly by Region 5 Forest Health Protection and Natural Resources Management, Silviculture and Genetics).

3.6.2 Stump Treatment Policy

All the National Forests in Region 5 have reported finding annosus root disease. Potential impacts of the disease include: increased susceptibility of infected trees to attack by bark beetles, mortality of infected trees presently on the site and, in recreation areas, depletion of vegetative cover and increased probability of tree failure and hazard.

Heterobasidion annosum (also known as *Fomes annosus* in the past) causes annosus root disease. The fungus is similar to the common heartrot fungi, and forms fruiting bodies or conks in decayed stumps, under the bark of dead trees, or, rarely, under the duff at the root collar. Infection centers start when airborne spores produced by the conks land and grow on freshly cut stump surfaces. The fungus grows down the stump into the roots and then spreads through root contacts into the root systems of adjacent live trees, resulting in the formation of enlarging disease centers. It is possible to reduce the impact of annosus root disease through detection, evaluation, prevention, and suppression.

The following guidance regarding annosus root disease comes from the Region 5 Supplement to the Forest Pest Management Handbook (FSH 3409.11). The objective of annosus root disease prevention is to prevent establishment of the disease in stands. Once annosus root disease becomes established in most forest stands, no economically feasible procedure for directly suppressing the disease is available. Therefore, prevention is the most efficient and economical method of reducing the impact of H. annosum. Prevention of annosus root disease includes treatment of freshly-cut conifer stumps with registered products (contact Forest Pest Management for currently registered and effective materials). Region 5 requires treatment of all conifer stumps in recreation sites. Outside of developed recreation and high value sites, the line officer makes the decision on whether or not to treat stumps.

In July, 2006, a Forest Health Protection Program Functional Assistance and Performance Accountability Review of the Shasta-Trinity National Forest found that borax treatments were often not performed during routine hazard tree removal operations. This treatment needs to be incorporated as part of the NRA's (and Forest's) hazard tree program.

3.7 Hazard Trees

Dead, dying and live defective trees are an important part of a healthy, functioning forest ecosystem. They play many ecological roles in forests such as altering plant succession and providing wildlife habitat. Retention of these types of trees is necessary to meet the needs of snag dependent species and ecosystem health. Forest Plan contains specific direction in this area.

Although dying and falling trees are important in the development of forests, they are not welcome in high use recreation areas where they risk human life and property.

People enjoy recreating in forests, particularly forests with large old trees. Large trees are more likely to contain significant amounts of internal wood decay and other defects. Thus, recreation managers are often faced with an apparent paradox -- how to maintain safety for visitors while sustaining the forest in an aesthetically pleasing condition.

Tree hazards develop from a variety of causes. These causes include weather-induced damage, diseases, insect infestations, fire scarring, flooding and channel undercutting, and genetically induced flaws such as V-shaped crotches. However, one of the major sources of wounding and resultant disease and hazard in campgrounds is campers. Axe throwing, chopping, hanging lanterns, dumping hot ashes at tree bases, etc. cause permanent damage that leads to decay and hazard. Not only do openings in the bark weaken trees, they allow decay fungi and insects to enter.

By definition a tree is considered hazardous if it has defects that may cause a failure resulting in property damage, personal injury or death. Therefore, for a tree to be a hazard it must have both a structural weakness and a nearby "target" (e.g., structure, vehicle, or person) that could be damaged or injured if the tree falls. This excludes trees that block views, create too much shade, drop too many needles and such. There is a big difference between a hazard tree and a nuisance tree.

The value of a target has a direct bearing on the relative hazard a tree represents. A tree falling on a fence is less serious than one falling on a visitor center. Defective trees near a heavily used campsite or picnic table represent a higher risk than do trees in areas infrequently used by visitors because the probability of a person being injured is greater should a tree fail. Hazard trees in such areas have a high priority for removal or other corrective treatment. Forest Service directives (FSM 2332) state that "consistent with preserving the recreation resource, remove trees or tree limbs identified as hazardous at developed recreation sites."

Coordination with the NRA resource specialists will take place prior to removal of any hazard tree.

Forest Service policy states that all open Forest Service managed facilities will be inspected annually by a trained employee for potential hazards. If any hazard trees are identified they will be removed or mitigated as soon as possible or the site (area) will be closed to public access. Depending on the amount of wood to be removed, a firewood permit or a small salvage sale contract could be used to insure that the government is compensated for the product. Alternatively, the trees may be felled and left on the ground as course woody material, if this does not create a new hazard.

In permitted facilities, it is the permit holder's responsibility to identify and mitigate hazardous trees within the permit area boundary. The Forest Service will inspect identified trees before removal to insure that they meet the hazard tree criteria and to assess whether the agency wants to sell the trees. The Permittee does not have free salvage rights to the wood. Depending on the amount of wood to be removed a firewood permit to a small salvage sale contract could be used to insure that the government is compensated for the product. If it does not create new hazards the trees can be fell and left on the ground as course woody material. Prescriptive resource protection measures for hazard tree removal are identified in the Developed Recreation Site Concession Special Use Permit project Decision Memo, signed November 30, 2012. Additionally, these measures are included within the Concessionaire's annual Operation and Maintenance Plan.

With regard to the campground concessionaire program, the permit holder has a financial responsibility for removing hazard trees and associated slash not to exceed 1% of their annual gross revenue generated the prior year. For example, if the concessionaire's gross annual revenue was $970,000 in 2011 the applicable financial responsibility would be up to $9,700 for removing hazard trees and associated slash in 2012. If the need for hazard tree removal exceeds the concessionaire's financial responsibility, the remaining funding for the work would have to come from Forest program funds.

Each recreation residence permit includes a clause limiting removal of vegetation (which includes trees, alive and dead) without prior approval from the Forest Service.

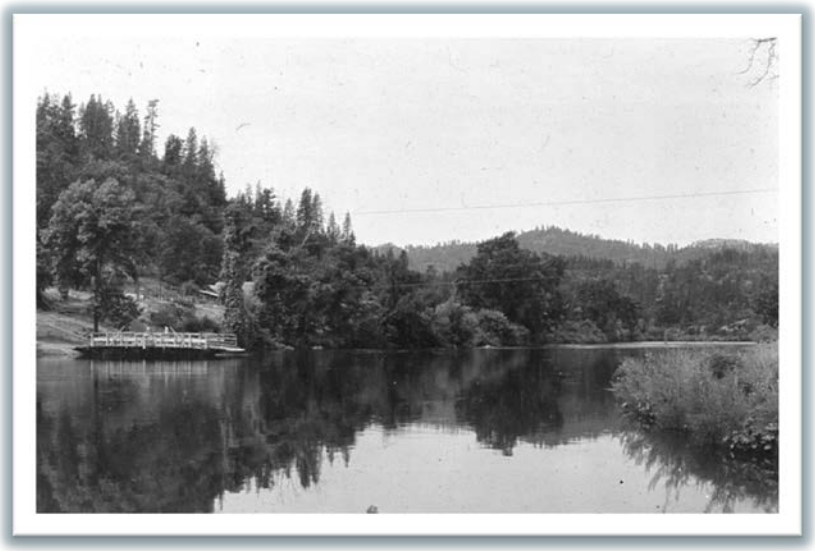
When a private landowner requests that the Forest Service cut a tree located on NFS land that is a hazard to life or property on private land, we must evaluate the situation as soon as possible and make a report to the Authorized Officer, who will then make a decision on how to resolve the situation.

3.8 Devils Rock-Hosselkus Research Natural Area (DHRNA)

The DHRNA was established to represent: (1) the unique target elements of limestone ecosystem and (2) the California black oak vegetation type for the Klamath Mountains Physiographic Province.

Management direction for the DHRNA is found in the STNF Forest Plan (FS 1995) and in the DHRNA Management Plan.

See the "Geology and Soils" Section for more information on the DHRNA.



Silverthorn Ferry on the Pit River.

VISUAL RESOURCES

1. Historical Overview

One hundred and twenty-five years before the creation of the NRA, most of the visitors to the area were travelers along the Siskiyou Trail. Their records give an idea of the scenery/terrain that they viewed in what was to become the NRA. On September 1, 1841 Lieutenant George Emmons, of the U.S. Exploring Expedition, began an expedition from Fort Vancouver to California along the Siskiyou Trail. By October 5 they were breaking camp just below Castle Crags and heading south. The following is an account of part of their journey published in the book *Siskiyou Trail* (Dillon 1975):

> Frequent stops were necessary to rest [the animals]. Six times the track crossed the swelling Sacramento to avoid the worst mountain slopes, though it generally followed the west bank. . . . Whichever side they chose, the travelers had to scramble a tortuous course in and out of tributary creeks and deep, dry *arroyos* which, in winter, would have been channels brimming with thundering torrents. They passed along deep ravines lined with large boulders then a succession of mountain ridges and outcroppings whose small basaltic stones cruelly hurt the horses' hooves. . . .The wonder of it was that more animals were not lost or crippled in the maze of mountain ridges, ravines, canyons, granite rocks, and pine and oak woods.
>
> As far as [Emmons] could see, there extended a succession of mountaintops . . . . Some were wooded, others covered only with undergrowth. The madrone which the travelers called arbutus or "strawberry tree" now became abundant. . . .The Sacramento, thirty yards wide, was one long staircase of rapids . . . . The peaks appeared to be about three thousand feet high, rocky and uneven. . . . Perhaps only Breckenridge [the Horticulturalist] could enjoy that day's trek through good-for-nothing country. He was all wrapped up in *Quercus* collecting: "Oaks" he wrote; "I do not know what to think of them, they are so varied in character."

> On October 10, 1841, Emmons exited via a terraced slope from both mountains and stony barren foothills. It was now smooth sailing across the dry sea of grassland which was the Sacramento Valley.

With the creation of Shasta Lake, the National Park Service went to work on a Master Plan (NPS 1947) for the area. The plan contains the following assessment of the Recreational Area's landscape: "The intimacy of man and nature in this place, the magnificence of mountain forms, the charm of the forest, and the efforts of Nature to restore where man has impoverished the cover, the frequent bands of deer observed swimming the lake and the generally fine wildlife population, and many other elements of the Shasta Landscape make it a rich and varied recreational treasury." A few years later, their *Project Report on Recreational Potentialities* (Bigler 1951) discussed the scenic values of the proposed Trinity and Lewiston Reservoirs:

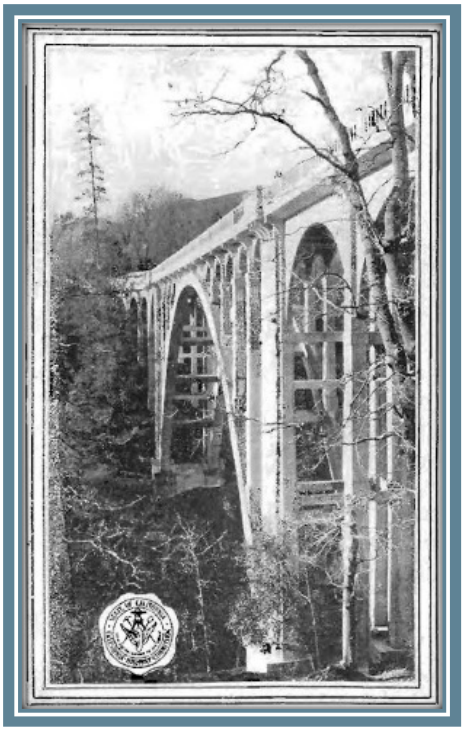
> The Trinity River country has long been noted for its scenic values. Surrounded by evergreen timber to the waters very edge in the majority of areas the reservoirs will not decrease the scenic value but will, in a way, alter it. At present, a sense of confinement is sometimes felt in traversing the deep winding canyons. The presence of a reservoir, from a landscape point of view, will create a more spacious uplifting state of mind. Both bodies of water, from any given point on their surface will be partially hidden by adjacent hills or ridges which will create a feeling of expansiveness. From certain places on the reservoir, and especially from the higher vantage points surrounding the reservoirs, excellent vistas of the high Trinity Alps country, Mount Shasta, and the distance high peaks of the Cascade Range will be visible.

The 1953 Shasta Lake Recreation Area Development Plan, prepared by the Forest Service, spoke to the attractiveness of each arm of Shasta Lake.

> The most attractive arm of the lake from all standpoints is the McCloud. This arm has a heavier forest cover and the several limestone formations lend a pleasing variety to the scenic attractions....Less attractive is the Pit Arm which has been severely treated by fires and its waters discolored and brackish because of its source. Furthermore, clearing on this arm was not completed, leaving submerged snags which are unsightly and a menace to navigation. However, a main tributary of the arm, Squaw Creek, rivals the McCloud for attractiveness. The least attractive is the Sacramento Arm. Its watersheds have been depleted of forest cover and heavily eroded as a result of smelter fumes and repeated fires leaving the entire west shoreline unattractive for recreation development.

The Public Use Plan prepared in 1956 for the future Trinity and Lewiston Reservoirs acknowledged the importance of visual quality along roads in a recreation area and included development policies for roadside zones. The Plan (FS 1956) states: "Roadside zones within the Trinity Lakes Recreation Area will be managed to maintain an attractive and natural setting for the traveling public. These strips will embrace all national forest lands within 200 feet on each side of the centerline of all roads consistently used by recreationists." The Plan goes on to say, "encroachment on a roadside zone by structures, demonstration areas or other occupancy will not be permitted if such use can serve its purpose if located outside the zone."

As previously mentioned, one of the major purposes from creation the NRA was scenic values. The enabling legislation called for "the conservation of scenic…values contributing to public enjoyment of…lands and waters…." In line with the NRA Legislation, the first management objectives developed for the NRA, Shasta Lake included "to maintain a natural appearance to the great portions of shoreline which will not be developed and control development sites to create a natural blending with the surroundings" (SCRC and FS 1965b). For Trinity and Lewiston Lakes the objectives included "to protect the natural beauty of the lakeshores" (TCRC and FS 1965).



Doney Creek Bridge
Photo from *California Highways*, January 1927.

Distinctive Doney Creek Bridge Now Open to Traffic

The second of three large arch bridges which are an important feature of the reconstruction of the Pacific Highway through the Sacramento Canyon—the bridge across Doney Creek—has been completed and opened to traffic. The design of the Doney Creek structure harmonizes with its surroundings, and its position overlooking the Southern Pacific railroad, along the river at the bottom of the canyon, provides the traveler with views of mountain and stream that will add to the pleasure of a trip over this section of the state highway (CHC 1927).

Harlan D. Miller (1880-1926) was the State Bridge Engineer for the California Highway Department from 1923 until his untimely death in 1926. During his short tenure as State Bridge Engineer he made radical changes to the way California designed bridges. Miller's most visible effect on California bridges was the consideration given to design aesthetics. His designs were recognized in their own periods as possessing beauty and boldness. He designed the Doney Creek, Charlie Creek and Dog Creek Bridges. The California Division of Highways dedicated the Dog Creek Bridge in honor of Miller while he was ill prior to his death. The bridge was constructed after Miller's death in 1927.

2. Setting

Every landscape has its own character, that is, the overall impression created by its unique combinations of visual features (such as land, vegetation, water and structures) as seen in terms of form, line, color and texture. When individuals view the environment, whether during an everyday commute or on a first time trip to the area, the visual characteristics strongly influence responses—positive and negative. Interestingly, it has been found that most people will generally agree on which views have high or low visual quality.

"Research has shown that high-quality scenery, especially that related to natural-appearing forests, enhances people's lives and benefits society. . . . Research findings support the logic that scenic quality and naturalness of the landscape directly enhance human well-being, both physically and psychologically, and contribute to other important human benefits. Specifically, these benefits include people's improved physiological well-being as an important by-product of viewing interesting and pleasant natural appearing landscapes with high scenic diversity" (FS 1995b).

Currently, the National Forest Scenery Management System (SMS) is the process used for planning and design of the visual elements of multiple use land management. Scenery management is based on the criteria and guidelines in the *Landscape Aesthetics: Handbook for Scenery Management*, Agriculture Handbook Number 701 (FS 1995b). This system was implemented in 1996, superseding the Visual Management System and replacing National Forest Landscape Management, Volume 2, Chapter 1, Agriculture Handbook Number 462 issued April 1974. The goal of the Scenery Management System is to create and maintain landscapes having high scenic diversity, harmony, and unity while managing for ecosystem sustainability and constituents' values and expectation. Policy directs National Forests to use SMS for all projects after it is integrated into the Land and Resource Management Plan (Forest Plan). SMS may be used on a case by case basis if the current Forest Plan refers to the Visual Management System.

Shasta Unit

The central visual attraction of the Shasta Unit is, of course, the lake itself, set in a landscape of red volcanic soils and limestone bluffs. The waters of Shasta Lake back up into four river canyons called "arms." These arms account for most of the 365 miles of shoreline and the innumerable small coves and inlets for which the lake is famous. Each arm has its own distinctive character.

The Sacramento Arm lies in the widest canyon and is characterized by broad expanses of water between manzanita-covered slopes dotted with occasional oaks and conifers. Much of the shoreline along the McCloud and the Squaw Creek arms is dominated by conifers. Developed campgrounds occupy the flats along the McCloud arm. The Squaw Creek arm is undeveloped, and the site of the historic Bully Hill mine is the only evidence of human activities. The Pit Arm is characterized by steep, rocky canyon walls forming a narrow channel that winds 20 miles up the Pit River Canyon. This arm offers the greatest diversity, especially in the upper reaches, due to the rugged terrain and diversified vegetation patterns. The upper Pit Arm was not cleared prior to the completion of the dam. World War II broke out about the time the clearing crews got to the confluence of the Pit and Squaw and they soon left. The dead trees sometimes lend an eerie appearance to the shores.

The Shasta Unit has the most visual interest during late spring and early summer when the water level is high and the streams are running full. As the water level drops, bare ground is exposed below high-water level, which may be seen as detracting from the overall visual quality. Other events/features that impact the lake's natural visual character include shoreline erosion and the resulting water turbidity, the extensive land disturbance caused by Interstate 5 and the railroad, hillside erosion caused by the old copper smelter north of the dam, old mining activities and fire lines created in 1999 using bulldozers. Prior timber harvests in background views, including those on privately owned land, deter from the natural visual quality. Vegetation management activities in the foreground and middleground views are unnoticed by the casual forest visitor.

The Unit contains portions of highways that are part of the State Scenic Highway System. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been officially designated. These highways are identified in Section 263 of the Streets and Highways Code. State Route 151 from Shasta Dam to near Summit City is an officially designated State Scenic Highway and Interstate 5 from State Route 44 near Redding to Shasta Reservoir is eligible for designation. North of the Shasta Unit, Interstate 5 between Highway 97 and Highway 89 is a segment of the All-American Road, Volcanic Legacy Scenic Byway. The section of Lake Boulevard (County Route A18) within the NRA is an officially designated County Scenic Highway.

The Shasta County General Plan (as amended through September 2004), section 6.8 Scenic Highways, also has this to say about Interstate 5: "Interest has been shown for obtaining official scenic highway designation for the stretch of Interstate 5 north of Shasta Lake to the Oregon border. This corridor is one of the most spectacular scenic routes in Northern California. Along this corridor are outstanding views of Shasta Lake, the Sacramento River Canyon, Castle Crags, and Mount Shasta. Continuing efforts may be made to incorporate this segment of I-5 into the State's Master Plan for officially designated highways."

Trinity Unit

At an elevation of 2,400 feet, Trinity Lake nestles in a horseshoe basin at the foot of the Trinity Alps. The area is endowed with rugged mountain scenery and coniferous forest which grow to the shoreline. Rich vegetation colors and textures, combined with the mountainous backdrop and deep blue lake, provide the visitor with a high-quality visual experience. Although less severe than on Shasta Lake, annual fluctuations in lake level are a visible human impact.

The surface of Lewiston Lake fluctuates less than four feet yearly. The resorts, old mining sites, and roads surrounding this small lake slightly detract from the natural lake setting. A large, barren borrow area west of the dam has a significant visual impact.

Prior timber harvests in background views deter from the natural visual quality of the lake viewshed. Timber management activities in the foreground and middleground views are not noticeable to the casual forest visitor. Views of developed recreation facilities, the Trinity Dam, the Trinity Center Airport and privately owned homes also detract from the natural visual character.

At the creation of the NRA, the highway (now SR 3) along the west side of Trinity Lake was recognized as having scenic qualities. The NRA Legislation authorized the Secretary of Agriculture "to acquire scenic easements or such other interests, including ownership of the land therein, as he determines to be appropriate to protect and assure the appearance of a strip of land not to exceed six hundred and sixty feet on each side of the centerline of Federal Aid Secondary Highway Numbered 1089 between the points where said highway crosses the south line of sections 10 and 20, township 35 north, range 8 west, and where it crosses the south line of section 18, township 36 north, range 7 west, on the northwesterly side of the Clair Engle-Lewiston unit…." A 1966 Forest Service memorandum (FS 1966a) spoke further on this topic. The Deputy Chief wrote, "protection of the roadsides of Highway 1089 will require special and priority attention. . . .The objective is to keep the adjacent strip free of such improvements, timber cutting, utility lines, advertising devices, and commercial uses that will impair the natural environment and beauty of the foreground to the highway. This does not necessarily mean that none of these uses may be made on any part of this strip but it does mean that any uses must be under prescriptions and restrictions that will keep them out of sight, or substantially so, or completely unobtrusive." The intention of the Washington Office's direction was solidified in the Federal Register, Part 251 of Chapter II, Title 36 CFR: "(1) Prohibition of new structural improvements or visible utility lines within a strip of land extending back not less than 150 feet from both sides of the centerline of any public road or roadway except roads within subdivisions or commercial areas. In addition to buildings, this prohibition pertains to above-ground power and telephone lines, borrow pits, gravel, or earth extraction areas, and quarries."

In 1990, the portion of Highway 3 from Weaverville to the Gazelle Callahan Road was designated as the Trinity Heritage National Scenic Byway. This section of highway is also eligible for designation as a State Scenic Highway.

3. Management Guidance

3.1 Evaluation of Visual Resources and Impacts

All developments and long-term activities in the NRA will be designed with the intent of protecting scenic values. Currently, the Forest uses the Visual Management System to protect scenery and the Forest Plan adopted visual management objectives (VQO's). The Scenery Management System will be utilized when the Forest Plan adopts the system.

Visual Quality Objectives are based on the sensitivity of the viewed area, distance from the viewer and the amount of acceptable alteration to the natural environment by management activities. VQO's are defined as: preservation, retention, partial retention, modification and maximum modification; they identify the maximum amount that a landscape can be altered by management activities. "Preservation" allows ecological changes only. "Retention" provides for management activities that are not visually evident to the casual Forest visitor. Management activities remain visually subordinate to the characteristic landscape under "Partial Retention". "Modification" means management activities may dominate the characteristic landscape but must borrow from naturally established form, line, color, or texture.

As defined in the Forest Plan and the Visual Management System, areas seen from highly sensitive places will meet a VQO of Retention within 1/2 mile from the viewer and partial retention in the middle ground, 1/2 mile to 5 miles. The following recreation areas and travel corridors have a high sensitivity level: Shasta Lake, Trinity Lake, Lewiston Lake, developed recreation sites, Interstate 5 and Highway 3.

Moderately sensitive areas have a VQO of partial retention within 1/2 mile from the viewer and modification from 1/2 mile to 5 miles. Moderately sensitive travel routes are Eastside Road (County 106), Gilman Road (35N60/County 7HO1 from I-5 east to McCloud River bridge), and Trinity Dam Boulevard (County Road 105). Developed recreation sites and marinas/resorts as seen from sensitive areas will meet a Modification VQO. Areas within the foreground of developed recreation sites, including marinas/resorts will meet a Retention VQO.

3.2 Standards and Guidelines of the NRA Built Environment

Permittees will utilize concepts from the *Built Environment Image Guide for the National Forests and Grasslands* (FS 2001). The term built environment, as used in this guide, refers to structures and signs installed or operated by the Forest Service, its cooperators and permittees. The built environment influences visitors' experience as much as the natural environments in the forests. The *Built Environment Image Guide* (BEIG) advocates structures that will resonate in form, shape, scale, color and materials with the natural environment.

The basic guiding principle to keep in mind is that visitors are coming to the National Forest to be in the natural environment. Use of materials that complement nature in color, shape and form will enhance and support the visitor's experience.

3.2.1 Materials

Exterior building materials play a big part in how well a structure blends in with its surroundings. High quality materials will result in high quality facilities; avoid using recycled items that would otherwise be discarded. Metal, recycled plastic and concrete may be used if they support the 'natural look' in form and color.

Roofing materials appropriate for use in the NRA are patterned asphalt shingles; textured, colored concrete; and standing-seam metal. Roofs will be in neutral colors, for example gray or brown, not pastels, such as blue. In forested areas roofs will be brown or dark Forest Service green; roofs near the water may be gray. The use of flat roofs and gambrel roof will be avoided.

3.2.2 Color

Color choice has a tremendous impact on how well a structure blends with the surrounding landscape. Colors that blend with shadows and other dark tones in the landscape help buildings recede rather than stand out. Bright colors, light colors, and colors not found in the landscape increase a structure's visibility.

Appropriate color choices in forested areas on the NRA are beige, tan, brown and dark green. On or adjacent to the lakes, weathered blue and gray are acceptable. Shiny aluminum surfaces and bright colors are not appropriate and will not be used.

Also see "Recreation Special Uses" section 3.5.2.

3.2.3 Massing and Scale

Use building materials in scale with the surrounding environment. For instance, in areas with large trees larger dimensioned timbers reflect the natural environment. Close to and on the lakes, smaller timbered structures are appropriate.

Boating at the Junction of the McCloud and Pit Rivers.

WATER RESOURCES

1. Historical Overview

The creation of the Central Valley Project (CVP) was all about water and reducing the threat of drought and flood in California. The 1942 book entitled The Central Valley Project (Writers Program 1942) described the CVP this way, "for nearly a hundred years California's Great Valley—heart of its rich agricultural empire—has suffered from both flood and drought. The Central Valley Project will alleviate both evils. It will spare this region the effects of too much water and too little, by remaking the landscape, redistributing rivers over the valley's whole 500-mile length, storing up water in the wet regions and releasing it in the dry."

However, construction of Shasta, Trinity and Lewiston dams drastically altered the hydrologic conditions within the adjacent watersheds; basically portions of rivers and streams were converted to freshwater lakes. For example, creation of lakes changed the sediment transport capabilities of channels at the perimeter of the lake, causing aggradation of sediment and channel bedload to occur where channels enter Shasta and Trinity Lakes. Another change was the inundation of many miles of streamside riparian corridors.

Building of the dams also had major effects on anadromous fish as discussed in the Fisheries Section.

2. Setting

2.1 General

Shasta Unit

The four major tributaries to Shasta Lake are the Sacramento River, McCloud River, Pit River and Squaw Creek, in addition to numerous minor tributary creeks and streams. Within the watersheds that are tributary to Shasta Lake, there are about 2903 miles of ephemeral, intermittent and perennial stream channels. The

creeks and streams that are tributary to Lake Shasta are generally steeply graded and fast-flowing. However, the main tributaries of the Upper Sacramento River, McCloud River, and Lower Pit River tend to be wider and slower.

The **Upper Sacramento River** drains an area of roughly 430 square miles. Its headwaters commence on the slopes of Mount Eddy and a Cliff Lake in the Trinity Mountains, and as a set of springs on the lower slopes of Mount Shasta in the adjacent Cascades. It flows south for approximately 40 miles before entering Shasta Lake.

The **McCloud River** basin drains an area of about 600 square miles. Its headwaters are at Colby Meadows near Bartle. The river flows southwesterly for approximately 50 miles to its terminus at Shasta Lake in the general vicinity of the McCloud River Bridge. Water from the upper McCloud River is regulated and approximately 75 percent of flow is diverted by Pacific Gas and Electric Company's McCloud-Pit Hydroelectric Project. McCloud Reservoir is used to redirect water from the McCloud River to the Pit River before it is returned to Shasta Lake. Base flows in the McCloud River are completely regulated by this project; baseflows in all of the sub-watersheds downstream of the reservoir are unregulated.

> *It was named Pit for the reason that the Indians dug deep pits in the deer trails leading to the river and covered them with brush and dirt, so that when the deer came down to the river to drink, they would without suspicion of danger walk upon these and, falling in, become prey for the Indians. Hence this river should be spelled Pit and not Pitt, as is often by erroneously seen.* (Bush 1958)

The **Pit River** watershed is located in northeastern California and southeastern Oregon. The north and south forks of the Pit River drain the northern portion of the watershed. The north fork of the Pit River originates at the outlet of Goose Lake and the south fork originates in the south Warner Mountains at Moon Lake in Lassen County. The Pit River is joined by the Fall River in Shasta County. The Pit River has 21 named tributaries, totaling about 1,050 miles of perennial stream and encompassing approximately 4,700 square miles.

The **Squaw Creek** watershed is located northeast of Shasta Lake and drains 103 square miles. It flows to the southwest through generally steep terrain. The headwaters of Squaw Creek originate at an elevation of approximately 4,000 feet below the watershed divide that separates Squaw Creek from the Hawkins Creek drainage (Lower McCloud Watershed). Squaw Creek flows for a distance of approximately 24.1 miles before reaching the high water line of Shasta Lake.

Trinity Unit

The **Trinity River** is the largest tributary to the Klamath River. From its headwaters to its confluence with the Klamath River at Weitchpec, the mainstem Trinity River is 170 miles long. The Trinity River basin encompasses approximately 2965 square miles, about one-quarter of which is upstream of the Trinity River Diversion.

The Trinity River originates in northeast corner of the basin in the vicinity of Mount Eddy. The channel develops rapidly with increasing tributary drainage as it flows in a south to southwesterly direction over a distance of 60 miles before entering Trinity Lake, and later Lewiston Reservoir. The largest tributaries to the Trinity River progressing in a downstream direction include Coffee Creek, Swift Creek, East Fork Trinity River and the Stuart Fork. The terrain of the Trinity River Basin is rugged and steep. The hydrology of the Trinity River and its tributaries is characterized by low summer base flows, flashy winter flows, and sustained high flows during spring snowmelt.

The Upper Trinity River Basin is composed of 5 fifth field watersheds: Main Trinity River, Coffee Creek, East Fork Trinity River, Stuart Fork and Trinity Reservoir. When combined, the fifth field watersheds drain a total

area of 717 square miles. Trinity Lake and Lewiston Lake, the two lakes that impound the Trinity River within the NRA, occur partly in all of these watersheds except Coffee Creek.

Although the Trinity-Lewiston Dam complex is much smaller than the Shasta Dam system, it is a significant element in the total Central Valley Project and is the only project which involves inter-basin diversion of water. The Lewiston Power Plant diverts water from the Trinity River country through the Trinity Mountains to Clear Creek, where is fills Whiskeytown Lake, and is transported to the Sacramento River.

The entire main stem of the Trinity River below Lewiston dam was designated a National Wild and Scenic River by the Secretary of the Interior in 1981.

2.2 Water Quality

Shasta Unit

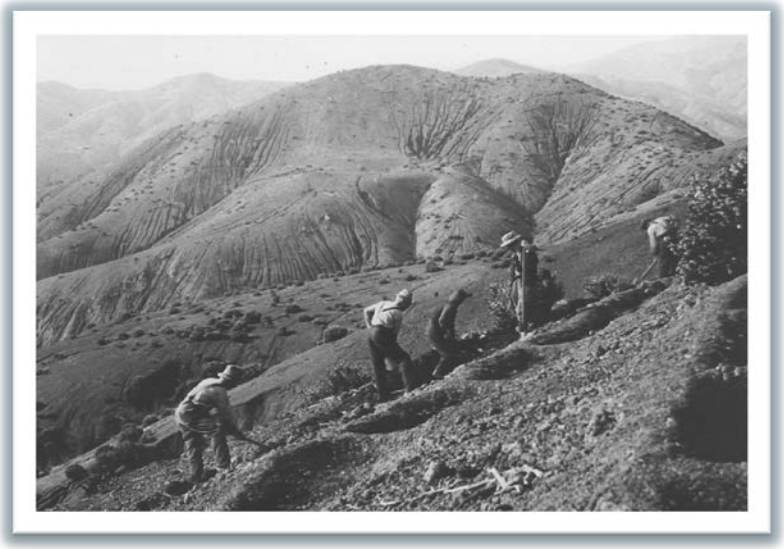
Water quality in Shasta Lake and its vicinity generally meets the standards for beneficial uses identified in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (BOR 2013). See section 3.1.3 below for information on Basin Plans.

The quality of water in Shasta Lake is considered good. The high turnover rate of water in Shasta Lake is the main factor that ensures good water quality. Inflows from Shasta Lake's major tributaries continually replenish the lake with fresh, high-quality water. The total annual inflow to Shasta Lake is approximately half the total storage capacity of the lake (FS 2010). However, some areas exist where the water quality does not meet the standards during periods of storm runoff because of past management activities, or as a result of drainage from historic mining and processing operations.

The primary water quality concerns in the lake are acid mine drainage, and the existing and potential turbidity levels (BOR 2003).

Acid mine drainage (see "Minerals" section for more information) is typically associated with heavy rainfall events that move toxic runoff and soils from abandoned mines into the lake. Waters discharged by stream channels draining the areas disturbed by the mining of sulfide ore deposits are generally acidic and contain high concentrations of dissolved metals, including iron, copper, and zinc. Periods of high acid mine drainage into the lake have caused localized fish kills, particularly in the Little Backbone and West Squaw Creek areas. The following water courses are listed by the U.S. Environmental Protection Agency (EPA) as impaired water bodies under Section 303(d) of the Clean Water Act (CWA): West Squaw Creek below the Balakala Mine, lower Little Backbone Creek, lower Horse Creek, and Town Creek, Little Backbone Creek, and West Squaw Creek. See section 3.1.5 below for information on the 303(d) list.

Turbidity, the result of fine soil particles suspended in water, drastically affects water values and use. Sediment enters the lake from tributary streams; fine sediment has increased over the past century due to human activity such as timber harvesting, wildfire suppression, and road construction. In addition, shoreline erosion caused by wave-wash and water level fluctuations in the reservoir also contributes to turbidity problems in the lake. The fine-textured clays that line much of the reservoir perimeter are the source of most of the turbidity that occurs during drawdown periods. Lake levels are determined by the Bureau of Reclamation and annual precipitation.



Restoration in Kennett Area--Planting Trees (circa mid 1930's).

The one still-active sediment source on Shasta Lake borders its southwest side of the lake, above the sites of smelter operations at Kennett and Coram. Extensive erosion followed complete denudation of these steep slopes in the early 1900s. Thousands of erosion-control structures and five million hand-planted conifers and willows dot the landscape in a noteworthy attempt to rehabilitate this area.

The long life expectancy of this reservoir is favored by geologic stability and low erodibility on most lands in the Shasta Lake watershed. In addition, the reservoir itself is designed with an enormous "dead storage" area unaffected by water outflow regulation. A third factor is the addition of small upstream reservoirs after the construction of Shasta Dam in the early 1940s. These impoundments, several of which are in the highest sediment-producing areas of the basin, collect material that would otherwise have been delivered into Shasta Lake.

The Sacramento River Canyon is vulnerable to accidental highway and railroad chemical spills, and the potential for chemical pollution of the lake by those spills is correspondingly great. Other potential sources of water-quality degradation are nutrient inputs from farm and grazing-land runoff in the Pit River drainage and sewage effluent from individual and domestic disposal. Algae growth resulting from nutrients could affect many lake values: domestic use, aesthetics, recreation, and fishing.

Trinity Unit

The quality of water in the Upper Trinity River is generally very good. The most important water quality problems that Trinity and Lewiston Lakes face are related to sediment, turbidity (fine soil particles suspended in water), and debris. Erosion problems occur each year, especially in the form of sheet and gully erosion, streambank cutting, and landslides. The magnitude of these problems is greatly increased during periods of major flooding, which occur on the average every third or fourth year. "Large flow events occurring over the last half century include the floods of 1964, 1974 and 1997. The 1996-97 floods hit the Upper Trinity River watershed hard, delivering massive amounts of sediment to the lakes. It took almost two years for the lakes to recover from the turbid conditions resulting from this sediment load" (FS 2005).

Another direct and significant source of sediment is shoreline erosion created by wind and wave action during periods of high water. Annual fluctuations of the lake surface further expose the unvegetated shoreline area below full pool to disturbance. As with Shasta Lake, the levels are controlled by the Bureau of Reclamation and the annual precipitation amounts.

Woody debris from natural sources affects public enjoyment of the lake surface at certain times of the year, especially after floods or heavy annual runoff. The problem typically remains until the annual lake drawdown begins, at which time the debris is beached on the shoreline. Woody debris also provides habitat for various aquatic organisms.

Although there have been no significant impacts to date, some threat from accidental highway chemical spills does exist. The potential of chemical pollution from other sources is fairly low within the watershed. Mineral and toxic material from mining activities, such as asbestos and arsenic, and detergents from domestic sources are comparatively minor. However, the existence of the Altoona mercury mine, located on private land in a drainage of the headwaters of the East Fork of the Trinity River is a source of elemental mercury in the lake waters.

Completion of the Trinity and Lewiston Dams in 1964 blocked migratory fish access to habitat upstream of Lewiston Dam, eliminated coarse sediment transport from over 700 square miles of the upper watershed, and restricted anadromous fish populations to the remaining habitat below Lewiston Dam. Trans-basin diversions from Lewiston Reservoir to the Sacramento River altered the hydrologic regime of the Trinity River and adversely affected fish habitat. In 1994, the U.S. Fish and Wildlife Service began the NEPA process for the Trinity River Mainstem Fishery Restoration Program. The Final Environmental Impact Statement for the program was published in 2000. The 2000 Record of Decision directed the U.S. Bureau of Reclamation, through the Trinity River Restoration Program, to restore the Trinity River fishery by implementing a combination of higher releases from Lewiston Dam, floodplain infrastructure improvements, channel rehabilitation projects, fine and coarse sediment management, watershed restoration, and an Adaptive Environmental Assessment and Management Program. For example, one project, initiated in 2006, was a large-scale project that mechanically moved accumulated gravels from the sedentary gravel bars and placed them in the active channel.

3. Management Guidance

3.1 Clean Water Act

The Forest Service will be responsive, in an ongoing manner, to the environmental intent, goals and objectives provided by the Clean Water Act, as amended.

3.1.1 Best Management Practices (BMPs)

BMPs are a practice or combination of practices determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. (R5 FSH 2509.22 Soil and Water Conservation Handbook)

Best Management Practices will be applied to all management activities. The current publication documenting the practices and procedures which are the structure of the water quality program for the Pacific Southwest Region is "Water Quality Management for Forest System Lands in California, Best Management Practices" published in September 2000. The practices, procedures and program are in conformance with, and comply with the provisions and requirements of Sections 208 and 319 of the Federal Clean Water Act. They are also within the guidelines of the Water Quality Control Board (Basin Plans) developed by the nine RWQCB in the State.

3.1.2 California Regional Water Quality Control Boards (RWQCB)

To achieve its objectives, the Clean Water Act authorizes EPA and the States to regulate, implement and enforce compliance with guidelines and standards to control the direct and indirect discharge of pollutants into U.S. waters. The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board and the nine

regional water quality control boards. The Shasta Unit is within the area overseen by the Central Valley RWQCB and the Trinity Unit is within the North Coast Regional Board's area. They monitor water quality in the lakes.

The Regional Boards issue permits which govern and restrict the amount of pollutants that can be discharged into the ground or a water body. National Pollutant Discharge Elimination System permits, also referred to as Waste Discharge Requirements, are issued to regulate the discharge of pollutants to surfaces waters. All persons discharging or proposing to discharge pollutants from a point source into any waters of the state are required to apply for and have a permit under the NPDES to discharge. The State has two NPDES permit programs, one for wastewater and one for storm water.

The Boards have established waste discharge requirements for all marinas on the lakes. These requirements include various specifications, prohibitions, and provisions to protect water quality. The requirements also outline very specific monitoring and reporting procedures for each marina.

3.1.3 RWQCB Basin Plans

Title 40, Code of Federal Regulations, Part 131 requires each State to adopt water quality standards by designating water uses to be protected and adopting water quality criteria that protect the designated uses. In California, the beneficial uses and water quality objectives are the State's water quality standards. Section 13240 of the Porter-Cologne Water Quality Control Act requires each Regional Board to formulate and adopt water quality control plans, or basin plans, for all areas within the Region. Therefore, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality. Each Basin Plan designates beneficial uses for the waters within the area covered by the Basin Plan, water quality objectives to protect those uses, and a program for achieving the objectives.

3.1.4 Discharge of Gray Water from Houseboats

In 2001, the State Board became concerned about direct gray water discharges from houseboats to surface water around the state. Gray water is waste discharged from showers, kitchen sinks, bathroom sinks, wet bar sinks, dishwashers, washing machines, and hot tubs. Studies conducted by the California Department of Health Services and samples collected by Regional Board staff, indicated that the concentration of pollutants in gray water, including pathenogenic bacteria, is similar to domestic sewage. Although the overall water quality of Shasta Lake was high, some elevated levels of these pollutants and pathogens were identified in the marinas where boat use is concentrated. Because Shasta Lake is designated as a municipal and domestic water supply, the staff of the Water Board determined that the discharge of gray water threatened to cause pollution and impairment of beneficial uses as defined in the California Water Code. The Water Board further determined that discharge of gray water to Shasta Lake from houseboats constituted a discharge of pollutants from a point source as defined in the Clean Water Act. As a result, on September 6, 2001, the Regional Board adopted Resolution No. 05-01-211 authorizing the Executive Officer to enter into a memorandum of understanding (MOU) with the U.S. Department of Agriculture, Forest Service to eliminate gray water discharges from houseboats to Shasta Lake after September 6, 2006. The NRA staff worked with the Shasta Lake marinas under Special Use Permit to develop solutions for the disposal of this gray water at marina locations. Leach field systems located on Forest Service lands in the vicinities of the marinas were identified as solutions that were economically feasible, environmentally sound and could be implemented prior to the resolution deadline.

3.1.5 Impaired Water Bodies--303(d) List

Section 303(d) of the federal Clean Water Act (33 USC § 1250 et seq., at 1313 (d)) requires states to identify waters that are not achieving water quality standards due to toxic releases and to develop a control strategy for the sources. Water bodies so identified are referred to as "impaired." States are required to compile a list of impaired water bodies and submit the list to U.S. Environmental Protection Agency for approval every two years on even-numbered years. This list is known as the Section 303(d) Impaired Waters List or "303(d)

list." The most recent list for California was compiled in 2010 and approved by the EPA in October 2011. For water bodies on the 303(d) list, the Clean Water Act requires that states establish a prioritized schedule for waters on the lists, and development of Total Maximum Daily Loads (TMDL) allocations for the pollutants of concern. TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards, and an allocation of that load among the various sources of the pollutant.

Shasta Lake is listed on the 2010 Section 303(d) list as impaired by mercury throughout the lake. A recent 2-year study conducted by the State Water Resources Control Board (SWRCB) sampled mercury accumulations in fish at a number of locations throughout Shasta Lake. This study documented elevated levels of mercury in some specimens (Davis et al. 2010). Table 2-28 gives a list of all the water bodies in the NRA that are on the Impaired Waters List.

Table 2-28
Water Bodies within the NRA on the 2010 303(d) List

Name	Pollutant	Estimated Size Effected
Horse Creek (Rising Star Mine to Shasta Lake	Cadmium, Copper, Lead, Zinc, pH	0.52 miles
Little Backbone Creek, Lower	Acid Mine Drainage, Cadmium, Copper, Zinc	0.95 miles
Pit River	Nutrients, Organic Enrichment/Low Dissolved Oxygen, Water Temperature	123 miles
Shasta Lake	Mercury	27, 335 acres
Shasta Lake (area where West Squaw Creek enters)	Cadmium, Copper, Zinc	20 acres
Town Creek	Cadmium, Copper, Lead, Zinc	0.98 miles
West Squaw Creek (below Balaklala Mine)	Cadmium, Copper, Lead, Zinc	2 miles
Trinity Lake	Mercury	15,985 acres
Trinity River HU, Upper HA	Sedimentation/Siltation	570 miles
Trinity River HU, Upper HA, East Fork	Mercury, Sedimentation/Siltation	92 miles

3.1.6 Army Corps of Engineers

The Clean Water Act gives jurisdiction over certain water bodies to the Army Corps of Engineers (Corps). Section 404 of the Clean Water Act requires the Corps to regulate most discharges of dredge or fill material into waters of the United States, including wetlands.

Any person, firm, or agency (including Federal, state, and local government agencies) planning to work in navigable waters of the United States, or dump or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers.

3.2 Aquatic Conservation Strategy

The Aquatic Conservation Strategy (ACS) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The four components of the ACS are: Riparian Reserves, Key Watersheds, watershed analysis and watershed restoration.

The ACS is part of the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* (ROD) (FS and BLM 1994). Appendix A of the ROD contains the *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl.*

The Riparian Reserves are defined and discussed in the ROD and in the Shasta-Trinity National Forests Land and Resource Management Plan (Forest Plan). Riparian Reserve Standards and Guidelines apply to all management activities within the Riparian Reserves. One aspect of the Riparian Reserve definition having a large impact in the NRA is that the lakes themselves and a buffer of at least 150 feet above the high water mark are designated as Riparian Reserves.

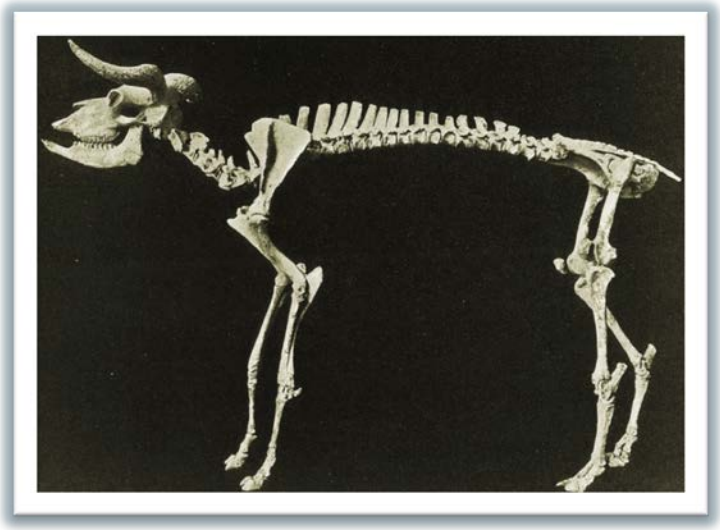
3.2.1 Watershed Analyses

Watershed Analysis is a component of the Aquatic Conservation Strategy. Watershed analysis is required in Key Watersheds, for roadless areas in non-Key Watersheds and Riparian Reserves prior to determining how proposed land management activities meet Aquatic Conservation Strategy objectives (FS and BLM 1994).

Watershed analysis focuses on collecting and compiling information within the watershed that is essential for making sound management decisions. It will be an analytical process, not a decision-making process with a proposed action requiring NEPA documentation. It serves as the basis for developing project-specific proposals, and monitoring and restoration needs for a watershed (FS and BLM 1994).

Table 2-29
Watershed Analyses that Include Portions of the NRA

Watershed Analysis	Date Completed
Clikapudi	June 2000
Iron Canyon	May 1996
Lower McCloud River	December 2011
McCloud Arm	May 1998
Pit Arm Shasta Lake	September 2011
Shasta Lake East	In process
Shasta Lake West	October 2000
Squaw Creek	April 1999
Upper Clear Creek	November 1998
Upper Trinity River	March 2005



The fossilized skeleton of an extinct species of shrub-ox (*Preptoceras sinclairi*) excavated from Samwel Cave in 1903.

WILDLIFE

1. Historical Overview

1.1 Ancient History

If one were able to visit the area that is now the NRA about 20,000 years ago, the wildlife encountered may have been quite different than what one would find today. Exploration of several local caves by researchers in the late 1800's and early 1900's provided a unique glimpse of some of the early wildlife species that inhabited the area that is now the NRA. At Samwel and Potter Creek Caves, both located within the Shasta Unit of the NRA, many Pleistocene era fossils were discovered, including fossils of over 20 species of now extinct animals. These extinct animals include elephant, ground sloth, and shrub oxen, as well as long extinct species of horse, bear, and condor.

1.2 More Recent History

Wildlife management on the NRA has evolved greatly over the years. In the early years of the NRA, management of game species and predatory species were the focus of wildlife managers. High profile game species such as Columbian black-tailed deer and Rocky Mountain elk were emphasized, and control of predatory species such as mountain lions, black bears, coyotes, and bobcats was practiced.

While providing for the habitat needs of game species continues to be an important aspect of management on the NRA, the conservation of rare species and their habitats has become a high priority. Management that protects and conserves species listed under the Endangered Species Act (ESA) as threatened or endangered, and species listed by the Regional Forester as sensitive is a main concern.

2. Setting

A combination of historical and ongoing activities, including: mining, timber harvesting, fire suppression, grazing, recreation, reservoir construction, and wildfires have influenced habitat and affected the population and distribution of wildlife within the NRA.

2.1 Special-status species (TES, etc)

The Shasta and Trinity Units of the NRA encompass many special habitats which support a diverse community of bird, mammal, reptile, and amphibian populations. There are over 20 threatened, endangered, and sensitive species that occur within the Shasta and Trinity Units of the NRA and five terrestrial Survey and Manage species that are found almost solely in the Shasta Unit. The following discussions will focus on those species and habitats that receive management emphasis or protection.

The bald eagle (*Haliaeetus leucocephalus*) was a federally listed species under the ESA until August 2007, when it was deemed recovered, and removed from the list. Although they are delisted, bald eagles are still protected by the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act. The bald eagle is present in both units of the NRA year-round. Shasta, Trinity, and Lewiston Lakes are important wintering areas for bald eagles. The NRA also supports the largest population of nesting bald eagles in the state. This is most likely due to the very productive fisheries found within the NRA. Monitoring of nests on both units occurs annually during the nesting season to determine occupancy and nesting success.

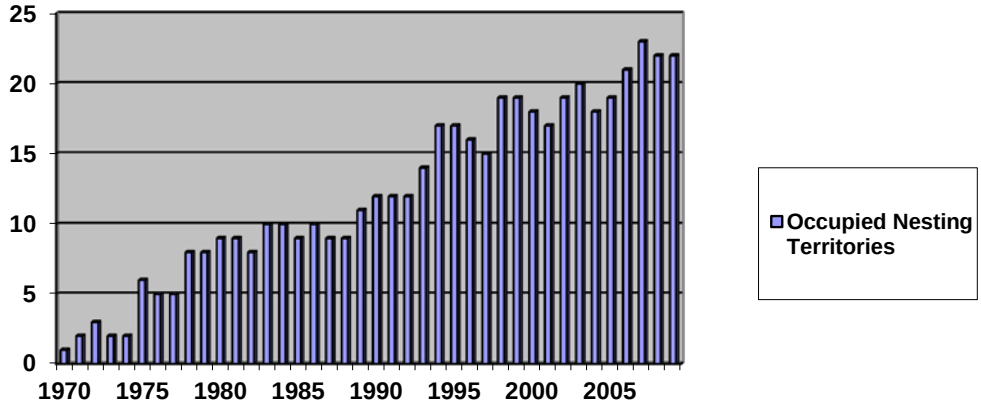


Figure 2-5. Number of Occupied Bald Eagle Nest Territories at Shasta Lake

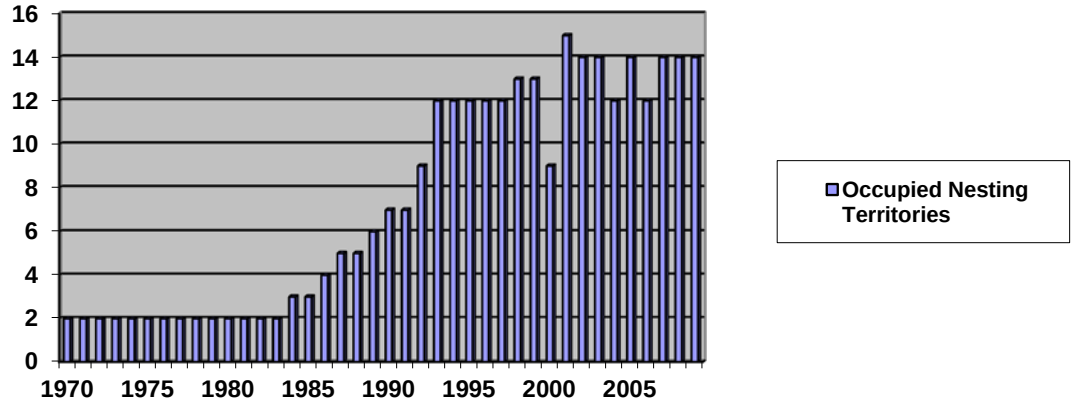


Figure 2-6. Number of Occupied Bald Eagle Nest Territories at Trinity and Lewiston Lakes

Whereas inclement weather has been attributed as the major cause of nest failure on Trinity Lake, concentrated recreation use adjacent to nests is believed to have a potential adverse impact on the nesting success on Shasta Lake in some situations. As a result, recreation use is restricted in portions of selected territories to avoid the possible adverse impacts to bald eagle nest success. Areas are protected by floating booms, posted signs, patrols, and gates to restrict access to sensitive areas during the nesting season, which is generally from January 1through July 31. Despite high levels of recreation use, the bald eagle population has increased significantly.

The northern spotted owl (*Strix occidentalis*), federally listed as threatened, is known to inhabit the Trinity Unit. Late-Successional Reserves provide suitable nesting, roosting, and foraging habitat. There are currently several spotted owls within or near the Trinity Unit, however all suitable habitat has not been surveyed to date. The Shasta Unit provides very little suitable habitat for this species.

The Survey and Manage Program of the Northwest Forest Plan contains survey protocols and protective measures for various species of plants and wildlife. There are four species of terrestrial snails; Shasta Hesperian snail (*Vespericola shasta*), Shasta Chaparral snail (*Trilobopsis roperi*), Shasta sideband snail (*Monadenia troglodytes troglodytes*), and the Wintu sideband snail (*Monadenia troglodytes wintu*) which are located within the Shasta Unit. These four snails are both Survey and Manage and Forest Service Sensitive species. There have been no Survey and Manage or Forest Service Sensitive terrestrial snail species found within the Trinity Unit

of the NRA. The Shasta Hesperian snail is a riparian species and is further protected by Riparian Reserve measures. The Shasta chaparral is a small land snail which is associated with the lower portions of talus slopes and surrounding forest vegetation during moist cool months. This species has been located along the Pit, McCloud, and Sacramento Arms of Shasta Lake. The two sideband snail species are associated with limestone outcrops: the Shasta sideband on the McCloud Arm and the Wintu sideband in the vicinity of the Squaw, Pit, and Squaw creek arms.

The Shasta salamander (*Hydromantes shastae*) is both a Forest Service Sensitive species, and under the Survey and Manage Program of the Northwest Forest Plan. A member of family Plethodontidae, the Lungless Salamanders. Lungless salamanders conduct respiration through their skin which requires them to live in damp environments on land and to move about on the ground only during times of high humidity. This species only occurs in the vicinity of Shasta Lake and two other locations east and north of the lake. This species is closely associated with limestone outcrops and adjacent slope habitats in several locations within the Shasta Unit. This species has also occasionally been found in areas not associated with limestone, but in cool, moist mesic habitats where other forest salamanders are typically located.

The northern goshawk (*Accipiter gentilis*), a Forest Service sensitive species is known to inhabit the Trinity Unit but is not known to occur in the Shasta Unit. Suitable habitat exists within the Trinity Unit, however suitable habitat within the Shasta Unit is generally lacking. Northern goshawk nesting and roosting habitat is primarily within the riparian and older forest stands, however, goshawks will forage through a broad array of seral stages.

The Pacific fisher (*Martes pennanti*) is a Forest Service sensitive species which occurs in both the Shasta and Trinity Units. While suitable habitat for this forest carnivore exists within the Trinity Unit and multiple sightings have been recorded, no known den sites have been located within this unit. The Shasta Unit does not contain what many would consider to be typical fisher habitat, however suitable habitat does exist in some of the more heavily timbered drainages and ridges in the unit and fisher have been confirmed at several locations around Shasta Lake. The abundant hardwood component within the Shasta Unit may provide the suitable denning and resting sites that fisher require. Riparian habitat within or adjacent to dense conifer habitat are highly preferred as travel routes/corridors and foraging areas. Riparian Reserve direction will maintain suitable habitat in many of these drainages and LSR designation would maintain suitable habitat in much of this unit, where it exists.

Three Forest Service sensitive bat species occur within the NRA: pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western red bat (*Lasiurus blossevillii*). While the western red bat typically roosts in tree foliage near riparian areas, the other two species utilize caves and mines as primary roost locations. Maintaining suitable roost locations and reducing impacts at occupied sites is a primary concern for these bats within the NRA.

Suitable habitat for the willow flycatcher (*Empidonax* traillii), a Forest Service sensitive species, is limited within the NRA. The willow flycatcher is not known to inhabit the NRA; however not all potential habitat has been surveyed. Marginally suitable habitat does exist in some of the riparian habitat vegetated with willows and alders. Potential suitable habitat would be protected through Forest standards and the Aquatic Conservation Plan.

The northwestern pond turtle (*Clemmys marmorata marmorata*), another Forest Service sensitive species, is found along portions of the shoreline riparian zones of Shasta and Trinity Lakes. A northwestern pond turtle population also occurs on the east side of Lewiston Reservoir. In addition, there are documented sightings around ponds at the north end of Trinity Reservoir. Riparian Reserve measures would provide for most of the protection needs of this species.

2.2 Other Species of Interest

The purple martin (*Progne subis*) is a species of special interest because it is uncommon in the western United States. One of the few known nesting colonies of this species in the west occurs along the Pit River Arm of Shasta Lake in snags that are submerged at full pool. Approximately 25 pairs are known to nest on the Pit Arm. This number will fluctuate depending upon lake levels during early spring. This species is not known to occur in the Trinity Unit.

Graham's cave scorpion (*Uroctonus grahami*) has been observed on the NRA at Samwel Cave. This is the only location in the world where it is known to occur. This scorpion is believed to be a cave obligate, but very little is known about its life history.

Mountain lions (*Puma concolor*) are also present in both units of the NRA and pose a potential public safety concern. We have collaborated with other agencies to develop a brochure to provide to the public to increase awareness of living and recreating in mountain lion country.

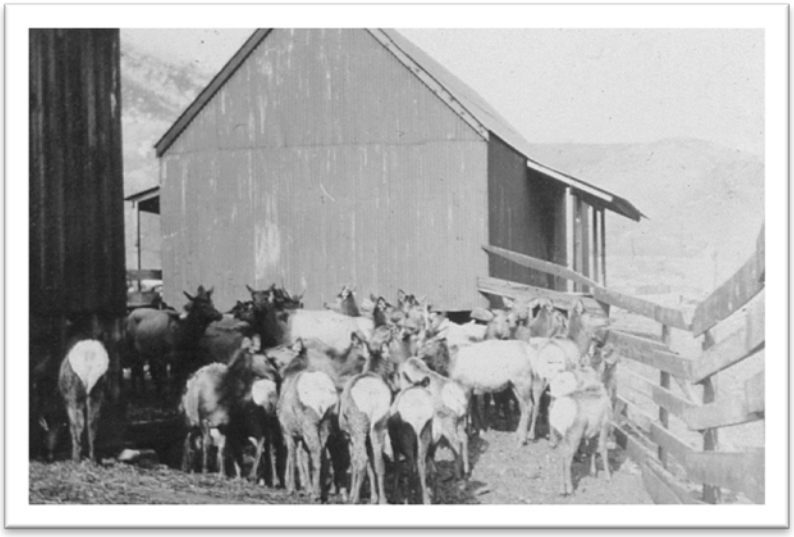
2.3 Game Species

A variety of game species are present within the NRA, including black-tailed deer, Rocky Mountain and Roosevelt elk, feral pigs, black bear, gray squirrel, rabbit, turkey, California quail, and a variety of waterfowl. Several other wildlife species inhabited this area prior to European settlement but were extirpated by over-hunting or because they were seen as threats, including grizzly bear, wolf, and various species of elk.

Most of the Shasta Unit serves as winter range for the Columbian black-tailed deer (*Odocoileus hemionus columbianus*), which migrate down from the surrounding higher elevations. Nearly all the land surface is below 3,000 feet elevation, and normally snow free. The entire Trinity Unit is classified as intermediate winter range for Columbian black-tailed deer. Critical winter range is located on most of the south-facing slopes, especially on the east side of the reservoirs. The herds utilize the reservoirs as a migratory travel route, from winter to summer ranges. The shrub lands, hardwood stands, and hardwood/conifer mixed stands provide for a moderate to high level of forage and cover. The area receives moderate year-round use, receiving the highest use when mast crops are plentiful and as winter range. Road density and closure status play a major role in habitat use and distribution of black-tailed deer as a result of the disturbances that occur.

Black bears (*Ursus americanus*) are common throughout the NRA during all seasons. With their diverse diet of grasses, berries, forbs, browse, insects, and carrion, they can easily survive in rugged terrain and hibernate during the winter months when food is scarce. All of the Trinity Unit is encompassed within an area that emphasizes black bear management. Road density and closure status play a major role in habitat use and distribution of black bear.

In recent years, there has been increasing concern over encounters with bears in the NRA. Some black bears have been habituated to associate people and ice chests with food, and there have been many bear and human interactions, resulting in property damage, a lower-quality recreation experience and removal of bears which have been deemed "problem" bears. We have an active black bear program to educate campers about the necessity and responsibility of keeping food out of reach of bears and to dispose of garbage properly and quickly after eating. We provide the recreating public with information about proper food storage that will deter bears from coming into campgrounds, increase public safety and enjoyment, and reduce the need to deal with "problem" bears.



Elk waiting to be released into the Squaw Creek Drainage in 1916.

"Besides the deer, there are approximately100 to 150 head of Yellowstone Elk ranging from the vicinity of Bella Vista to Ingot and extending north across the Pit River into the Squaw Creek , Ripgut Creek, and Potem Creek drainages. These animals are the increase from the 58 head which were released 22 years ago near Bully Hill." (Brandeberry and Barnum 1938)

Historically, elk were native to this area, but by the late 1800's they were no longer believed to be present on the Forest. Fifty-eight Rocky Mountain elk (*Cervus elaphus nelsoni*) were obtained from Jackson Hole, Wyoming and turned loose in the Squaw Creek area above Bully Hill mine during the summer of 1916. Herds that use the NRA currently number 60 to 70 animals. They range over the eastern portion of the NRA during all seasons, and extend into the higher elevations far to the north and east of the Unit during the summer months. Roosevelt elk (*Cervus elaphus roosevelti*) have been introduced into the Trinity Alps Wilderness area and sightings have increased in the Trinity Unit in recent years.

A large waterfowl population utilizes Lewiston Reservoir, some species year-round. Partners collaborate with habitat enhancement and restoration projects for wood ducks. To date over 75 wood duck nest boxes have been placed and are monitored around Lewiston Lake.

3. Management Guidance

The emphasis of ecosystem management activities will be to meet recreation, visual, and wildlife objectives while maintaining healthy and vigorous vegetative communities and restore, maintain, or enhance biodiversity to the extent feasible within the goals and objectives of NRA management. Ecosystem health will be managed in designated and undesignated key habitats for Threatened, Endangered, and Sensitive (TES) species.

Management activities for wildlife will focus on providing a diversity of habitat types. Management emphasis will occur within occupied habitats of TES species in accordance with appropriate laws and policy. Surveys and monitoring of potential suitable habitat will continue to determine use or occupancy status for TES species.

3.1 Coordinating with CDFW and USFWS

The California Department of Fish and Wildlife (CDFW), is responsible for managing the states wildlife resource. CDFW is responsible for maintaining healthy wildlife populations. Of course, maintaining healthy wildlife populations depends on providing suitable habitat. This Guide has highlighted the importance of the NRA in providing essential habitat for a multitude of wildlife species.

The U.S. Fish and Wildlife Service (USFWS) is responsible for implementation of the Endangered Species Act (ESA). Management of the NRA will be in compliance with the ESA. Consultation with the USFWS will occur as needed to ensure projects are consistent with ESA implementation.

Cooperation will continue with the CDFW and USFWS regarding habitat management.

The Forest Service will work with the appropriate state and county agencies to inform the public and enforce current hunting and shooting regulations. Partnerships will be developed and other methods explored to generate funds to restore and improve habitat, and provide interpretation and environmental education opportunities where appropriate.

3.2 Non-Governmental Cooperators

Partnerships with non-governmental cooperators have contributed significantly to wildlife habitat restoration efforts within the NRA. A long-term partnership with the Rocky Mountain Elk Foundation (RMEF) has been established on the Shasta Unit. RMEF has provided grants to support a multi-year prescribed burning project at Green Mountain. The Green Mountain project has been very successful at improving habitat for elk and other wildlife, and has succeeded in large part due to the partnership with RMEF.

Additional opportunities to develop partnerships with wildlife conservation groups should be explored. Groups that would be logical partners include California Deer Association, Mule Deer Foundation, and National Wild Turkey Federation.

3.3 Environmental Education/Interpretive Program

Implement a program to focus on public safety and wildlife with the focus on black bears and mountain lions. Continue to work with California Department of Fish and Wildlife and the National Park Service to implement a strategy to deter bears from coming into campgrounds and other developed sites and to educate recreationists in "bear etiquette" while recreating in the NRA. Provide information to NRA visitors on bears and mountain lions to improve their safety while enjoying the NRA.

Increase wildlife viewing opportunities to promote public awareness and appreciation for wildlife species inhabiting the NRA.

The wildlife interpretative and environmental education program, integrated with other resource areas, and primarily focused on elementary school children, will continue to be a high priority.

3.4 Maintaining Key Wildlife Habitat Components

3.4.1 Limestone

Limestone outcrops within the Shasta Unit are recognized as a unique habitat component for various wildlife species. The cool moist microclimate present within these outcrops provides the habitat to escape the hot, dry summer season. Maintaining limestone habitats is a top priority within the NRA. Actions which could negatively impact limestone habitats (road building, dozer-line construction, piling and burning) will be avoided if limestone habitats would be degraded.

3.4.2 Lewiston Lake

As described in the Forest Plan, the east side of Lewiston Lake will remain undeveloped to conserve its excellent wildlife habitat and to provide an enhanced opportunity for the public to view and enjoy wildlife.

3.4.3 Logs and Snags

Due to the important role down woody material and snags play in the ecosystem, design projects to maintain large down logs and large snags. In general, down logs and snags will be retained unless they pose a direct

risk to public safety. It is recognized that projects implementing prescribed fire will directly impact large snags and logs. These projects are encouraged, as they are essential in maintaining a healthy and diverse ecosystem. It is also recognized that the effects of prescribed fire on snags and down logs is a dynamic process, as fire will consume some snags and logs, but also some trees are killed by fire, which provides for recruitment of new snags and logs.

3.4.4 Abandoned Mine Closure

To maintain suitable bat roost locations, prior to closing any abandoned mines, they will be evaluated by the District biologist to determine their suitability as bat roost locations. Mines determined to be suitable roost sites will be closed in a manner that allows bat passage.

3.5 Criteria for Selecting Wildlife Habitat Improvement and Facility Development Projects

Wildlife habitat will be improved through vegetative manipulation as needed throughout the NRA to maintain a balanced mix of cover and palatable forage, to improve forest health, and to reduce the threat of catastrophic wildfire. The emphasis of ecosystem management activities will be to: meet recreation, visual, and wildlife objectives while maintaining healthy and vigorous vegetative communities, and; restore, maintain, or enhance biodiversity to the extent feasible within the goals and objectives of NRA management. The following criteria will be used to prioritize treatments: potential to enhance and conserve threatened, endangered, or sensitive species habitat; LSR enhancement; cover: forage ratio and the need to improve habitat condition; and the opportunity to partner with internal and external partners.

Opportunities to develop Watchable Wildlife sites will be explored as funding permits and will focus on high public use areas. Wildlife viewing opportunities will be emphasized, where appropriate, to promote public awareness and appreciation for wildlife species found within the NRA.

Continue to integrate fuels and wildlife management, with an emphasis on prescribed fire. Treat bald eagle nest trees and stands to reduce fuel loading and risks to high intensity wildfire. Continue habitat enhancement for waterfowl at Lewiston Lake and develop waterfowl nesting opportunities at Shasta Lake and the north end of Trinity Lake. The east-side of Lewiston Lake should remain undeveloped to conserve its excellent wildlife habitat and to provide the public enhanced opportunities to view and enjoy wildlife.

3.6 TES Policy

3.6.1 Bald Eagle Management Plan

Monitor recreational use and bald eagle productivity each year between January 1 and July 31 and implement the bald eagle nest protection measures as identified in the Shasta Lake Bald Eagle Forest Order EA and the NRA Bald Eagle Strategy where necessary to avoid adverse impacts to nesting bald eagles. Professional biologists will provide recommendations to ensure compliance with the provisions of the Bald and Golden Eagle Protection Act and other appropriate laws and policies. Prior to implementation of any new action that may affect bald eagles, perform a biological evaluation to provide the adequate level of protection and appropriate mitigation of impacts. The management of bald eagles will be consistent with the *National Bald Eagle Management Guidelines* published by U.S. Fish and Wildlife Service in 2007. Actions will be implemented as needed during the nesting season in areas where recreation and other land management activities are likely to disturb nesting bald eagles. Monitoring of bald eagle territories will be conducted annually to determine occupancy and nesting success.

3.6.2 Other Special-Status Species

Prior to implementation of any new action that may affect any species protected under the Endangered Species Act, perform a biological assessment to provide the adequate level of protection and appropriate

mitigation of impacts. Conduct the necessary level of consultation with the USFWS to obtain the appropriate clearance for the project.

Prior to the implementation of any action that may affect any species listed on the Regional Forester's Sensitive Species List, perform a biological evaluation to provide the adequate level of protection and appropriate mitigation of impacts.

Inventories for Survey and Manage species will be conducted as needed prior to the implementation of any management decisions which may negatively affect limestone outcrops, talus-slope habitats and other potential habitats where these salamanders and snails might be found. The need to survey for prescribed burning projects should be evaluated at the project level, considering factors such as fuel loading, season of burn, and expected fire intensity. In many instances, prescribed burns can be conducted without the need for protocol surveys if mitigation measures are included in the project which would minimize potential impacts to survey and manage species and their habitats.

3.6.3 Developed Sites in LSR

Several developed recreation sites occur within areas designated as Late Successional Reserves (LSR). Consistent with Forest Plan direction, continuing use of these developed areas within LSR's are considered existing uses, and may remain. The following recommendations apply to any proposed development or expansion of developed sites within LSR's. No new development or expansion of existing developments should occur unless it can be demonstrated that the development or expansion cannot feasibly be located outside LSR's. Any development that eliminates or reduces the quality of habitat should be mitigated. Mitigation should focus on increasing acreage of the LSR through acquisition of private land within or adjacent to the LSR. Acres acquired should, at a minimum be equal to the number of acres of new development. If the habitat being acquired is lower quality than the habitat being developed, the area acquired should be provided at a ratio of at least two acres for each higher quality acre developed.

Table 2-30
Developed Sites in LSR

Site Name	Location
Water's Gulch Trail	Shasta
Bowerman Barn	Trinity
Bushytail Campground	Trinity
Clark Springs Boat Ramp	Trinity
Clark Springs Campground	Trinity
Clark Springs Picnic Area	Trinity
Fairview Boat Ramp	Trinity
Fawn Campground	Trinity
Jackass Spring Campground	Trinity
Lakeshore Trail	Trinity
Minersville Boat Ramp	Trinity
Minersville Campground	Trinity
Mule Creek Station	Trinity
Osprey Visitor's Center	Trinity
Stoney Creek Campground	Trinity
Stoney Creek Swimming Area	Trinity
Stuart Fork Boat Ramp	Trinity
Tannery Gulch Boat Ramp	Trinity

Site Name	Location
Tannery Gulch Campground	Trinity
Trinity Heritage Scenic Byway (State Hwy. 3)	Trinity
Trinity Vista	Trinity
Ackerman Campground	Lewiston
Tunnel Rock Campground	Lewiston

3.7 Updates in Direction

Various wildlife-related guiding documents such as: recovery plans, survey protocols, management plans, etc. are referenced in this Guide. Updates and revisions of these guiding documents occur regularly. It is anticipated and appropriate that as new guiding documents are developed, they will replace those specifically referenced in this guide.

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NATIONAL RECREATION AREA
Management Guide

Chapter 3
DESIRED CONDITION—WROS

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Chapter 3 — Desired Future Condition

To be completed at a later date

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NATIONAL RECREATION AREA
Management Guide

GLOSSARY & REFERENCES

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GLOSSARY OF TERMS

Abandoned Mine	Previously mined area and associated waste units, processing plants and other facilities that have not been reclaimed.
Accessibility	A term referring to the degree to which recreation opportunities, facilities, or programs meet current legal, social, and design requirements to be utilized by persons of varying physical and mental abilities.
Acid Drainage	Acid mine drainage (AMD) or acid rock drainage (ARD), collectively called acid drainage (AD), is formed when certain sulfide minerals in rocks are exposed to oxidizing conditions.
Acid Rock Drainage (ARD)	Drainage that occurs as a result of oxidation of sulfide materials (usually pyrite or iron sulfide) contained in rock that is exposed to air and water. The oxidation of sulfides produces sulfuric acid and sulfate salts. The acid dissolves and leaches out minerals in the rock. Although this is a natural process, mining activities can trigger this phenomenon by exposing large surface areas of rock to water and oxygen. In the context of mining, may be referred to as acid mine drainage (AMD).
Acid Mine Drainage (AMD)	A form of acid rock drainage produced through the disturbance and exposure of large quantities of sulfide-bearing rocks by mining activities.
Acquired Lands	Lands or interests in lands which the United States obtained through purchase, gift or condemnation. They are one category of public land.
Acre-foot	The volume of water or sediment equal to the amount that would cover one acre to a depth of one foot (43,560 cubic feet; 326,000 gallons).
Adit	A nearly horizontal passage accessible from the surface for the purpose of working in or dewatering a mine.
Aesthetics	Generally, the study, science, or philosophy dealing with beauty and with judgments concerning beauty. In scenery management, it describes landscapes that give visual and sensory pleasure.
Alluvium	Soil particles transported and deposited by water.
Anadromous fish	Fish such as salmon or steelhead trout that hatch in fresh water, migrate to and mature in the ocean, and return to fresh water as adults to spawn.

Aquatic Conservation Strategy (ACS)	A strategy developed to restore and maintain the ecological health of watersheds and aquatic ecosystems. (see NWFP ROD)
Archaeological Resources Protection Act of 1979	Establishes various criminal and civil penalties for the unauthorized removal of antiquities or artifacts from federal property, and/or the damage or destruction of heritage properties on federal lands.
Authorized Officer	Any Forest Service employee with delegated authority to evaluate and administer special use authorizations. (FSM 2340)
Basin Plan	Common name for Water Quality Control Plan. A Basin Plan is the basis for water quality regulatory actions by the RWQCB within California. The preparation and adoption of a Basin Plan is required by California Water Code and supported by the CWA. Section 303 of the CWA requires states to adopt water quality standards which consist of the designated uses of the navigable waters involved and the water quality criteria (referred to as "objectives" in California) for such waters based upon designated uses. Basin Plans are adopted and amended by the various RWQCBs.
Beneficial use	Actual or reasonable potential use that may be made of waters of the State, including but not limited to domestic, municipal, agricultural, and industrial.
Best Management Practice (BMP)	A practice, or a combination of practices, that is determined by the State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing, or reducing the amount of pollution generated by nonpoint sources to a level compatible with water-quality goals. (R5 FSH 2509.22)
Bioaccumulation	The accumulation of contaminants in the tissues of organisms through any route, including respiration, ingestion, or direct contact with contaminated water, sediment, pore water, or dredged material. Such processes can result in levels of pollutants in tissues of aquatic organisms far higher than in the surrounding water.
Burning prescription	Written direction stipulating fire environment conditions, techniques, and administrative constraints necessary to achieve specified resource management objectives by use of fire on a given area of land.
Canopy	The more or less continuous cover of leaves and branches collectively formed by the crowns of adjacent trees in a stand or forest. Canopy cover varies by the number of trees in an area.
Cave	The term "cave" means any naturally occurring void, cavity, recess, or system of interconnected passages which occurs beneath the surface of the earth or within a cliff or ledge (including any cave resource therein, but not including any vug, mine, tunnel, aqueduct, or other manmade excavation) and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or manmade. Such term shall include any natural pit, sinkhole, or other feature which is an extension of the entrance. (Federal Cave Protection Act of 1988)
Cave Resources	Any materials or substances occurring in caves including, but not limited to, biotic,

	cultural, mineralogic, paleontologic, geologic, and hydrologic resources. 36CFR290.2
CFR	Code of Federal regulations
Chaparral	A vegetation community that consists primarily of shrub species such as chemise and ceanothus.
Claim	The portion of mining ground held under the Federal and local laws by one claimant or association, by virtue of one location and record. Also called a "location."
Clair Engle Lake (Clair Engle-Lewiston Unit)	These are the official names, found in enabling legislation, for the areas commonly known as Trinity Lake and the Trinity Unit of the NRA.
Clean Water Act (CWA)	The Federal Water Pollution Control Act, popularly known as the Clean Water Act (CWA), is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Originally enacted in 1948, the CWA was expanded numerous times until it was reorganized and expanded in 1972. It continues to be amended almost every year. The CWA is codified in the United States Code (33 USC 1251-1387). Regulations implementing the CWA are included in the Code of Federal Regulations (CFR).
Closed to Mineral Entry	Closed to mineral entry means the land is not available for the location of mining claims or sites because Congress, BLM, or another surface managing agency has withdrawn or otherwise segregated the lands from the operation of the General Mining Law, often subject to valid existing rights. (43 CFR 3830.5)
Code of Federal Regulations (CFR)	Contains the rules and regulations of all Federal agencies. Forest Service rules and regulations appear in Title 36, Chapter II, Parts 200-299.
Concession	A commercial enterprise operating on National Forest System land under permit for the purpose of providing goods and services to the general public. It is commonly referred to as a commercial public service special use. A valid special use authorization for the provision of commercial recreation services, facilities, or activities on National Forest System lands. Examples of commercial recreation services, facilities or activities include ski areas, resorts, marinas, concession campgrounds, outfitting and guiding, recreation events and other public services.
Concessionaire (Concessioner)	An individual, organization, company, corporation, or cooperating State or local agency holding a valid special use permit authorizing the provision of commercial recreation services, facilities, or activities on National Forest System lands. (FSM 2340)
Confluence	The flowing together of two or more streams; the place of meeting of two or more streams.
Critical habitat	As defined in the ESA, critical habitat is a specific geographic area that is essential for the conservation of a threatened or endangered species, and that may require special

	management and protection. It may include an area that is not currently occupied by the species but is an area that will be needed for its recovery. These areas have been legally designated via Federal Register notices.
Cultural resources	Tangible and intangible aspects of cultural systems, living and dead, that are valued by a given culture or contain information about the culture. Cultural resources include, but are not limited to sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events.
Desired condition	An expression of resource goals that have been set for a unit of land. It is written as a narrative description of the landscape as it will appear when the goals have been achieved. The condition also includes a description of physical and biological processes, the environmental setting, and the human experience.
Desired future condition	The desired condition of the landscape expressed in terms of the biotic and abiotic components of the ecosystem and includes the social, economic and cultural elements.
Developed recreation site	A discrete place containing a concentration of facilities and services used to provide recreation opportunities to the public and evidencing a significant investment in facilities and management under the direction of an administrative unit in the National Forest System.
Diameter at breast height (dbh)	Tree diameter (outside bark) at breast height (4.5 feet above the ground).
Dispersed recreation	Outdoor recreation that occurs outside planned and maintained recreational facilities (e.g., scenic driving, hunting, backpacking, and camping in undeveloped areas).
Dissolved oxygen	A commonly employed measure of water quality. The concentration of free (not chemically combined) molecular oxygen (a gas) dissolved in water, usually expressed in milligrams per liter, parts per million, or percent of saturation. DO levels are considered the most important and commonly employed measurement of water quality and indicator of a water body's ability to support desirable aquatic life.
Easement	A type of special use authorization (usually granted for linear rights-of-way) that is utilized in those situations where a conveyance of a limited and transferable interest in National Forest System land is necessary or desirable to serve or facilitate authorized long-term uses, and that may be compensable according to its terms. (36 CFR 251)
Endangered species	Any species listed as such in the Federal Register which is in danger of extinction throughout all or a significant portion of its range.
Endangered Species Act of December 28, 1973 (ESA)	Authorizes the determination and listing of species as endangered and threatened; prohibits unauthorized taking, possession, sale, and transport of endangered species; authorizes the assessment of civil and criminal penalties for violating the Act or regulations; and, authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the Act or any regulation issued there under. Section 7 of the Act requires federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued

existence of listed species or modify their critical habitat.

Endemic species — A species restricted to and known to occur naturally only within a specific geographic area.

Entry — An application to acquire title to public lands.

Ephemeral stream — A stream or reach of a stream that flows briefly only in direct response to precipitation in the immediate locality and whose channel is at all times above the water table.

Erosion, soil — The detachment and movement of soil from the land surface by wind and water.

Evolutionarily significant unit (ESU) — The National Marine Fisheries Service definition of a distinct population segment (the smallest biological unit that will be considered to be a species under the Endangered Species Act). A population is considered to be an ESU if: (1) it is substantially reproductively isolated from other conspecific (of the same species) population units, and (2) it represents an important component in the evolutionary legacy of the species.

Exclusive use — Extended private party use of National Forest System lands or waters which excludes or limits use of the same lands or waters by the general public.

Expanded Amenity Fee — Fee charged for specialized facilities and services beyond entrance fees and standard amenity fees. Examples include camping, boating, and tours.

Extirpated species — No longer surviving in regions that were once part of the species' range.

Federal Lands Recreation Enhancement Act (REA) — This Act was passed into law as part of the 2005 Consolidated Appropriations Act (Public Law 108-447) on December 8, 2004. The 10-year Act permits federal land management agencies to continue charging modest fees at campgrounds, rental cabins, high-impact recreation areas and at day-use sites that have certain facilities.

Federally listed species — Animals or plants that have been formally added to Federal lists of endangered or threatened wildlife or plants by the US Fish and Wildlife Service and/or the National Oceanic and Atmospheric Administration Fisheries. In legal terms, also includes species formally proposed for addition to these lists.

Fish habitat — The aquatic environment and the surrounding terrestrial environment that, combined, afford the necessary physical and biological support systems required by fish species during various life history stages.

Flow Line — Maximum Flow Line of the Reservoir - The identified highwater line of the individual project water storage facilities when the inflows to the reservoir are at the maximum inflow design level. Normal Flow Line - The identified water line of the reservoir when the storage pool is full and inflows equal outflows without any water withdrawals for irrigation, municipal, or industrial use. Minimum Flow Line - The water surface level when water withdrawals have reached a maximum level beyond which design criteria or contractual provisions do not permit further reservoir

	drawdown. (FSM 1530)
Forest Service Directive System	The Forest Service Directive System consists of the Forest Service Manual and Handbooks, which codify the agency's policy, practice, and procedure. Each consisting of amendments, supplements, interim directives, and transmittals. The system serves as the primary basis for the internal management and control of all programs and the primary source of administrative direction to Forest Service employees.
Forest Service Handbook (FSH)	The component of the Forest Service's Directive System that provides detailed direction to employees in more than one unit on how to proceed with a specialized aspect of a Forest Service program or activity.
Forest Service Manual (FSM)	The component of the Forest Service's Directive System that contains legal authorities, management objectives, policies, responsibilities, and general direction to Forest Service line officers and staff directors in more than one unit to plan and execute their assigned programs and activities (FSM 1111).
Forest Plan	Forest land and resource management plan. This document addresses all lands and resources on a given National Forest in a single coordinated management plan. Forest Plans are mandated by the National Forest Management Act of 1976.
Fuels	Any material capable of sustaining or carrying a forest fire, usually natural material both live and dead. Downed logs and branches are examples.
Full pool	The volume of water in a reservoir when the reservoir is fully used for all project purposes, including flood control.
Gassan	An iron-bearing capping over a sulfide deposit.
General Mining Law	General Mining Law means the Act of May 10, 1872, as amended, (codified as 30 U.S.C. 22–54).
General Plan	A statement of policies, including text and diagrams, setting forth objectives, principles, standards, and plan proposals, for the future physical development of the city or county.
Geologic Resources	Geologic resources include landforms, bedrock exposures, aquifers, recharge areas, ground-water dependent ecosystems, caves, cave resources and associated cave ecosystems, karst features, paleontology, geologic and paleontological special interest areas, interpretive sites, and recreational collecting sites for fossils, rocks, and minerals. FSM 2880
Geomorphic Province	Naturally defined geologic regions that display a distinct landscape or landform. Each region displays unique, defining features based on geology, faults, topographic relief and climate. Earth scientists have recognized eleven provinces in California.
Gray Water	Domestic wastewater composed of wash water from kitchen, bathroom, and laundry sinks, tubs, and washers.

Guiding	Providing services or assistance (such as supervision, protection, education, training, packing, touring, subsistence, interpretation, or other assistance to individuals or groups in their pursuit of a natural resource-based outdoor activity) for pecuniary remuneration or other gain. The term "guide" includes the holder's employees, agents, and instructors.
Habitat	A place where a plant or animal naturally or normally lives or grows. For wildlife, habitat is made up of four components: food, water, cover and space.
Hardrock minerals	Include base metals, precious metals, industrial minerals, and precious or semi-precious gemstones. Hardrock minerals do not include coal, oil shale, phosphate, sodium, potassium, or gilsonite deposits. Also, hardrock minerals do not include commodities the government sells such as common varieties of sand, gravel, stone, pumice or cinder. (43CFR3500)
High water mark	the line where the vegetation begins and the shoreline ends
Hydrologic Unit	The United States is divided and sub-divided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.
Indigenous	Occurring naturally in a particular region; not introduced.
Incompatible uses	Land uses which cannot exist together by reason of either competition for limited resources or use by-products which prevent the alternative use. For example, timber harvesting and wilderness preservation are incompatible uses for one piece of land.
Inland trout	Non-anadromous trout or trout that do not migrate to the ocean. Same as resident trout.
Integrated weed management	A system for the planning implementation of a programs, using an interdisciplinary approach, to select a method for containing or controlling and undesirable plant species or group of species using all available methods including – education; prevention; physical or mechanical methods; biological control agents; herbicide methods; cultural methods and general land management. It is a multidisciplinary, ecological approach to managing unwanted plant species – weeds. (USDA Forest Service 2001b).
Invasive species	A species, including its seed, spores or other biological material, whose introduction does cause or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112).
Karst	Landforms produced primarily through the dissolving of rock, such as limestone, dolomite, marble, gypsum, and salt, are collectively known as karst. (Living with Karst)

Land Allocation — An assignment in the Forest Plan of a management emphasis to particular land areas with the purpose of achieving goals and objectives.

Land and Water Conservation Fund Act of 1965 (LWCFA) — Federal law mandating the development of a program to charge entrance and activity (use) recreation fees, based on the premise that persons using certain federal facilities and services should pay a greater proportion of the operating costs than the general taxpayer.

Landscape Aesthetics — Generally, the study, science, or philosophy dealing with beauty and with judgments concerning beauty; more specifically, those aspects of National Forest System lands which are related to the human senses of, predominantly, sight, smell, and sound. In scenery management, aesthetics describe landscapes that give visual and sensory pleasure.(FSM 2380)

Landscape Character — A combination of physical, biological, and cultural images that gives an area its visual and cultural identity and helps to define a "sense of place." Landscape character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity. (FSM 2380)

Law — Congress, and only Congress, enacts laws. The Motorboat Act of 1940, the Federal Boating Act of 1958 and the Federal Boat Safety Act of 1971 are all examples of laws which were enacted by Congress.

Lease — A type of special use authorization (usually granted for uses other than linear rights-of-way) that is used when substantial capital investment is required and when conveyance of a conditional and transferable interest in National Forest System lands is necessary or desirable to serve or facilitate authorized long-term uses, and that may be revocable and compensable according to its terms. (36 CFR 251)

Leasable Minerals — A legal term that identifies a mineral or mineral commodity that is leasable by the federal government under the Mineral Leasing Act of 1920 and similar legislation. Leasable solid minerals include coal, oil shale, native asphalt, phosphate, sodium, potash, potassium, and sulfur, while leasable fluid minerals include oil, gas and geothermal resources.

Which mineral leasing act applies depends on the type of lands and minerals involved. There are three basic categories of lands and mineral deposits subject to the leasing acts: (1) leasable minerals (as defined in the 1920 Mineral Lands Leasing Act, as amended) with public domain status, (2) leasable minerals (as defined in the Mineral Leasing Act for Acquired Lands (Act of August 7, 1947)) with acquired status, and (3) hard-rock minerals which have been acquired (as defined in the 1946 President's Reorganization Plan 3).

Limestone — Sedimentary rock often formed from ancient coral beds, which consists of a high percentage of calcium carbonate ($CaCO_3$).

Listed species — Any species of fish, wildlife, or plant that has been determined to be endangered or threatened under Section 4 of the federal ESA of 1993, as amended.

Listing	The formal process through which USFWS or NMFS adds species to the federal list of endangered and threatened wildlife and plants.
Locatable Minerals	Locatable minerals are minerals for which the right to explore, develop and extract mineral resources is established by the staking of mining claims as authorized under the General Mining Law of 1872, as amended. Locatable minerals are distinguished from federally owned minerals that are disposed of by leasing (see "leasable minerals"). Locatable minerals are mostly metallic, nonmetallic, and rare earth elements. Metallic minerals include precious metals such as gold and silver and base minerals such as zinc, molybdenum, bentonite, nickel, cinnabar, lead, tin, and copper. Some of the nonmetallic minerals are borax, feldspar, fluorspar, and gypsum. One of the rare earth elements mined as a locatable mineral is uranium.
Location (mineral claim)	The staking and recordation of a lode or placer claim, millsite, or tunnel site on public land. A valid location is one that is properly located, recorded, and maintained under Section 314 of the Federal Land Policy and Management Act of October 21, 1976, and the mining laws of the State where the claim or site is located. (See "claim")
Management Area	A contiguous area *of* land used in planning. Usually consisting of differing analysis areas, to which one or more prescriptions are applied Management Areas do not vary between alternatives, however, the prescriptions applied to them do vary.
Management prescription	Management practices and intensity selected and scheduled for application on a specific area to attain goals and objectives.
Marina	This designation includes a combination of waterfront uses that are boating oriented. These uses may include a dock or basin providing secure moorings for all types of boats, launching ramps, the supplying of food, water, fuel, repair, and other facilities or services.
Meaningful Measures (MM)	The Meaningful Measures for Quality Recreation Management system. MM is a six-step, cyclical, site and project level management system. Accomplishment is measured through established standards of quality for recreation opportunity outputs. The system determines costs t attain quality outputs; sets priorities for work to be accomplished and budget allocations; and measures the actual success at producing quality opportunity outputs.
Memorandum of Agreement (MOA)	A written agreement between a Federal recreation site and local governments, nonprofit organizations, corporations, individuals, and other federal agencies used to document receipt of funds, goods, and or services by the federal recreation site for a non-federal party.
Memorandum of Understanding (MOU)	A memorandum of understanding is the instrument used for a written plan between the Forest Service and other parties for carrying out their separate activities in a coordinated and mutually beneficial manner and for documenting a framework for cooperation.(FSM 1586)
Migratory Bird	An individual of any species protected in the United States by the Migratory Bird

	Treaty Act; a list of migratory birds can be found in Title 50, Part 10, of the Code of Federal Regulations.
Mineral	Any natural resource extracted from the earth for human use; e.g., ores, salts, coal, or petroleum.
Mineral Materials	Mineral materials include sand, stone, gravel, pumicite, cinders, pumice (except that occurring in pieces over 2 inches on a side), clay, and petrified wood. (FSM 2800)
MIST (Minimum Impact Suppression Tactics)	The concept of MIST is to use the minimum amount of force necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It is a mind set on how to suppress a wildfire yet minimize the long-term effects of the suppression action on the land. MIST may also require greater rehabilitation efforts than previously practiced.
Moorage	A delineated water surface, delineated by either floating or fixed dock structures, for the purposes of embarking, disembarking, and the wet storage of a recreational boat (a.k.a. boat slip or boat dock).
National Environmental Policy Act of 1969 (NEPA)	Federal legislation establishing the national policy that environmental impacts will be evaluated as an integral part of any major federal action. Requires the preparation of an EIS for all major federal actions significantly affecting the quality of the human environment.
National Forest Management Act of October 22, 1976 (NFMA)	The National Forest Management Act reorganized, expanded and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest lands. The National Forest Management Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests.
National Forest System	The National Forest System consists of units of Federally owned forest, range, and related lands throughout the United States and its territories, united into a nationally significant system dedicated to the long-term benefit for present and future generations. The National Forest system includes all National Forest system lands reserved or withdrawn from the public domain of the United States, all National Forest system lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under Title 111 of the Bankhead-Jones Farm Tenant Act (50 Stat 525, 7 U S C IO IOIOl2), and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.
National Historic Preservation Act of 1966, as amended	Establishes a program for the preservation of prehistoric and historic properties throughout the nation. It makes historic preservation national policy. Section 106 of the Act directs that Federal agencies shall take into account the effects of their actions on heritage resources. Section 110 of the Act directs Federal agencies to take responsibility for the preservation and management of heritage resources that are owned or controlled by the agency.
National Pollutant	A provision of the Clean Water Act that prohibits discharge of pollutants into waters

Discharge Elimination System (NPDES)	of the United States unless a permit is issued that complies with the Clean Water Act.
National Register of Historic Places	The Nation's official list of cultural resources worthy of preservation. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture.
National Visitor Use Monitoring (NVUM)	A systematic process to estimate annual recreation and other uses of National Forest lands through user surveys. Use information is gathered in five categories; day use developed sites (DUDS), overnight use developed sites (OUDS), general Forest areas (GFAs), Wilderness and viewing corridors.
Native species	Species which occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect human actions.
Noncommercial group uses	Noncommercial group uses are any activity conducted on NFS (National Forest System) lands in which (a) no entry or participation fee is charged, and (b) the primary purpose of the activity is not the sale of a good or service. Some examples are: club or family recreation outings, reunions, and weddings.
Nonpoint Source (NPS) Pollution	Pollution that, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. In general, NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. Loadings of pollutants from NPS enter water bodies via sheet flow, rather than through a pipe, ditch or other conveyance.
Noxious weed (Federal)	A plant species designated as a noxious weed by the Secretary of Agriculture pursuant to the Plant Protection Act of 2000 or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being non-native or new to or not common to the United States or parts thereof.
"NRA Legislation"	The term used in this document to refer to Public Law 89-336 which created the Whiskeytown-Shasta-Trinity National Recreation Area. See Appendix A.
Off-Highway Vehicle (OHV)	Any vehicle capable of being operated off established roads; e.g., motorbikes, and small and large four-wheel drive vehicles.
Outfitter and Guide Service	This category includes services, equipment, and, in some cases, rudimentary facilities provided by private sector holders to the recreating public. Examples of outfitting and guiding are packing, hunting, float trips, canoe or horse liveries, ski touring, helicopter skiing, jeep tours, and fishing.
Outfitting	Providing through rental or livery any saddle or pack animal, vehicle or boat, tents or camp gear, or similar supplies or equipment, for pecuniary remuneration or other gain. The term "outfitter" includes the holder's employees, agents, and instructors.

Paleontological Resources	Any remains, traces, or imprints of organisms preserved in or on the Earth's crust which have paleontological value. FSM 2880
PAOT	An acronym for Persons-At-One-Time; a measure of facility or site designed recreation carrying capacity, particularly for developed sites.
Patent	Land Patents are Federal Conveyance Documents created on the initial transfer of land titles from the Federal government to individuals.
Peak season	Refers to the highest-use recreation season.
Perennial stream	A stream that carries water during 90 percent or more of a year.
Permit	A special-use authorization that provides permission, without conveying an interest in land, to occupy and use National Forest System land or facilities for specified purposes. It is both revocable and terminable. (FSH 2709.12)
Planning Permit	A permit issued to a proponent authorizing minor disturbance of a site named in a special use proposal to gather information and data needed to develop the proposal. Planning permits usually are granted in connection with major development proposals and are categorically excluded from environmental analysis under the National Environmental Policy Act (NEPA; FSH 1909.15, ch. 30).
Point Source Pollution	Any discernable, confined, and discrete conveyance. Including, but not limited to, pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may discharge.
Portal	Entrance to an adit or tunnel.
Potable Water	Water that is safe for drinking and cooking.
Powerboat	Any motor-driven boat.
Prescribed burn	Intentional application of fire to wildland fuels in either their natural or modified state, under such conditions of weather, fuel moisture, soil moisture, etc. as to allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further ascertain planned objectives of silviculture, wildlife habitat, grazing, fire-hazard reduction, etc. It seeks to employ fire scientifically so as to realize maximum net benefits with minimum damage at acceptable costs.
Programmatic EIS	A programmatic EIS is prepared for a broad federal action, such as the adoption of a regulation, policy, plan, or program. 40 CFR 1502.4(b)
Proponent	A person or entity that submits a proposal to use or occupy National Forest System lands.

Proposal	A request to use National Forest System lands that has not passed the initial or second-level screening and that has not been accepted by the Forest Service as a formal application.
Recreation Event	This designation includes organized events of a temporary nature, such as animal, vehicle, or boat races; dog trials; fishing contests; rodeos; adventure games; and fairs.
Recreation Fee	An entrance fee, standard amenity fee, expanded amenity fee, or special recreation permit fee.
Recreation Residence	A privately built and owned structure authorized under special use permit. A privately owned dwelling within an established recreation residence tract or group on National Forest System land, authorized for maintenance and use under a special use permit. A vacation structure authorized for the purpose of facilitating the use and enjoyment of related National Forest lands and recreation resources by holders, their families, and guests. A recreation residence is not intended for use as the primary or permanent residence of the owner. (FSM 2340)
Recreation setting	Recreation setting is a geographic location composed of physical, social, and managerial attributes where a person participates in a particular activity to have a specific type of recreation experience. Managers manage the recreation setting. (WROS)
Regulations	Federal executive departments write regulations to implement the authority of laws. Regulations (as well as Executive Orders and Proclamations) are subordinate to laws but both laws and regulations are enforceable. The The United States Code is the official compilation of codified laws by subject; the U.S. Statutes-at-Large is the official chronologic compilation of all laws; and the Code of Federal Regulations is the official compilation of regulations.
Regulatory buoy	A plastic device anchored in a body of water to convey a regulatory message (e.g., speed limit or a limitation on use).
Research Natural Area	The Research Natural Area (RNA) system is a national network of ecological areas designated in perpetuity for research, education, and to maintain biological diversity on National Forest System and other federal ownerships lands.
Reservoir	Artificially impounded body of water.
Resort	Concessioner developments that include a complex of enterprises.
Right-of-way	A permit or an easement that authorizes the use of lands for certain specified purposes, such as the construction of forest access roads or a gas pipeline.
Riparian habitat	Habitats related to and influenced by surface or subsurface waters, especially the margins of streams, lakes, ponds, wetlands, seeps, and ditches. Riparian habitat refers

	to the transition zone between aquatic and upland habitat (FSM 2605)
Saleable Mineral	Sand, gravel, stone, soil, and other common-variety mineral materials disposed of through sales at not less than their appraised price or through free-use permits.
Sanitation cutting	The removal of dead, diseased, infested, damaged, or susceptible trees essentially to prevent the spread of pests or pathogens and so promote forest hygiene.
Scenic Attractiveness	The scenic importance of a landscape based on human perceptions of the intrinsic beauty of landform, rockform, waterform, and vegetation pattern. Reflects varying visual perception attributes of variety, unity, vividness, intactness, coherence, mystery, uniqueness, harmony, balance, and pattern. (Ag Hdbk 701)
Scenic Quality	The essential attributes of landscape that when viewed by people, elicit psychological and physiological benefits to individuals and, therefore, to society in general. (Ag Hdbk 701)
Sediment	Sediment includes particles of sand, clay, silt, and other substances that settle at the bottom of a body of water. Sediment can come from the erosion of soil or from the decomposition of plants and animals. Wind, water, and ice often carry these particles great distances.
Significant Cave	A cave located on National Forest System lands that has been determined to meet the criteria in §290.3 © or (d) and has been designated in accordance with §290.3(3). (From 36CFR290.2)
Special Recreation Permit Fee	Noncommercial permit and issued as a means to disperse use, protect natural and cultural resources, provide for the health and safety of visitors, allocate capacity, and/or to help cover the higher costs of providing specialized services.
Special Uses	Any use by a private party of National Forest lands and waters. Recreation special uses in the NRA include resort/marinas, recreation residences, and overnight boats. All uses of National Forest System lands, improvements, and resources, except those authorized by the regulations governing sharing use of roads (§212.9); grazing and livestock use (part 222); the sale and disposal of timber and special forest products, such as greens, mushrooms, and medicinal plants (part 223); and minerals (part 228) are designated "special uses." 36 CFR § 251.50
Special-use authorization	A permit, term permit, temporary permit, lease, or easement, or other written instrument that grants rights or privileges of occupancy and use subject to specified terms and conditions on National Forest System land.
Special-use permit	A permit issued to an individual, organization, or company for occupancy or use of NFS land for some special purpose.
Standard Amenity Fee	Fee charged for use of BLM, FS, and Reclamation sites that have a combination of basic amenities -- picnic tables, trash receptacles, toilets, developed parking, interpretive signing, and security.

Steelhead	Coastal rainbow trout (*Oncorhynchus mykiss irideus*) that exhibit an anadromous life history.
Storm Water	The storm water runoff, and snow melt runoff that is regulated as a point source under the Clean Water Act. (SWRCB)
Storm Water Discharges	Wastewater discharges originating as a result of storm induced flow that accumulates pollutants as it traverses the geography of an area or, larger scale, a watershed. (SWRCB)
Subregion	A scale of planning and analysis in the National Hierarchical Framework that has applicability for strategic, multi-forest, statewide, and multi-agency analysis and assessment.
Sulfide	A metallic mineral containing sulfur such as pyrite (FeS2), chalcopyrite (CuFeS2) or sphalerite (ZnS).
Tailings	Residual material remaining after ore is processed.
Take	When used in reference to individuals of listed threatened, endangered, proposed, candidate, or fully protected species, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.
Temporary Permit	A temporary permit terminates within 1 year or less after the approval date. All other provisions applicable to permits apply fully to temporary permits. Issue temporary permits for seasonal or short-duration uses involving minimal improvement and investment. (FSM 2711)
Term Permit	When authorized by law, term permits ensure a stability of tenure and are appropriate for facilities constructed for long-term use. Term permits are not appropriate for temporary facilities or uses. (FSM 2711)
Threatened species	Legal status afforded to plant or animal species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range, as determined by the USFWS or the NMFS.
Total Maximum Daily Load (TMDL)	A calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards.
Treatment	We use this term to mean any of a set of human activities that can assist the natural recovery of trees. Treatments include any combination of dead wood rearrangement, removal, or disposal (with or without commercial value; by any feasible method, including logging, piling, masticating, burning, etc.) for site preparation. Treatments also include planting, seeding, and monitoring for natural regeneration without site preparation. Treatments also include follow-up release to control vegetation that competes with trees during the early establishment period (by any feasible method).
Unsolicited Proposal	A proposed use of National Forest System lands that is not initiated by the Forest

Service.

Vegetation Series — A series is a floristically defined vegetation type identified by its dominant and/or characteristic species. Series are easily defined by using basic rules of dominance - the type being named by the single or shared dominant species in the highest strata in a given stand of vegetation.

Viewshed — Landscape seen or potentially seen from all or a logical part of a travel route, use area, or water body. The purpose of corridor viewshed planning is to provide the management direction for retaining or creating the desired forest character in an attractive sequential arrangement over time and space.

Visual Quality — The character, condition, and quality of a scenic landscape or other visual resource and how it is perceived, preferred, or otherwise valued by the public.

Visual Quality Objective (VQO) — A resource management objective that reflects the desired level of visual quality based on the physical characteristics and the sensitivity of the landscape setting as viewed by people. Five categories of VQO are commonly used: preservation; retention; partial retention; modification; and, maximum modification.

Waste — Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. (SWRCB)

Wastewater — The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. (SWRCB)

Waters of the United States — As defined in CWA Section 404: Navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or are adjacent to any of the above.

Water Quality Certification — State certification required by the Clean Water Act that a federally permitted activity meets state water quality standards. Under federal Clean Water Act (CWA) section 401, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification (Certification) that the proposed activity will comply with state water quality standards. Most Certifications are issued in connection with U.S. Army Corps of Engineers (Corps) CWA section 404 permits for dredge and fill discharges.

Water Quality Standards (State of California) — Water quality standards include:

1. **Beneficial Uses** - uses of water for drinking, agriculture, navigation, recreation, and fish and wildlife habitat;
2. **Objectives** - numeric and narrative limits on water characteristics or bans on substances, which affect water quality.); and
3. **Anti-Degradation Policy**- which requires that existing high-quality waters be protected and maintained.

Regional Water Quality Control Boards maintain Water Quality Control Plans (Basin Plans) for each major hydrologic basin in California. The Basin Plans list the water

	bodies in each region and describe the applicable water quality standards.
Watershed	A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place.
Wetland	Lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."
Withdrawn from Mineral Entry	Areas withdrawn from further location or mining claims or sites.
Withdrawn National Forest Lands	National Forest System lands segregated or otherwise withheld from settlement, sale, location, or entry under some or all of all of the general land laws (43 U.S.C. 1714).
Zoning	Local codes regulating the use and development of property. The zoning ordinance divides the city or county into land use districts or "zones", illustrated on zoning maps, and specifies the allowable uses within each such zone. It establishes development standards such as minimum lot size, maximum structure height, building setbacks, and yard size.

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NATIONAL RECREATION AREA
Management Guide

APPENDIXES

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Appendix A

Public Law 89-336
89th Congress, H. R. 797
November 8, 1965

An Act

To establish the Whiskeytown-Shasta-Trinity National Recreation Area in theState of California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in order to provide, in a manner coordinated with the other purposes of the Central Valley project, for the public outdoor recreation use and enjoyment of the Whiskeytown, Shasta, Clair Engle, and Lewiston reservoirs and surrounding lands in the State of California by present and future generations and the conservation of scenic, scientific, historic, and other values contributing to public enjoyment of such lands and waters, there is hereby established, subject to valid existing rights, the Whiskeytown-Shasta-Trinity National Recreation Area in the State of California (hereinafter referred to as the "recreation area"). The boundaries of the recreation area, which consists of the Whiskeytown unit, the Shasta unit, and the Clair Engle-Lewiston unit, shall be those shown in drawing numbered BOR-WST 1004, dated July 1963, entitled "Proposed Whiskeytown-Shasta-Trinity National Recreation Area", which is on file and available for public inspection in the office of the Director of the Bureau of Outdoor Recreation, Department of the Interior. The Whiskeytown unit shall be administered by the Secretary of the Interior; and the Shasta and Clair Engle-Lewiston units shall be administered by the Secretary of Agriculture, except that lands or waters needed or used for the operation of the Central Valley project shall continue to be administered by the Secretary of the Interior to the extent he determines to be required for such opera-ion. The two Secretaries shall coordinate their planning and administration of the respective units in such manner as to provide integrated management policies for the recreation area as a whole for the purposes of this Act in order to bring about uniformity to the fullest extent feasible in the administration and use of the recreation area.

ACQUISITION OP PROPERTY

SEC. 2. (a) Within the boundaries of the portion of the recreation area under his jurisdiction and outside such boundaries when required for the construction or improvement of access roads thereto, each Secretary is authorized to acquire lands, waters, or other property, or any interest therein, in such manner, including exchange as hereinafter provided, as he considers to be in the public interest to carry out the purposes of this Act. In connection with any such acquisition, each Secretary may permit the grantor a. reservation of all or any part of the minerals or of any other interest or right of use in such lands or waters on such terms and conditions as the Secretary may deem appropriate. Any property or interest therein owned by the State of California or any political subdivision thereof within the recreation area may be acquired under the authority of this Act only with the concurrence of the owner. Notwithstanding any other provision of law, any Federal property located within the recreation area may, with the concurrence of the agency having custody thereof, be transferred with-out consideration to the administrative jurisdiction of the appropriate Secretary for use by him in carrying out the purposes of this Act.

The Secretary of the Interior, in order to assure public access to Clear Creek and to provide hiking and horseback riding trails for the public, may, as he deems necessary for these purposes acquire such easements

or other interests on either or both sides of Clear Creek between the south boundary of the Whiskeytown unit and the highway at Igo, California.

The Secretary of Agriculture is authorized to acquire scenic easements or such other interests, including ownership of the land therein, as he determines to be appropriate to protect and assure the appearance of a strip of land not to exceed six hundred and sixty feet on each side of the centerline of Federal Aid Secondary Highway Numbered 1089 between the points where said highway crosses the south line of sections 10 and 20, township 35 north, range 8 west, and where it crosses the south line of section 18, township 36 north, range 7 west, on the northwesterly side of the Clair Engle-Lewiston unit: *Provided*, That such easements or interests shall not be acquired without the consent of the owners so long as the appropriate local zoning agency shall have in force and applicable to such property a duly adopted, valid, zoning ordinance that, in the judgment of the Secretary of Agriculture, con-forms to the zoning standards set forth in regulations issued pursuant to subsection (e).

The two Secretaries shall engage in mutual consultation with respect to such acquisition and to exchange transactions so as to promote uniform policies therefor insofar as practicable, taking into consideration the purposes of the recreation area as a whole, the responsibility of the Secretary of the Interior for the administration of federally owned minerals and of the Central Valley project, and the responsibility of the Secretary of Agriculture for the administration of national forests.

(b) When the public interests will be benefited thereby, the Secretary of the Interior and the Secretary of Agriculture are each authorized to accept title to any non Federal property within any part of the recreation area and in exchange therefor convey to the grantor of such property any federally owned property under his jurisdiction within the State of California which he classifies as suitable for exchange or other disposal, notwithstanding any other provision of law. The properties so exchanged shall he approximately equal in fair market value: *Provided*, That the Secretary of the Interior or the Secretary of Agriculture, as the case may be, may accept cash from or pay cash to the grantor in such exchange in order to equalize the value of the properties exchanged. The Secretary of Agriculture shall obtain the concurrence of the Secretary of the Interior with respect to the value of any mineral interests in any such exchange proposed to be made by the Secretary of Agriculture.

(c) Any owner or owners of improved residential property on the date of its acquisition by either Secretary may, as a condition to such acquisition, retain the right of use and occupancy of the property by himself and members of his immediate family for noncommercial residential purposes for a term ending at the death of such owner, the death of his spouse, or the day his last surviving child reaches the age of thirty, whichever is the latest. The value of the right retained shall be taken into consideration by the respective Secretary in deter-mining the value of the property being acquired.

(d) Privately owned "improved property" or interests therein shall not be acquired under this Act without the consent of the owner so long as an appropriate local zoning agency shall have in force and applicable to such property a duly adopted, valid, zoning ordinance that is approved by the Secretary having jurisdiction of the unit wherein the property is located. The term "improved property" as used in this Act shall mean any building or group of related buildings the actual construction of which was begun before February 7, 1963, together with not more than three acres of the land in the same owner-ship on which the building or group of buildings is situated: *Provided*. That the respective Secretary may exclude from improved property any shore or waters, together with so much of the land adjoining such shore or waters as he deems necessary for public access thereto.

(e) Prior to the approval of any zoning ordinance for the purposes of this section, the Secretary of the Interior and the Secretary of Agriculture shall jointly issue regulations, which may be amended from time to time, specifying standards for such zoning ordinances. Standards specified in such regulations shall have the object of (1) prohibiting new commercial or industrial uses, other than commercial or industrial uses which the Secretaries consider to be consistent with the purposes of this Act; (2) promoting the protection and develop-ment of properties for purposes of this Act by means of use, acreage, frontage, setback, density, height, or other requirements; and (3) providing that the appropriate Secretary shall receive notice of any variance granted under, or any exception made to, the application of the zoning ordinance. Following issuance of such regulations, each Secretary shall approve any zoning ordinance or any amendment to an approved zoning ordinance submitted to him that conforms to the standards contained in the regulations in effect at the time of

adoption of the ordinance or amendment. Such approval shall remain effective for so long as such ordinance or amendment remains in effect as approved.

(f) The suspension of the respective Secretary's authority to acquire any improved property without the owner's consent shall automatically cease if (1) such property is made the subject of a variance or exception to any applicable zoning ordinance that does not conform to any applicable standard contained in regulations issued pursuant to this section; or (2) if such property is put to any use which does not conform to any applicable zoning ordinance.

(g) Each Secretary shall furnish to any party in interest upon request a certificate indicating the property with respect to which the Secretary's authority to acquire without the owner's consent is suspended.

(h) Within the Shasta and Clair Engle-Lewiston units any owner of unimproved property who proposes to develop his property or a part thereof for service to the public may submit to the Secretary of Agriculture a development plan which shall set forth the manner in which and the time by which the property is to be developed and the use to which it is proposed to be put. If upon review of such plan the Secretary determines that the development and use of the property in the manner prescribed conforms to a zoning ordinance approved in accordance with the provisions of this section and that such use and development would serve the purposes of this Act, the Secretary of Agriculture may in his discretion issue to such owner a certificate to that effect. Upon the issuance of any such certificate and so long as such property is developed, maintained, and used in conformity there-with, the authority of the Secretary of Agriculture to acquire such property or any interest therein without the consent of the owner shall be suspended. This subsection shall not apply to any property which the Secretary of Agriculture determines to be needed for easements and rights-of-way for access, utilities, or facilities, or for administrative sites, campgrounds, or other areas needed for use by the United States for visitors to the national recreation area.

ESTABLISHMENT OF UNITS: BOUNDARY DESCRIPTIONS

SEC. 3. (a) When the Secretary of Agriculture determines that sufficient lands, waters, or interest therein are owned or have been acquired by the United States within the boundaries of the Shasta unit or within the boundaries of the Clair Engle-Lewiston unit to permit efficient initial development and administration for the purposes of this Act, he shall publish in the Federal Register a notice to that effect and a detailed description of the boundaries of such unit.

(b) When the Secretary of the Interior determines that sufficient lands, waters, or interest therein are owned or have been acquired by the United States within the boundaries of the Whiskeytown unit to permit efficient initial development and administration for the purposes of this Act, he shall publish in the Federal Register a notice to that effect and a detailed description of the boundaries of the unit.

(c) Following the publication of any such notice, the respective Secretaries may continue to acquire the remaining property within the recreation area.

ADMINISTRATION: PRIORITIES

SEC. 4. (a) Each Secretary is authorized and directed to administer the portion of the recreation area under his jurisdiction in a manner coordinated with the other purposes of the Central Valley project and with the purposes of the recreation area as a whole and in such manner as in his judgment will best provide for (1) public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and such management, utilization, and disposal of renewable natural resources as in the judgment of the respective Secretary will promote or is, compatible with, and does not significantly impair, public recreation and conservation of scenic, scientific, historic, or other values contributing to public enjoyment. Such administration shall be carried out under land and water use management plans which each Secretary shall prepare and may from time to time revise in consultation with the other.

(b) In the administration of the portion of the recreation area under his jurisdiction--

(1) the Secretary of Agriculture shall utilize statutory authorities relating to the national forests in such manner as he deems appropriate to carry out the purposes of this Act ; and

(2) the Secretary of the Interior may utilize such statutory authorities relating to areas of the national park system and such statutory authority otherwise available to him for the conservation and development of natural resources as he deems appropriate to carry out the purposes of this Act.

HUNTING AND FISHING

SEC. 5. Each Secretary shall permit hunting and fishing on lands and waters under his jurisdiction within the recreation area in accordance with the applicable laws of the State of California and of the United States: *Provided*, That each Secretary may designate zones where, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment not compatible with hunting or fishing. Regulations prescribing any such restrictions shall be issued after consultation with the California Department of Fish and Game.

MINERAL DEVELOPMENT

SEC. 6. The lands within the recreation area, subject to valid existing rights, are hereby withdrawn from location, entry, and patent under the United States mining laws. The Secretary of the Interior, under such regulations as he deems appropriate, may permit the removal of the nonleasable minerals from lands or interests in lands under his jurisdiction within the recreation area in the manner pre-scribed by section 10 of the Act of August 4, 1939, as amended (53 Stat. 1196; 43 U.S.C. 387), and from those under the jurisdiction of the Secretary of Agriculture within the recreation area in accordance with the provisions of section 3 of the Act of September 1, 1949 (63 Stat. 683; 30 U.S.C. 192c), and he may permit the removal of leasable minerals from lands or interests in lands within the recreation area in accordance with the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181 et seq.), or the Acquired Lands Mineral Leasing Act of August 7, 1947 (30 U.S.C. 351 et. seq.), if he finds that such disposition would not have significant adverse effects on the purposes of the Central Valley project or the administration of the recreation area: *Provided*, That any lease or permit respecting such minerals in lands administered by the Secretary of Agriculture shall be issued only with his consent and subject to such conditions as he may prescribe.

All receipts derived from permits and leases issued under the authority of this section on lands administered by the Secretary of Agriculture shall be paid into the same funds or accounts in the Treasury of the United States and shall be distributed in the same manner as provided for other receipts from the lands affected by the lease or permit, except that any receipts derived from permits or leases issued on those or other lands in the recreation area under the Mineral Leasing Act of February 25, 1920, as amended, or the Act of August. 7, 1947, shall be disposed of as provided in the applicable Act; and receipts from the disposition of nonleasable minerals from public lands under the jurisdiction of the Secretary of the Interior shall be disposed of in the same manner as moneys received from the sale of public lands.

STATE JURISDICTION

SEC. 7. Nothing in this Act shall deprive any State or political subdivision thereof of its right to exercise civil and criminal jurisdiction within the recreation area or of its right to tax persons, corporations, franchises, or property, including mineral or other interests, in or on lands or waters within the recreation area.

ADDITIONS TO THE SHASTA AND TRINITY NATIONAL FORESTS

SEC.8. The exterior boundaries of the Shasta National Forest in the State of California are hereby extended to include the lands described in the Act of March 19, 1948 (62 Stat. 83), and sections 22 and 27, township 35 north, range 1 west, Mount Diablo base and meridian. The exterior boundaries of the Trinity National Forest in the State of California are hereby extended to include all of sections 4, 5, and 8, the east half and the northwest quarter of section 6, the east half of section 7, the northwest quarter of section 17, and the northeast quarter of section 18, township 33 north. range 8 west, Mount Diablo base and meridian. Subject to any valid claim or entry now existing and hereafter legally maintained, all public lands of the United States

and all lands of the United States heretofore or hereafter acquired or reserved for use in connection with the Shasta, Clair Engle, or Lewiston Reservoirs of the Central Valley project within the exterior boundaries of the Shasta and Trinity National Forests which have not heretofore been added to and made a part of such forests, and all lands of the United States acquired for the purposes of the recreation area in the Shasta or Clair Engle-Lewiston units are hereby added to and made a part of the respective national forests within which they are situated : *Provided*, That lands within the flow lines of any reservoir operated and maintained by the Department of the Interior or otherwise needed or used for the operation of the Central Valley project shall continue to be administered by the Secretary of the Interior to the extent he determines to be required for such operation.

SEC. 9. Revenues and fees obtained by the United States from operation of the national recreation area shall be subject to the same statutory provisions concerning the disposition thereof as are similar revenues collected in areas of the national park system except that fees and revenues obtained from mineral development and from activities under other public land laws within the recreation area shall be disposed of in accordance with the provisions of the applicable laws.

SEC. 10. There are hereby authorized to be appropriated for the acquisition of lands and interests in land pursuant to the provisions of this Act not more than $21,600,000. There are also authorized to be appropriated not more than $22,700,000 for the development of recreation facilities pursuant to the provisions of this Act.

Approved November 8, 1965.

Appendix B

PART 292—NATIONAL RECREATION AREAS
Subpart B—Whiskeytown-Shasta-Trinity National Recreation Area

Section 292.11 Introduction.

(a) Administration of the Shasta and Clair Engle-Lewiston Units will be coordinated with the other purposes of the Central Valley Project of the Bureau of Reclamation and of the recreation area as a whole so as to provide for: (1) Public outdoor recreation benefits; (2) conservation of scenic, scientific, historic, and other values contributing to public enjoyment; and (3) the management, utilization, and disposal of renewable natural resources which in the judgment of the Secretary of Agriculture will promote or is compatible with, and does not significantly impair, public recreation and conservation of scenic, scientific, historic, or other values contributing to public enjoyment.

(b) The Secretary may not acquire without consent of the owner any privately owned "improved property" or interests therein within the boundaries of these units, so long as the appropriate local zoning agency shall have in force and applicable to such property a duly adopted, valid, zoning ordinance that is approved by the Secretary. This suspension of the Secretary's authority to acquire "improved property" without the owner's consent would automatically cease: (1) If the property is made the subject of a variance or exception to any applicable zoning ordinance that does not conform to the applicable standards contained in §§292.11 to 292.13; or (2) if such property is put to any use which does not conform to any applicable zoning ordinance approved by the Secretary.

(c) Improved property as used in §§292.11 to 292.13, means any building or group of related buildings, the actual construction of which was begun before February 7, 1963, together with not more than three acres of land in the same ownership on which the building or group of buildings is situated, but the Secretary may exclude from such "improved property" any shore or waters, together with so much of the land adjoining such shore or waters, as he deems necessary for public access thereto.

(d) Sections 292.11 to 292.13 specify the standards with which local zoning ordinances for the Shasta and Clair Engle-Lewiston Units must conform if the "improved property" or unimproved property proposed for development as authorized by the Act within the boundaries of the units is to be exempt from acquisition by condemnation. The objectives of §§292.11 to 292.13 are to: (1) Prohibit new commercial or industrial uses other than those which the Secretary considers to be consistent with the purposes of the act establishing the national recreation area; (2) promote the protection and development of properties in keeping with the purposes of that Act by means of use, acreage, setback, density, height or other requirements; and (3) provide that the Secretary receive notice of any variance granted under, or any exception made to, the application of the zoning ordinance approved by him.

(e) Following promulgation of §§292.11 to 292.13 of final form, the Secretary is required to approve any zoning ordinance or any amendment to an approved zoning ordinance submitted to him which conforms to the standards contained in the regulations in effect at the time of adoption of the ordinance or amendment.

(f) Any owner of unimproved property who proposes to develop his property for service to the public may submit to the Secretary a development plan setting forth the manner in which and the time by which the property is to be developed and the use to which it is proposed to be put. If the Secretary determines that the development and the use of the property conforms to approved zoning ordinances, and serves the purposes of the National Recreation Area and that the property is not needed for easements and rights-of-

way for access, utilities, or facilities, or for administration sites, campgrounds, or other areas needed for use by the United States for visitors, he may in his discretion issue to such owner a certification that so long as the property is developed, maintained, and used in conformity with approved zoning ordinances the Secretary's authority to acquire the property without the owner's consent is suspended.

Section 292.12 General provisions; procedures.

(a) Approval of zoning ordinance and development plans. (1) All validly adopted zoning ordinances and amendments thereto pertaining to the Shasta and Clair Engle-Lewiston Units may be submitted by the county of origin to the Secretary for written approval relative to their conformance with the applicable standards of §§292.11 to 292.13. Within 60 days following submission, the county will be notified of the Secretary's approval or disapproval of the zoning ordinances or amendments thereto. If more than 60 days are required, the county will be notified of the expected delay and of the additional time deemed necessary to reach a decision. The Secretary's approval shall remain effective so long as the zoning ordinances or amendments thereto remain in effect as approved. (2) Development plans pertaining to unimproved property within the Shasta and Clair Engle-Lewiston Units may be submitted by the owner to the Secretary for determination as to whether they conform with approved zoning ordinances and whether the planned use and development would serve the Act. Within 30 days following submission of such plans the Secretary will approve or disapprove the plans or, if more than 30 days are required, will notify the applicant of the expected delay and of the additional time deemed necessary.

(b) Amendment of ordinances. Amendments of approved ordinances may be furnished in advance of their adoption to the Secretary for written decision as to their conformance with applicable standards of §§292.11 to 292.13.

(c) Variances or exceptions to application of ordinances. (1) The Secretary shall be given written notice of any variance granted under, or any exception made to, the application of a zoning ordinance or amendment thereto approved by him. (2) The County, or private owners of improved property, may submit to the Secretary proposed variances or exceptions to the application of an approved zoning ordinance or amendment thereto for written advice as to whether the intended use will make the property subject to acquisition without the owner's consent. Within 30 days following his receipt of such a request, the Secretary will advise the interested party or parties as to his determination. If more than 30 days are required by the Secretary for such determination, he shall so notify the interested party or parties stating the additional time required and the reasons therefore.

(d) Certification of property. Where improvements and land use of improved property conform with approved ordinances, or with approved variances from such ordinances, certification that the Secretary's authority to acquire the property without the owner's consent is suspended may be obtained by any party in interest upon request to the Secretary. Where the development and use of unimproved property for service to the public is approved by the Secretary, certification that the authority to acquire the property without the owner's consent is suspended may be issued to the owner.

(e) Effect of noncompliance. Suspension of the Secretary's authority to acquire any improved property without the owner's consent will automatically cease if: (1) Such property is made the subject of variance or exception to any applicable zoning ordinance that does not conform to the applicable standard in the Secretary's regulation, (2) such property is put to a use which does not conform to any applicable zoning ordinance, or, as to property approved by the Secretary for development, a use which does not conform to the approved development plan or (3) the local zoning agency does not have in force a duly adopted, valid zoning ordinance that is approved by the Secretary in accordance with the standards of §§292.11 to 292.13.

(f) Nonconforming commercial or industrial uses. Any existing commercial or industrial uses not in conformance with approved zoning ordinances shall be discontinued within 10 years from the date such ordinances are approved: Provided, however, That with the approval of the Secretary such 10-year period may

be extended by the county for a prescribed period sufficient to allow the owner reasonable additional time to amortize investments made in the property before November 8, 1965.

Section 292.13 Standards.

(a) The standards set forth in §§292.11–292.13 shall apply to the Shasta and Clair Engle-Lewiston Units, which are defined by the boundary descriptions in the notice of the Secretary of Agriculture of July 12, 1966 (31 FR 9469), and to a strip of land outside the National Recreation Area on either side of Federal Aid Secondary Highway Numbered 1089, as more fully described in 2(a) of the act establishing the recreation area (79 Stat. 1296).

(b) New industrial or commercial uses. New industrial or commercial uses will be prohibited in any location except under the following conditions: (1) The industrial use is such that its operation, physical structures, or waste byproducts would not have significant adverse impacts on surrounding or nearby outdoor recreation, scenic and esthetic values. Industrial uses having an adverse impact include, but are not limited to, cement production, gravel extraction operations involving more than one-fourth acre of surface, smelters, sand, gravel and aggregate processing plants, fabricating plants, pulpmills, and commercial livestock feeder yards. (2)(i) The commercial use is for purposes of providing food, lodging, automotive or marine maintenance facilities and services to accommodate recreationists and the intended land occupancy and physical structures are such that they can be harmonized with adjacent land development and surrounding appearances in accordance with approved plans and schedules. (ii) This standard provides for privately owned and operated businesses whose purposes and physical structures are in keeping with objectives for use and maintenance of the area's outdoor recreation resources. It precludes establishment of drive-in theaters, zoos, and similar nonconforming types of commercial entertainment.

(c) Protection of roadsides. Provisions to protect natural scenic qualities and maintain screening along public travel routes will include: (1) Prohibition of new structural improvements or visible utility lines within a strip of land extending back not less than 150 feet from both sides of the centerline of any public road or roadway except roads within subdivisions or commercial areas. In addition to buildings, this prohibition pertains to above-ground power and telephone lines, borrow pits, gravel, or earth extraction areas, and quarries. (2) Retention of trees and shrubs in the above-prescribed roadside strips to the full extent that is compatible with needs for public safety and road maintenance. Wholesale clearing by chemical or other means for fire control and other purposes will not be practiced under this standard.

(d) Protection of shorelines. Provisions to protect scenic qualities and reduce potentials for pollution of public reservoirs will include: Prohibition of structures within 300 feet horizontal distance from highwater lines of reservoirs other than structures the purpose of which is to service and accommodate boating or to facilitate picnicking and swimming: Provided, That exceptions to this standard may be made upon showing satisfactory to the Secretary that proposed structures will not conflict with scenic and antipollution considerations.

(e) Property development. Location and development of structures will conform with the following minimum standards: (1) Commercial development. (i) Stores, restaurants, garages, service stations, and comparable business enterprises will be situated in centers zoned for this purpose unless they are operated as part of a resort or hotel. Commercial centers will be of sufficient size that expansion of facilities or service areas is not dependent upon use of public land. (ii) Sites outside designated commercial centers will be used for resort development contingent upon case by case concurrence of the responsible county officials and the Secretary that such use is, in all aspects, compatible with the purposes for establishing the recreation area. (iii) Structures for commercial purposes, inclusive of isolated resorts or motels, will not exceed two stories height at front elevation, and will be conventional architecture and will utilize colors, nonglare roofing materials, and spacing or layout that harmonizes with forested settings. Except for signs, structures designed primarily for purposes of calling attention to products or service will not be permitted.

(2) Residential development. (i) Locations approved for residential development will be buffered by distance, topography, or forest cover from existing or planned public use areas such as trailer parks, campgrounds, or organization sites. Separation will be sufficient to avoid conflicts resulting from intervisibility, noise, and proximity that is conducive to private property trespass. (ii) Requirements for approval of residential areas will include: (a) Construction of access when main access would otherwise be limited to a road constructed by the United States primarily to service publicly owned recreation developments; (b) limitation of residences to single-family units situated at a density not exceeding two per acre, but any lot of less than a half-acre may be used for residential purposes if, on or before promulgation of §§292.11–292.13, such lot was in separate ownership or was delineated in a county-approved plat that constitutes part of a duly recorded subdivision; (c) use of set-backs, limitations to natural terrain, neutral exterior colors, non-glare roofing materials, and limitations of building heights fully adequate to harmonize housing development with the objective of the National Recreation Area as set forth in the act.

(3) Signs and signing. Only those signs may be permitted which: (i) Do not exceed 1 square foot in area for any residential use; (ii) do not exceed 40 square feet in area, 8 feet in length, and 15 feet maximum height from ground for any other use, including advertisement of the sale or rental of property; and (iii) which are not illuminated by any neon or flashing device. Commercial signs may be placed only on the property on which the advertised use occurs, or on the property which is advertised for sale or rental. Signs shall be subdued in appearance, harmonizing in design and color with the surroundings and shall not be attached to any tree or shrub. Nonconforming signs may continue for a period not to exceed 2 years from the date a zoning ordinance containing these limitations is adopted.

(Data is current as of January 6, 2014)

Appendix C

Notice of Establishment and Description of Boundaries in Whiskeytown-Shasta-Trinity National Recreation Area. Federal Register, Volume 31, No. 133, Tuesday, July 12, 1966.

Office of the Secretary

CALIFORNIA

Notice of Establishment and Description of Boundaries in Whiskeytown-Shasta-Trinity National Recreation Area

Pursuant to the authority vested in me by Public Law 89-336 (sec. 3(a), 79 Stat. 1297), which established the Whiskeytown-Shasta-Trinity National Recreation Area in the State of California, notice is hereby given that I have determined that sufficient lands, waters, or interests therein are owned or have been acquired by the United States within the boundaries of the Clair Engle-Lewiston and Shasta Units of the Whiskeytown-Shasta-Trinity National Recreation Area to permit efficient initial development and administration of the units for the purposes of Public Law 89-336. The boundaries of the Clair Engle-Lewiston and Shasta units encompass the following described lands:

CLAIR ENGLE-LEWISTON UNIT

MOUNT DIABLO MERIDIAN

T. 34 N., R. 7 W.,
Sec. 18.
T. 35 N., R. 7 W.,
Secs. 4 to 9, inclusive;
Secs. 16, NW¼NE¼, N½NW¼;
Secs. 17 to 20, inclusive;
Secs. 29 to 31, inclusive.
T. 36 N., R. 7 W.,
Secs. 1 to 4, inclusive;
Secs. 5 and 8, those portions lying easterly of a line measured horizontally 300 feet from and parallel to the maximum westerly flow line of Clair Engle Lake;
Secs. 9 to 16, inclusive;
Sec. 17, that portion lying easterly of a line measured horizontally 300 feet from and parallel to the maximum westerly flow line of Clair Engle Lake;
Secs. 20 to 36, inclusive.
T. 37 N., R. 7 W.,
Secs. 16 and 17;
Sec. 18, E½;
Sec. 19, E½;
Secs. 20, 21, 28, and 29;
Sec. 30, E½;
Secs. 32 to 36, inclusive.

T. 33 N., R. 8 W.,
Secs. 4 and 5;
Sec. 6, N½, SE¼;
Sec. 7, E½;
Sec. 8;
Sec. 17, NW¼;
Sec. 18, NE¼.
T. 34 N., R. 8 W.,
Secs. 1 to 18, inclusive;
Sec. 20, E½;
Secs. 21 to 24, inclusive;
Secs. 27 and 28;
Sec. 29, E½;
Sec. 32, E½;
Sec. 33.
T. 35 N., R. 8 W.,
Secs. 1 and 2;
Secs. 10 to 16, inclusive;
Secs. 21 to 36, inclusive.
T. 36 N., R. 8 W.,
Sec. 36, that portion lying easterly of a line between the SE corner of the SW¼ SW¼ and the NW¼ corner of the NE¼ NE¼.
T. 34 N., R. 9 W.,
Secs. 1 and 2;
Sec. 3, N½.
T. 35 N., R. 9 W.,
Sec. 25, S½;
Sec. 26, S½;
Sec. 27, S½;
Secs. 34 to 36, inclusive.

SHASTA UNIT

MOUNT DIABLO MERIDIAN

T. 34 N., R. 1 W.,
Secs. 6 and 7.
T. 35 N., R. 1 W.,
Sec. 31.
T. 33 N., R. 2 W.,
Sec. 4, W½;
Secs. 5 and 6.
T. 34 N., R. 2 W.,
Secs. 6 to 12, inclusive;
Secs. 14 to 21, inclusive;
Secs. 28 to 32, inclusive;
Sec. 33, W½.
T. 33 N., R. 3 W.,
Secs. 1 to 6, inclusive;
Secs. 8 to 10, inclusive.
T. 34 N., R. 3 W.,
Sec. 1;
Secs. 4 to 36, inclusive.
T. 35 N., R. 3 W.,
Sec. 4, S½;
Sec. 5, W½ and SE¼;
Secs. 6 to 9, inclusive;
Secs. 16 to 21, inclusive;
Secs. 28 to 33, inclusive.
T. 36 N., R. 3 W.,
Sec. 31, E½;
Sec. 32, W½.
T. 33 N., R. 4 W.,
Sec. 1;
Sec. 2, N½N½;
Sec. 3, N½NE¼, SW¼NE¼, NW¼;
Sec. 4, N½, SW¼;
Secs. 5 and 6.
T. 34 N., R. 4 W.,
Secs. 1 to 36, inclusive.
T. 35 N., R. 4 W.,
Sec. 6, W½;
Sec. 7, W½;
Secs. 18 and 19;
Secs. 23 to 26, inclusive;
Sec. 29, S½;
Secs. 30 to 36, inclusive.
T. 33 N., R. 5 W.,
Secs. 1 to 12, inclusive;
Sec. 13, N½N½;
Secs. 14 to 18, inclusive.
T. 34 N., R. 5 W.,
Secs. 1 to 4, inclusive;
Secs. 9 to 16, inclusive;
Secs. 21 to 28, inclusive;
Secs. 33 to 36, inclusive.
T. 35 N., R. 5 W.,
Secs. 1, 2 and the N½ of Sec. 12, all those portions lying north or east of a line measured horizontally 300 feet from and parallel to the maximum westerly flow line of Shasta Lake;
Sec. 13, S½NE¼, E½SW¼, SE¼;
Secs. 13 and 14;
Secs. 23 to 26, inclusive;
Sec. 27, S½;
Sec. 28, S½;
Secs. 33 to 36, inclusive.

Done at Washington, D.C., this 6th day of July 1966.

JOHN A. SCHNITTKER,
Acting Secretary of Agriculture.

[F.R. Doc. 66-7545; Filed, July 11, 1966; 8:47 a.m.]

FEDERAL REGISTER, VOL. 31, NO. 133—TUESDAY, JULY 12, 1966

Washington Office Direction. Memorandum from Deputy Chief dated March 23, 1966.

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

UNITED STATES GOVERNMENT - **Forest Service**
Washington, D.C. 20250

Memorandum

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TO : **Regional Forester, R-5**

DATE: MAR 23 1966

FROM : **M. M. Nelson, Deputy Chief**

SUBJECT: **Interdepartmental - Whiskeytown-Shasta-Trinity National Recreation Area**

AIRMAIL

This refers to Public Law 89-336 (79 Stat. 1295), "To establish the Whiskeytown-Shasta-Trinity National Recreation Area in the State of California, and for other purposes.", copies of which you have received. Purpose of this memorandum is to discuss the provisions, requirements, and opportunities offered by P.L. 89-336 and to outline some of the actions necessary to make it effective, as we see them.

You already have copies of the Department's report on H.R. 797, the bill which, with some amendments became law, the Chief's statement to the House Interior and Insular Affairs Committee on this bill, and the supplementary statements furnished the House Committee with the Chief's letter of March 19, 1965 to Congressman Rivers. These generally present the Department's views on the provisions of the bill, its purposes and functions.

In enacting P.L. 89-336, Congress established outdoor recreation as the principal use of the National Forest lands included in the NRA. The effect is to direct the Secretary to develop this area to the optimum extent for public outdoor recreation use. By this act, Congress extends national recognition to the area, recognizes its outstanding qualities, and contemplates an intensity and quality of development and management commensurate with its status as a nationally recognized and designated public recreation area. Through this Act Congress also recognizes the competency of the Forest Service to develop and administer National Recreation Areas, which heretofore have been only units of the National Park System. By statute it has placed responsibility for the major units of the NRA in the Department of Agriculture and the Forest Service. We must to the full extent of financial and managerial capabilities redeem this responsibility.

While public outdoor recreation and the conservation of scenic, scientific, historic, and other values which contribute to public enjoyment of the recreation resources are the primary purposes of the NRA, the utilization of other resources and values to the full extent that such uses can be harmonized with and not significantly impair the recreation and other values contributing to public enjoyment is specifically provided for by the Act. To make adequate use of water, timber, minerals, forage and game resources in ways that will be compatible with scenic preservation presents a particular challenge to our land use programming abilities.

LAND USE AND DEVELOPMENT PLANS

An initial and high-priority requirement therefore is the preparation of broad-gauged, imaginative overall plans for (1) the conservation, development, and

management of public recreation resources and the scenic and other values which contribute to public enjoyment of them, (2) coordination of recreational and other uses on public and private land, and (3) maximum use of the commodity-type resources in ways fully compatible with recreation use and scenic preservation and, where possible, enhance these basic recreational assets.

Manual material on National Recreation Areas, which will include planning guidelines is in process of preparation. As it will take sometime to complete and process this material, we suggest you follow generally the guidelines and format for recreation area plans, (FSM-2312.31 - "c" and "d" and FSH-2313, 74-31 to 74-35), expanded to provide for the special conditions required by the establishing legislation and giving emphasis to the coordinating requirements for the various resources. Up-to-date multiple-use plans which recognize the special requirements of the National Recreation Area are a requisite.

The directives of the law apply not only to the lakes and major streams but to all of the land area encompassed in the recreation area. Recreation planning must encompass the entire area, land as well as water and shorelines. Scenic values adjacent to Interstate No. 5 and other highways and roads, trails, scenic overlooks, perhaps scenic drives, nature study areas, wildlife observation facilities, possibly rock collection areas, etc., are examples of needs and possibilities to be considered. The Trinity unit in particular can be the base for recreation uses extending into other areas of the forest, and particularly to the Salmon-Trinity Alps Area. Additionally, there should be opportunity to place some of the overnight camping and other uses on surrounding National Forest lands Timber and other uses near the recreation area can affect the management within it. Hence planning should extend to adjacent lands contributory to but outside of the recreation area as well as to the lands within it - to the total impact area.

The directive to conserve scenic, scientific, historic and other values contributing to public enjoyment is explicit. This applies to all lands within the National Recreation Area. The overall land use and development plan, therefore, must encompass necessary measures to achieve this objective as well as the more specific resource use and development programs.

More intensive use of the three main lakes may require zoning for or against certain uses or other special measures to assure harmonious use of the water resources. The Master Plan should anticipate and provide for any such need. Use of the NRA can be materially affected by the transportation system. Therefore, road, trail, and airport system planning is an important part of an overall land use and development plan.

Our letter of May 19, 1965 under the same designation commented in some detail on the Master Plan for the Trinity unit furnished with your February 24, 1965 memorandum. The same comments apply to the basically similar plan for the Shasta unit. As pointed out then, these plans fall short of an adequate land use and development plan for these units, considering the status which Congress has given

them. To the extent that you have not already done so, you are requested to proceed with the preparation of adequate overall plans for the Forest Service administered portions of the NRA. In this program, you might well enlist the assistance of the Pacific Southwest Station, particularly in the development of new or up-dated recreational use predictions. Adequate overall plans should be substantially completed during 1966.

FACILITIES DEVELOPMENT

Establishment of the NRA implies development of a high level of facilities, both quantity-wise and quality-wise, and a high level of management. We should maintain the basic Forest Service policy of providing in National Forest areas relatively simple types of accommodations. Within this guideline, however, special attention must be paid to sanitation and the avoidance of pollution, to esthetics, to perpetuation of the spacious and relatively natural environment which now exists and which forms one of the chief attractions of the National Forest units as compared to the Whiskeytown unit, and to assurance of adequate access to lakes and appurtenant streams. Recreation facilities policies will need to be critically reviewed in the light of these guidelines, particularly those in regard to such facilities as boat launching ramps. Policy will be to assure adequate access to the lakes for public use and this will include facilities for parking and for getting boats into and out of the lakes as well as access roads. Policy will also be to assure, on a planned, feasible, and phased basis, installations necessary for full public use, public health protection, and to assure against any pollution of streams and reservoirs through recreational use.

We should vigorously implement our policy of providing service facilities - motels, restaurants, stores, service stations, boat repair and rental, etc. - through private development either on private lands or through special-use permits. Again, these facilities should be of a high level quality-wise. Again, also, policies in regard to responsibilities of the Forest Service and the concessionaire, respectively, for development of concession sites will need to be reviewed. The Forest Service should make such provision in this regard as is necessary to assure competent, stable, well financed concessionaires and quality developments and services. Section 2(h) of the act, discussed in more detail later, affords an opportunity to work affirmatively with developers of private tracts to assure modern and esthetically acceptable facilities and an acceptable quality of services.

National Recreation Area policy guides, standards, and an action program to implement all of the above should be developed promptly. This should be tied to the land use and adjustments plans and should be in sufficient detail to provide budget support. Please furnish copies to this office.

INTERAGENCY COORDINATION

Section 1 of the act provides that the two Departments shall coordinate planning and administration of the respective units so as to provide integrated management policies for the recreation area as a whole in order to bring about uniformity to

the fullest extent feasible in administration and use of the entire recreation area. Recreation area uses also must be coordinated with the purposes of the Central Valley Project, that is, with management of the reservoirs by the Bureau of Reclamation.

The requirement for integrated management policies and for uniformity in administration and use of the recreation area to the fullest extent feasible does not mean that plans, developments, or administration need be identical. The initial report on the then proposed National Recreation Area, published by BOR in April 1963 states: "Such a National Recreation Area may be administered by one or more agencies ---- so long as the units are established as part of the National Recreation Area for which there is a common master plan for administration, development, and use, and each agency's programs are in accord with the master plan." On page 8 the same report recommends: "The agencies with management responsibilities for the NRA should prepare a coordinated resource development plan. The purpose of this plan would be not only to insure that recreation development of the several units within the area is coordinated but that the recreation resource development is coordinated with programs for use of the other resources in the area."

To meet the requirements of the act in this regard and as a common sense measure to assure harmonious use and development of the three units, the Forest Service and the Park Service should jointly prepare a management and development coordination plan which will be the overall guide for the NRA.

This plan should also take cognizance of the interests of State and local governments, other federal land management agencies in the area, and private landowners. The plan should state the overall objectives of development and management for each of the three units; provide adequately for priorities and phasing of developments; provide for correlation of the public information activities; take cognizance of agreed-upon limitations on uses, if any are required, or agreements that some types of uses will be encouraged at one unit but not at others; include agreement on basic policies for other resource uses as timber, hunting, mining, recreation homes, commercial special uses, etc.; and provide the mechanism for continual consultation and coordination of activities. As we see it this will be general in scope but specific enough to guide the preparation of the land use and development plans for each unit.

We believe you already have agreements with the Bureau of Reclamation adequately coordinating National Forest uses with the reclamation requirements for management of Shasta and Clair Engle-Lewiston Reservoirs. However, to the extent not already done these should be reviewed and revised as appropriate now that all lands have National Forest status and is included in the NRA.

COOPERATIVE MANAGEMENT ARRANGEMENTS

Since the three units will often be used alternately by the same people or by people moving from one to another, there will be need for continuous on-the-ground cooperation of certain aspects of administration and management. Fire prevention

measures, particularly such measures as smoking restrictions or fire closures; hunting controls and limitations; restrictions on reservoir uses such as zoning out speed boating or water-skiing; and information activities are examples. This will need to be accomplished by day-to-day liaison between the Forest Supervisor and the Whiskeytown unit Superintendent.

LAND ACQUISITION

Section 2 of the act authorizes acquisition of lands or interests in lands within the National Recreation Area. Lands outside the boundaries or interests therein required for construction or improvement of access roads to the recreation area also can be acquired under this act. Special provision is made for the Secretary of Agriculture to acquire scenic easements or other interests in lands, or title to lands, to protect and assure the appearance of the roadside adjoining FAS Highway 1089 within certain classified areas.

Acquisition of lands and scenic easements within those parts of the Trinity and Shasta units that were within established National Forest boundaries as of January 1, 1965 can be paid for with L&WCF appropriations, subject to suitable budgeting, programming and approval. Likewise, lands or easements needed for the protection of FAS Highway 1089 can be acquired with L&WCF appropriations.

The Act (PL 89-336) is to be used as the acquisition authority for all purchases of land or interests in land, other than rights-of-way, within the boundaries of the National Recreation Area and for those other areas specially designated in the act. County consent is not required. As a matter of policy, however, the counties should be kept informed of plans for acquisitions.

The 1948 act giving National Forest status to the lands in and about Shasta Lake did not clearly extend the exterior boundary of the Shasta National Forest to include the described lands. Consequently, there is question if L&WCF appropriations can properly be used in the Shasta Lake unit, except in those portions which were within the established proclaimed boundary of the National Forest as of January 1, 1965. Definitely, they cannot be used to acquire lands in the small extension of the Trinity boundaries provided by PL 89-336. The Department has recommended amendment of the bill to authorize use of L&WCF appropriations in these areas. In the meantime, we are exploring whether the legislative history of the L&WCF bill indicates it can properly be applied to the area in the 1948 act.

Public Law 89-336 contains special authority for land exchanges to consolidate the NRA, including the receipt or payment of cash to equalize values. In commenting on proposals to extend the cash equalization procedure more generally, the Forest Service has recommended that cash payments not exceed one-third of the total agreed-on value. Please use this guideline in any such transactions under PL 89-336.

LAND ACQUISITION PROGRAM

You should plan to acquire all those lands in the Forest Service units which will be needed for public use or as sites for public improvements to assure full

development of the outdoor recreational potentials of the area, taking into account increased demands and adequate plans to meet them to optimum extent. The possibility that acquisition of easily accessible and developable sites can save improvement costs should not be overlooked. Also, the need to acquire lands adjoining National Forest development sites to forestall incompatible uses must be given full consideration.

You also should take such necessary actions - acquisition of scenic easements or development control rights, fee acquisitions, local cooperative arrangements, zoning, etc., as will assure conservation and enhancement of scenic, esthetic, and historic values throughout the units. Scenic conservation needs of areas visible from the lakes, from established or planned viewpoints or scenic roads and trails, from Interstate Highway No. 5, and from other roads and highways should be carefully evaluated. You also should evaluate land adjustment actions required to protect, develop and assure public access to areas of historical, ecological, geological, or other natural history significance.

We are familiar with the analysis of a few years ago showing adequate development areas to accommodate predicted recreational uses at Shasta and Trinity Lakes. We believe there needs to be a thorough-going review of the anticipated usage, in view of the designation of these units as a NRA and development subsequent to the first study, and also an enlargement of the planning to all of the NRA and not just to the periphery of the two lakes.

Protection of the roadsides of Highway 1089 will require special and priority attention. The act gives authority to acquire lands and interests in lands necessary to protect and assure the appearance of a strip 10 chains on each side of the center-line, with the proviso that lands cannot be condemned if there is in force a valid and sustaining zoning ordinance adequate to protect the scenic values of the strip and meeting the requirements or standards of the Secretary of Agriculture. The objective is to keep the adjacent strip free of such improvements, timber cutting, utility lines, advertising devices, and commercial uses that will impair the natural environment and beauty of the foreground to the highway. This does not necessarily mean that none of these uses may be made on any part of this strip but it does mean that any uses must be under prescriptions and restrictions that will keep them out of sight, or substantially so, or completely unobtrusive.

A land adjustments and land control plan should be prepared, including priorities and cost estimates. Please furnish a copy to this office by November 1, 1966.

LOCAL ZONING ORDINANCES

We are now working jointly with the National Park Service on ideas for preliminary joint regulations specifying standards for zoning ordinances as provided by Section 2(e) of the act. We will get to you for comment and review as soon as possible any results of these discussions. A local group also is working on this problem and we presume the Forest Service is participating. Please advise of the views that result from this effort.

In the meantime, in regard to Highway 1089, you can very well move with the county toward a zoning ordinance or a bylaw to accomplish the foregoing objectives. If adequate action through zoning does not appear feasible and timely, the acquisition authority should be implemented.

Section 2(h) of the act provides a procedure whereby unimproved lands proposed for development for service to the public may in the discretion of the Secretary, be accorded immunity from arbitrary condemnation subsequent to development. Such developments must be found by the Secretary of Agriculture to conform to approved zoning ordinances and also that they will serve the purposes of the act. Proposed developments on private lands which would meet the same requirements as you would impose in regard to developments on National Forest lands under special-use permits would no doubt meet any future requirements under standards for local zoning ordinances. Your suggestions on Secretarial standards are requested.

TIMBER HARVEST

Timber harvest is permissible to the extent that such use is compatible with the purposes of the NRA and does not significantly impair recreational use and scenic values. Timber use should be planned in such locations and in accordance with practices that will accord with the foregoing prescription. Timber cutting to keep healthy stands, open up recreation sites, or to clear road locations can promote recreation enjoyment. Timber use in general should be so regulated as to be inconspicuous and to avoid log and lumber traffic on roads subject to heavy use by recreationists. Location of logging roads will need special attention. Logging roads conspicuous from the lakes or otherwise noticeably scarring the landscape will be avoided.

MINING

Section 6 of the act withdraws all the public lands in the National Recreation Area from entry under the United States mining laws, subject to valid existing rights. However, minerals may be utilized under regulations of the Secretary of the Interior, through permit or lease to the extent that such disposition would not have significant adverse effects on the purposes of the Central Valley Project or the administration of the recreation area. Leases or permits involving National Forest lands will be issued only with the consent of the Secretary of Agriculture and subject to such conditons as he may prescribe.

Forest Service concurrence in mineral leases or permits should be on the same basis and take account of the same objectives as other compatible non-recreation uses such as timber sales. In other words, we should make sure that prospecting for or extraction of minerals does not significantly impair the recreation and scenic values of the National Recreation Area. The legislative history of the act specifically deals with extraction of the iron deposits owned by the Ironex Company and the issuance of necessary special uses on National Forest lands to facilitate such operation. We should provide for necessary uses of National Forest lands in this instance but require all practical measures to minimize

adverse effects on scenic values and recreational uses. According to Senate hearings and other records, including your reports, transport of the refined ore across Shasta Lake will be by barge and we should insist on adherence to this plan unless alternate proposals will have less adverse impacts on recreational use.

BOUNDARY EXTENSIONS

Section 8 officially extends the boundaries of the Shasta to include lands described in the 1948 act, and the two sections in T. 35 N., R. 1 W., formerly outside the National Forest. It also extends the Trinity boundaries to include the lands at and adjacent to Lewiston Lake. All lands within the boundaries as revised heretofore or hereafter acquired for use in connection with the Shasta, Clair Engle, or Lewiston Reservoirs that had not previously be made part of the National Forest are given National Forest status by this section. Also, all public lands within the revised boundaries whether or not withdrawn for the Central Valley Project, are included in and made part of the National Forest, if such had not been previously accomplished. Bureau of Reclamation lands omitted from the 1948 act or acquired after it, as well as the additional lands at Lewiston and adjacent to the Shasta now have National Forest status.

Lands within the flow lines of the reservoirs or other wise needed or used for operation of the Central Valley Project will continue to be administered by the Secretary of the Interior to the extent that he determines to be required for reclamation purposes. The extent to which these lands are needed for administration of the reclamation aspects of the projects and the necessary coordinating arrangements with the Bureau of Reclamation should be incorporated in a land use and management plan and a memorandum of understanding with the Bureau of Reclamation. We believe you have done this for Shasta Reservoir and presumably now for Clair Engle and Lewiston Lakes, also.

DISPOSITION OF RECEIPTS

Questions raised by the language of Section 9 of the act relative to disposition of fees and revenues obtained from operation of the NRA within the National Forest have been resolved by the interpretation contained in the sixth paragraph on Page 6 of Senate Report No. 922 on H.R. 797. Copies of this report have been sent to you. Receipts from National Forest resources or uses of lands within the National Forest units will be disposed of as provided by existing law applicable to National Forests.

APPROPRIATION AUTHORIZATION AND LIMITATIONS

Section 10 authorizes appropriations for acquisition of lands and the development of recreation facilities pursuant to the provisions of the act.

$21,600,000 is authorized for land acquisition and $22,700,000 for the development of recreation facilities pursuant to this act. These estimates are the sum of estimates given to the Congress by the National Park Service and the Forest Service for these activities. Please note that the limitations apply only to procurement of lands or interests in lands and the development of recreation facilities pursuant to this act.

While the allocation of the specific sums authorized to be appropriated under Section 10 still needs to be formally firmed up with the Department of the Interior, the totals cited are derived from the following estimates for Whiskeytown and the two National Forest units:

Acquisition	$21,600,000
Forest Service	3,600,000
National Park Service	18,000,000
Recreation Facilities Development	22,700,000
Forest Service	18,700,000
National Park Service	4,000,000

You may use the above breakdown for planning purposes pending final agreement on allocation of the limitation between the Forest Service and the Park Service.

The table on Page 12 of the aforementioned Senate Report shows the cost estimates by units for the first five-year period as presented to the Congressional Committees. These include acquisition, management, protection and maintenance as well as new facilities. Insofar as National Forest units are concernad, these five-year estimates are over and above the average amounts spent by the Forest Service on the National Forest units for recreational development and management during the preceding three fiscal years. This was estimated at an average of $500,000 per year; of this about $68,000 average per year was for recreation facilities development.

There are some questions regarding the provisions of Section 10 that need to be resolved. These relate to application of the limitations and the types of development costs which are subject to the limitations. We will advise you as soon as these matters have been settled.

FORMAL ESTABLISHMENT

Section 3(a) of the act provides for formal establishment of the NRA by the Secretary of Agriculture. We have previously asked you to check the descriptions to be included in a Secretarial order doing this. In the meantime we will appreciate your advice as to timing.

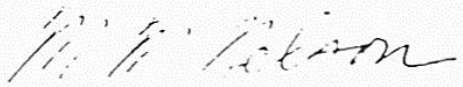
SPECIAL REGULATIONS

The only formal regulations specifically required by the Act are those setting standards for local zoning ordinances that might give immunity from condemnation to certain previously improved or other private lands in the NRA. These have been discussed earlier in this memorandum. You may find need for special regulations of the Secretary on other phases of management of the NRA, however. These might include specific ones governing hunting or use of the water surface. Please consider and advise.

10

DELEGATIONS OF AUTHORITY

Present authorities in the Forest Service, under existing assignment of functions, appear fully adequate to cover all necessary actions in the planning, programming, management, and protection of the National Recreation Area and we believe existing delegations of authority to the Regional Forester are fully adequate in these respects also. If you find need for additional delegations please let us know, with supporting information.



Office of General Counsel Letter dated September 24, 1981

LYOU

United States Department of Agriculture — Forest Service — RO

To: 2370 National Recreation Areas — Date: October 1, 1981

Subject: Authority to Enforce Regulations

To: Forest Supevisor, Shasta - Trinity ~~NF~~

Enclosed is a response from OGC concerning your question of applicability of local, county and state ordinance, laws and regulations. The conclusion is the Forest Service regulations take precedence on National Forest land and on the lakes even if the lake bed is not entirely in federal ownership.

ALAN J. LAMB, Director
Recreation Staff

Enclosure

1 Floor
_F.S., Deputy, A.O.
_P. I. O.
_Fire Control
Paul Flohr
_Rec. Staff
_F. W. & R. Staff
_Land's Staff
_Soil Staff
_LMP
_Timber
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RECEIVED OCT 7 1981 SHASTA-TRINITY NATIONAL FOREST

United States Department of Agriculture
Office of General Counsel
Two Embarcadero Center - Suite 860
San Francisco, California 94111
(415) 556-4536

September 24, 1981

Subject: 2300 - Whiskeytown-Shasta-Trinity National Recreation Area

To: Regional Forester
Attn: Jim Shiro, Recreation Staff

You have asked me to respond to the Forest's memorandum of September 11.

All national forest land in the NRA is held by the United States in proprietorial status. As such, it is subject to the legislative jurisdiction of both the United States and state and local governments.

Prohibitions with respect to the NRA can be adopted by the Forest Service under the procedures applicable to Title 36, Code of Federal Regulations, Part 261, Subparts B and C, respectively, if needed. In the event of conflict with state and local law, these prohibitions would take precedence ~~both~~ on national forest land; on the lakes themselves, for the reasons given below.
also
The artificial lakes within the NRA pose a special problem to the extent the lakebeds are not entirely in federal ownership. Specifically, does the Forest Service have the authority to regulate activity on a lake if it does not own all of the lakebed? I believe the reasoning of the Lindsey case leads us to an affirmative answer.

In U.S. v. Lindsey, 959 F.2d 5 (9th Cir., 1979), defendants were charged with violating Forest Service regulations against camping and building a campfire in the bed of the Snake River within the Hells Canyon National Recreational Area. Although the offense was committed on state-owned riverbed, the Court reversed a dismissal of the prosecution by the trial court, stating at p. 6:

> The fact that title to the land on which the violations occurred was in the state of Idaho does not deprive the United States of regulatory control over appellees' conduct. Article IV, Section 3, Clause 2 of the United States Constitution provides in part:

> The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory of other Property belonging to the United States.
>
> It is well established that this clause grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters.

I hope the foregoing is responsive to the Forest's concerns.

WILBUR W. JENNINGS
Regional Attorney

By Russell J. Mays
Russell J. Mays, Attorney

Attachment

RJM/ams

Appendix D

Lewiston Lake Fisheries and Wildlife Resources Evaluation

A. Setting

Lewiston Lake is located approximately seven miles northeast of Weaverville, Trinity County, California. Formed in 1961 with the completion of Lewiston Dam, the reservoir provides after bay storage from releases from the Trinity Lake power plant. It also serves to direct Trinity River water into the 11 mile long Clear Creek Tunnel for diversion to Whiskeytown Lake. Lewiston Lake is about 9 miles long with 15 miles of shoreline and an elevation of 1,900 feet. As the water comes out of the bottom of Trinity Dam, it remains cold years round, averaging about 45 degrees F. Water levels tend to remain fairly constant generally fluctuating less than 18 inches. The lake has a considerable amount of rooted aquatic vegetation which provides habitat for a large community of aquatic invertebrates.

The lake is inhabited by several fish species including rainbow trout, brown trout, kokanee, smallmouth bass, three-spined stickleback and Pacific lamprey. The lake is stocked by the Calif. Dept. of Fish and Wildlife with catchable rainbow trout during the summer when most of the fishing takes place. The lake is very popular with fly fisherman and anglers with small boats. There is also a fish cage culture program on the lake in which large-size trout are raised and released for the angling public. This program has earned the lake a local reputation as a trophy trout fishery and has yielded numerous fish over 10 lbs. within the last few years. The largest trout caught to date was just over 17 lbs. There are two disabled angler platforms on the west shore of the lake. Immediately after the lake has been stocked, these platforms become popular fishing sites for anglers of all abilities.

The lake has two pair of nesting bald eagles and provides habitat for numerous birds and other wildlife. Waterfowl and wading birds use the lake as a staging and resting area during their winter migration, and as nesting habitat during the spring/summer. There is a wood duck nest box program on the lake which helps to boost the numbers of this species. River otter, beaver, blacktail deer and mink are common within the area. Hunting is a common seasonal activity, primarily for deer, quail and waterfowl.

There are a total of eight streams that flow into Lewiston Lake. Four are perennial fish-bearing streams with year-round flows. These include; Eastman Gulch, Mooney Gulch, Jennings Gulch, and Baker Gulch. These streams support adfluvial runs of rainbow trout from Lewiston Lake and are used by the juvenile trout for rearing. The other four streams; Ferry Gulch, Roycroft Gulch, Posey Gulch and Bear Gulch are small ephemeral streams that were not flowing during the survey. Fish use within these ephemeral streams would be restricted to the extreme lower reaches during flow events.

Lewiston Lake has two marinas/resorts; Lakeview Terrace and Pine Cove Marina which are under special use permit. The number of boats that can be moored year-round at these resorts is specified under the use permits. There are no restrictions on the number of public boats that can use the lake on a daily basis. There is a 10 mph speed limit on the entire lake which helps to contribute to the calm and quiet nature of the surroundings. The lake has 4 developed campgrounds; Mary smith, Cooper Gulch, Tunnel Rock, and Ackerman. Camping occurs primarily during the summer. The primary road access to the area is road 105 which parallels the west shore of the lake. Road access to the east side of the lake is by jeep or ATV trails of

which many are old mining roads. Mining was a significant historical activity as evidenced by the numerous tailings found around the east side of the lake.

B. Methods

Lewiston Lake and the surrounding watershed were surveyed during the summer of 2002 and several times during the various seasons of 2004 through 2007. Stream and lake surveys were conducted using the standard Region 5 survey protocol. Streams were surveyed during low flow beginning at the mouth and moving upstream until no more fish were observed or until suitable fish habitat no longer existed. Physical and biological data was collected including; stream temperature, average and maximum depth, stream width, substrate composition, percent cover, presence and suitability of spawning habitat, riparian vegetation, benthic invertebrates, aquatic species present, and fish age-class. Stream surveys were not conducted for Ferry, Roycroft, Posey, and Bear Gulches as these streams where dry during the survey. The lake survey was conducted by boat over a period of several days during 2002. Lake information collected included; temperature, substrate composition, depth, turbidity, aquatic invertebrates, fish and wildlife species observed, and aquatic vegetation. Additional observations of the lake were made in subsequent years through 2007 particularly with respect to species presence, sediment movement, and lake turbidity during and after precipitation.

An inventory and assessment of the roads and trails within the Lewiston Lake Basin was also conducted. Roads, ATV trails, and mine tailings were surveyed to determine the existing and the potential for resource damage due to rutting, erosion and slides. This survey included Forest Service system and non-system roads on the lakes east side and was conducted during the summer and fall of 2002.

C. Results

1. Baker Gulch

This is the only perennial stream that drains into Lewiston Lake from the west side. This is a perennial, fish-bearing stream with an average width of 2.5 feet and an average depth of 0.8 feet. The pool-riffle ratio was about 1:2. Pool habitat was formed primarily by bedrock and boulders, which together with rock made up the most significant portion of the stream substrate. Shade canape was good throughout the stream and was dominated by alder and cottonwood. Caddisfly, mayfly and stonefly were abundant and represented the most common fish food organism. Rainbow trout young-of the-year were the only fish observed. The fish were observed only within the lower reach which also had the greatest amount of suitable spawning habitat. Overall, fish habitat in Baker creek was rated fair. Fish habitat is limited by the generally steep gradient, particularly as distance upstream increases. The culvert at the Forest Road 105 crossing is a barrier to fish passage.

2. Eastman Gulch

This is the largest drainage within the Lewiston Lake watershed. This is a perennial fish-bearing stream that flows into the lake from the east side. The average width and depth were 1.5 feet and 0.5 feet, respectively. The flow during the survey was 1.5 cfs at the mouth. The stream was dominated by riffles and pools were relatively uncommon. Pool habitat was formed mostly by rock and boulders. Rock, rubble, and gravel comprised the majority of the stream substrate though sand and fine sediments were also common. Shade canopy was rated low to moderate, comprised of alder, cottonwood and maple. Benthic invertebrates were common throughout the stream. Caddisfly, stonefly and mayfly were the most common fish food organisms. Rainbow trout young-of-the-year were present within the lower reach only. Their relative abundance was low. Fish habitat was rated poor as pool habitat was limited with little cover. Spawning habitat, though present, was compacted and had a high degree of sand and fines.

3. Mooney Gulch

This stream had an average width of 3 feet and an average depth of about 1 foot. The stream flow at the time of the survey was 1.3 cfs. The pool-riffle ratio averaged 1:1 throughout the surveyed reaches. Pool habitat was formed mostly by boulders. Boulder, rock and rubble comprised the majority of the stream substrate though sand and fine sediments were also common. Shade canopy was generally good, and alder and cottonwood was common. Benthic invertebrates were common throughout the stream. Caddisfly, stonefly and mayfly were the most common fish food organisms. Aquatic snails were also common especially within the lower reach. Rainbow trout young-of-the-year were present within the lower reach only. Their relative abundance was low. No other age-class was observed. Fish habitat was rated fair. Though pools were relatively common, they were small in size and had little cover. Spawning gravel was common, but it had a high percentage of sand and fines. A significant delta has formed at the mouth of the stream. This is composed primarily of fine sediments that have been carried downstream from the upper watershed.

4. Jennings Gulch

This is the shortest of the perennial streams with an average width of 1.7 feet and an average depth of 0.5 feet. Flow at the time of the survey was 1.1 cfs. This is a riffle dominated stream with little pool or run habitat. Pool habitat made up less than 10% of the stream and was formed by rock and boulder. Boulder, rock and rubble were the dominate substrate types. Shade canopy was rated good overall. Benthic invertebrates were common throughout the stream. Caddisfly, stonefly and mayfly were the only fish food organisms found. Rainbow trout young-of-the-year were present within the lower reach only. Their relative abundance was low. Fish habitat was rated poor as pool habitat was limited with little cover. Spawning habitat, though present, was compacted and had a high degree of sand and fines. There is a very large deposition of alluvial deposits located at the mouth of the stream. Like the previous stream, this deposition is composed of sediments carried downstream from the upper watershed.

5. Lewiston Lake

This is a very productive lake with cold water temperatures and a relatively stable water level. Lewiston Lake is about 9 miles long with 15 miles of shoreline and an elevation of 1,902 feet. The lake has a drainage area of about 25.6 sq. mi. The maximum depth of the lake is about 60 feet but averages less than 25 feet. As the water comes out of the bottom of Trinity Dam, it remains cold years round, averaging about 45 degrees F. Water levels tend to remain fairly constant generally fluctuating less than 18 inches. The lake has a considerable amount of rooted aquatic vegetation which provides habitat for a large community of aquatic invertebrates which are a significant food source for fish and numerous species of wildlife. Dragonfly, mayfly, damsel fly and stonefly are the most common and are seasonally abundant. The lake is inhabited by several fish species including rainbow trout, brown trout, kokanee, smallmouth bass, three-spined stickleback and Pacific lamprey. Large Rainbow trout are common within the lake due largely to the existing cage culture project. Eastern brook trout were once stocked in the lake, but are no longer present. There is an abundance of wildlife on and around the lake both in terms of species and numbers which varies with the seasons. Waterfowl are present year-round, but there number increase dramatically in the winter as the lake is used as a resting and staging area. Black tail deer, river otter and ring-tailed cats were the mammal species most frequently observed. Ring-tailed cat were generally encountered while conducting wood duck nest box maintenance activities. The area is a forest designated watchable wildlife area. Table 1 lists the species observed during the evaluation period as well as their relative abundance. The primary water source is Trinity Lake however there are also four perennial streams that contribute to the water quality of Lewiston Lake. This is particularly evident during runoff events when the lake becomes turbid due to the fine sediments entering the lake from these streams. Much of the lake shoreline is composed of rock and is very stable; however the drainages on east side of the lake have been extensively mined in the past and is currently very prone to erosion and slides. This has resulted in large deposits of alluvium or fine sediments at the mouths of Jennings and Mooney Gulches and to a lesser extent at the mouths of Eastman and Cooper Gulches.

There are several small ponds that have been developed for waterfowl nesting along the east side of the lake. Wood duck nest boxes have been placed throughout the area and are used by nesting wood ducks as well as ring-tailed cats. These nest boxes are maintained annually and have resulted in the production of numerous wood duck broods. These ponds are also important habitat for Northwestern pond turtles which are a Forest Service sensitive species. There is also a shallow marsh-like area located between Jennings and Eastman Gulches that is used by other nesting waterfowl as well as neotropical migrant birds. This area is also heavily used by migrating ducks and water birds during the late fall and winter.

6. Roads and Trails

The only paved road within the Lewiston Lake area is Road 105 that parallels the western shore of the lake. This road is in good condition and is not presently a source of significant sediments to the lake or any Westside streams. The only problem noted was the stream crossing over Baker Gulch. There is a large culvert at this crossing that acts as a fish barrier. Adfluvial runs of rainbow trout that move up the stream to spawn are limited to the lower most reach as they are unable to swim through the culvert.

There are numerous unimproved roads and ATV trails within the eastern watershed of Lewiston Lake. Most of these appear to be associated with old mining roads with the highest densities found within the Jennings Gulch drainage. Road density is also high along the ridge (between Clear Creek and Lewiston Lake) where most of these roads and trails originate. Most of these roads are associated with unstable mine tailings, are steep, and have inadequate drainage. As a result, there is a very significant amount of surface erosion that yields fine sediments to the eastside streams, in particular Jennings Gulch. The amount of fine sediment entering Jennings and Mooney gulch contributes to the overall poor fish habitat condition of these streams. These sediments have resulted in the formation of deltas at the mouths of these two streams. There are also several small slide features associated with some of the tailing piles. These have the potential to become worse should the area continues to be used by OHVs. Because of the unstable nature of this area (due largely to the past mining activities) there would be a significant amount of erosion and sediment transport even if there was no OHV use. The use of this area by OHVs simply compounds the problem. This can be observed by simply visiting the lake after a rainstorm. The fine sediments that are transported downstream increase lake turbidity dramatically.

D. Discussion

The perennial streams (and to some degree the ephemeral streams) that enter Lewiston Lake provide fish habitat for spawning adult trout, and rearing of young-of-the-year rainbow trout. Fish habitat within these streams is generally poor primarily due to the compaction of the spawning gravels, the small size of the pools and the general lack of cover. Most of the fish use within these streams is restricted to the lower stream reaches. Fish production within these streams is not sufficient to sustain the existing fishery which is presently augmented through stocking and the cage culture project. The riparian or shade canopy was good and does provide significant cover and travel corridors for wildlife species. That fact this area is largely undeveloped is also of benefit to wildlife as disturbance and habitat loss is kept to a minimum other than the unauthorized OHV use.

Lewiston Lake is an important habitat for many terrestrial and aquatic species, not only for resident wildlife, but also for the numerous waterfowl and Neotropical birds that frequent the area. The abundance of the areas fish and wildlife is directly tied to the high quality of the habitat and abundance of food, as well as the low recreational pressure and the effort made to minimize the effects of the recreating public. The fact that the lake is overlooked as a recreational destination greatly reduces the disturbance to wildlife and helps contribute to its value as good fish and wildlife habitat. The low number and small size of the resorts/marinas, as well as the 10 mph lake speed limit help to minimize the effect that people have on the area. Angling is the primary activity associated with this NRA. Most of the recreationists appear to be locals or else are anglers from outside of the area that are seeking a quiet relaxing experience away from fast boats and excessive traffic. The lake in recent years has gained a reputation as a trophy trout fishery. Most anglers questioned

were hoping to catch one of the big ones. This trophy fishery is largely due to the cage culture program on the lake. Since 2000, several hundred trout have been released annually. This is in addition to the thousands of hatchery trout stocked into the lake during the summer.

The road crossing at Cooper Gulch is a barrier to resident and lake-run trout trying to move upstream to spawn. There is an estimated one half to one mile of suitable habitat above the culvert. A barrier removal project would solve this problem, but an economic analysis needs to be completed to determine the feasibility. The mine tailings and unimproved roads and trials on the east side of the lake will continue to be a source of sediment to the streams and lake. These sediments have significantly reduced the quality of fish habitat within some streams as well as increasing lake turbidity after it rains. If the level of fine sediments and subsequent turbidity within the lake becomes a chronic problem, the effect on the lakes fish and wildlife could be dramatic. During the winter of 1998/1999 severe storms washed large amounts of fine sediment into Trinity Lake causing a turbidity problem that extended into Lewiston Lake well into the following summer. This turbidity resulted in the die-off the lakes rooted aquatic vegetation, which in turn severely reduced the benthic aquatic invertebrate population. This translated into less food for the lakes fish and wildlife and resulted in a reduction in the number of fish caught be anglers. There was also an observed reduction in the number/occurrence of several bird species. The effect on other wildlife species was not noted. Present erosion and sediment levels are nowhere near that bad at this time, but increased sedimentation will exacerbate the current situation and could severely affect the quality of the lakes fish and wildlife habitat. The current OHV use increases sediment levels well above background levels. Due to the unstable nature of the area, erosion and some mass wasting will continue even if all unauthorized OHV use is stopped.

The noise is another problem associated with OHV use. This can have an adverse effect on some wildlife species. The noise and presence of people disrupts wildlife behavior patterns which can interfere with courtship and breeding. Some wildlife species such as bald eagle have been known to abandon their nest due to excessive human disturbance. The noise and disturbance to wildlife from boats appears to be minimal at this time thanks largely to the 10 mph speed limit. This low level of noise and disturbance seems to draw individuals looking for a quiet relaxing recreational experience. Unless seen, boaters and anglers go largely unnoticed.

E. Conclusion

The Lewiston Lake setting is quite different from the settings associated with the Shasta Lake NRA and the remainder of the Trinity Lake NRA. The activities permitted and associated with the Lewiston "NRA" lend to its quiet, relaxing, and peaceful atmosphere. More importantly are the activities that are limited or not permitted that make this area unique. There are no speeding boats and jet skis with the roar of their engines and annoying wakes. No lines of vehicles waiting at the boat ramp. No endless traffic or the smell of exhaust. Instead there is a beautiful setting with an abundance of wildlife and an outstanding fishery. This type of setting seems to be increasingly difficult to find and should be preserved. The management of this area should encourage activities that have a minimal effect on the setting while discouraging or prohibiting activities that would reduce the quality of this type of recreational experience. Maintain the 10 mph hour speed limit. Keep the existing facilities as they are and carefully evaluate the need for any further developments of facilities. Manage the OHV use to reduce noise and associated resource damage. Finally, maintain the existing cage culture program so that large trout continue to roam the lake and delight anglers. As per the forests Land and Resource Management Plan (p.4-113): The east side of Lewiston Lake is to remain undeveloped to preserve its excellent wildlife habitat. This area provides an enhanced opportunity for people to observe wildlife.

Table 1. Lewiston Fish and Wildlife Observations 2002 – 2007

Common Name	Occurrence
Mallard	Common
Common Merganser	Common
Hooded Merganser	Rare Winter Visitor
Lesser Scaup	Winter Visitor
Bufflehead	Winter Visitor
Common Goldeneye	Winter Visitor
Barrow's Goldeneye	Rare Winter Visitor
Green Wing Teal	Winter Visitor
Wood Duck	Common
American Coot	Common Winter
Canada Goose	Common Resident
Common Gallinule	Few
Great Blue Heron	Common
Green Heron	Common Summer
Rufous-sided towhee	Seasonally abundant
Black Phoebe	Common Summer
Northern Flicker	Common
Western Tanager	Few
Mountain quail	Common
Calif. Valley Quail	Common
Blue Grouse	Few
Violet-green swallow	Abundant
Acorn Woodpecker	Common
Band-Tailed Pigeon	Fall Visitor
Mourning Dove	Fall Visitor
Killdeer	Summer Visitor
Marsh Wren	Few
Barn swallow	Abundant
Common Nighthawk	Seasonal Visitor
Gull (ring-billed and California)	Occasional visitor
Osprey	Uncommon
White-breasted nuthatch	Seasonally Common
Jay (stellar's and scrub)	Common
Double-crested cormorant	Seasonal Visitor
Brown-headed cowbird	Uncommon
Wilson's Snipe	Seasonal Visitor
Red-wing blackbird	Seasonally Abundant
Dark-eyed Juco	Common
English Sparrow	Common Summer
Chipping Sparrow	Common Summer
Tricolored Blackbird	Seasonal Visitor
Bald Eagle	Uncommon
Turkey Vulture	Common Summer
American Kestrel	Occasional Summer
Red Tailed Hawk	Common
Sharp-Shinned Hawk	Few
Coopers Hawk	Rare
Belted Kingfisher	Common Summer
Dipper	Few
Least Sandpiper	Few

Common Name	Occurrence
Raven	Abundant
Western Pond Turtle	Few
Three-spined sticklebacke	Abundant
Rainbow trout	Abundant
Brown Trout	Uncommon
Pacific Lamprey	Common
Pacific Chorus frog	Common
Pacific Giant salamander	Uncommon
Western Toad	Common
Western Garter Snake	Uncommon
Beaver	Few
River Otter	Common
Mink	Common
Raccoon	Common
Ringtail Cat	Common
Striped Skunk	Few
Black tail Deer	Common
Black Bear	Few
Possum	Few
Meadow Vole	Common

Appendix E

Modification to the ABA Accessibility Standards for the Proposed Turntable Bay Marina

USDA United States Department of Agriculture
Forest Service

Shasta-Trinity National Forest
Headquarters

3644 Avtech Parkway
Redding, CA 96002
(530) 226-2500
(530) 226-2490 - TDD
www.fs.fed.us/r5/shastatrinity

File Code: 2700/1700
Date: August 18, 2006

David L. Bibb
Deputy Administrator
U.S. General Services Administration
1800 F Street, NW
Washington, DC 20405-0002

Dear Mr. Bibb:

The purpose of this letter is to request a modification to the Architectural Barriers Act Accessibility Standards for access routes from the parking areas to the gangways at the proposed Turntable Bay Marina. The marina is located on Shasta Lake within the Shasta-Trinity National Forest. The Architectural Barriers Act of 1968 authorizes the Administrator of the General Services Administration to modify the standards that implement the Act on a case by case basis. This modification is requested because the access routes are structurally impracticable.

Background

Shasta Lake is the largest lake in the Whiskeytown-Shasta-Trinity National Recreation Area (NRA) and is managed by the Shasta-Trinity National Forest to provide quality recreational experiences to the public. Besides being a major recreational attraction, the lake is a reservoir managed by the USDI Bureau of Reclamation. Water is released from the reservoir continuously throughout the summer to provide water resources for California's Central Valley and produce electricity for thousands of Californians through the hydroelectric facilities associated with its dam.

In 1979 a "Resort Relocation Analysis" was completed for Shasta Lake. It concluded that Turntable Bay was the only viable location on Shasta Lake to relocate or construct a new resort/marina. The criteria included access from existing transportation routes, conflicts with threatened and endangered species, topography (viability for construction) and the critical element - a deep water port.

In May, 2002, the Shasta-Trinity National Forest issued a prospectus offering the opportunity to relocate any of the existing marina operations on the lake to Turntable Bay. The successful bidder was Seven Crown Resorts, Inc., the operator of Digger Bay Marina. Their proposed project improves the location and quality of facilities and services, as compared to those currently provided by Digger Bay Marina. Turntable Bay has direct access from Interstate 5, whereas Digger Bay is located approximately six miles from Interstate 5. Access to Digger Bay

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is via Shasta Dam Boulevard, through the City of Shasta Lake, and then north on Digger Bay Road, a low-standard, narrow and winding road about 3.5 miles long, poorly suited for trailers carrying boats.

Digger Bay is not a deep water port. The boat launch ramp at Digger Bay ends at a depth of 60 feet below full lake level. When the lake surface drops below this level, boats can no longer be launched at the site. From 60 to 100 feet below full lake level, access to marina facilities on the water is constrained by a winding asphalt road which is difficult to negotiate with vehicles and requires frequent repositioning of the docks as water levels change. Below 100 feet from full lake level, marina facilities at Digger Bay cannot be accessed from the land at all.

The proposed Turntable Bay Marina and associated land-based development will be designed for water-based recreational use on a year-round basis. Proposed water-based facilities include a retail store, public moorage facilities, boat rentals and service docks (fuel, septic waste and refuse collection). Proposed land-based improvements include off-ramp lighting, a paved access road, paved parking, a launch ramp, public restrooms, water supply, a sanitary waste disposal system and power and communications facilities. All land-based improvements are proposed to occur above 1090 feet elevation to avoid conflicts with a potential increase of 20 feet in the height of Shasta Dam.

Reasons for a Modification of ABAAS

According to data maintained by the Bureau of Reclamation since 1985, the water level of Shasta Lake drops an average of 77.42 vertical feet annually. The maximum water level drop of 105.09 vertical feet occurred in 1988. The lowest water level (909.88 feet elevation) occurred in 1991, and the highest water level (1066.48 feet elevation) occurred in 2003. The distance between the highest and lowest measured water levels during that time period is 156.60 vertical feet. During drought years the water level drops much lower; in 1976 the water level dropped 225 vertical feet (842 feet elevation). As water levels drop and rise, the existing marinas' floating piers must be moved (sometimes daily) to accommodate the changing water depth.

The lake bottom's steep slopes at Turntable Bay make it a desirable site for a new marina; the steeper the slopes the deeper the port. The deep port criterion for Shasta Lake is critical because of the significant annual drop in the water level of the reservoir, however, this annual water level drop prohibits the development of an accessible route to the proposed Turntable Bay Marina.

Our Request

The Forest Service requests a modification to section F206.2.1 (Site Arrival Points) and 1003.2 (Accessible Routes) of the Architectural Barriers Act Accessibility Standard (ABAAS), which requires accessible routes to the gangways to three floating piers in the proposed Turntable Bay Marina, for all times other than when the proposed gangways have a direct connection to the

parking area. These piers will provide moorage for rental boats, midsized private vessels, and larger houseboats, respectively. The Forest Service bases its request on several specific site constraints which, in combination, make it structurally impracticable to construct accessible routes to the three piers:

1) The lakebed where the marina will be located has an extreme slope, with a drop of 10 feet over a run of 16 to 20 feet. At its steepest point, 250 feet from the shore, the slope is 62%.

2) The water levels in the bay fluctuate from an average high level of 1043.28 feet to an average low level of 965.86 feet, with a maximum variation of 77.42 feet from the high to the low levels during the year. Water levels may change as much as 10 vertical feet in a day, and the location of the floating piers may change 100 to 150 times during an operating season. As a result of this dramatic fluctuation, the planned floating piers will move into the deeper sections of the lake as the water level recedes during the year, and move back toward the lake shore as the water level rises.

3) At its historically lowest water level, the floating piers will be moved approximately 2000 feet from the shore and 249 feet below the level of the parking lot (1091 feet elevation). If an accessible route were constructed in the lakebed, it would have to be a switchback design and would need to be at least 5820 feet long. In addition, it would not always be possible to achieve slopes less than 1:12 on the switchback structure or to connect the landings on the switchback structure with the floating piers.

The gangways and the three proposed floating piers will be designed to comply with ABAAS Sections F235 (Recreational Boating Facilities) and 1003 (Recreational Boating Facilities). In addition, the Forest Service will meet its obligations under Section 504 of the Rehabilitation Act of 1973 through providing an alternative means of accessibility for persons with disabilities to the programs and services provided at the proposed Turntable Bay Marina.

Supporting Information

Please refer to the following supporting documents:

Exhibit A: Power Point – Shasta Lake background information, Turntable Bay location
Exhibit B: Video –
general footage of Shasta Lake at average drawdown of 90 vertical feet. At the beginning of the summer the marinas are moored at high water at the vegetation level, the video reveals how far the marinas move during an average drawdown.
Exhibit C: Preliminary Site Plan for Turntable Bay Marina, 11 x 17 format
Exhibit D: Conceptual Access Route, plan view, 11 x 17 format
Exhibit E: Conceptual Access Route sections / slope, 11 x 17 format
Exhibit F: Diagram of changing water levels and Access route, plan view, 11 x 17 format

Exhibit G: Accessibility Criteria for Access Route / reasoning for structural impracticability
Exhibit H: Letter from Shasta-Trinity National Forest to the Regional Forester which documents the drought water levels in 1976
Exhibit I: Map of underwater topography and drought water level
Exhibit J: Aerial photo of Turntable Bay during 1976 drought conditions

If you have any questions, please contact District Ranger Kristy Cottini at (530) 275-1587.

Sincerely,

J. SHARON HEYWOOD
Forest Supervisor

cc: Marlene Finley, John C Schuyler, Kristy Cottini, Lynn Boone, Dave Meurer, Bob Rollins, Bill Curry, Thomas Williams

GSA

GSA Public Buildings Service

OCT 0 5 2006

MEMORANDUM FOR DAVID L. WINSTEAD
COMMISSIONER (P)

FROM: THOMAS N. WILLIAMS
NATIONAL ACCESSIBILITY OFFICER (PM)

SUBJECT: Modification of the Architectural Barriers Act Accessibility Standard for the Proposed Turntable Bay Marina, Shasta Lake, Shasta-Trinity National Forest, CA

The following is a request for your approval for a modification of the Architectural Barriers Act Accessibility Standard (ABAAS), as applied to the subject proposed Marina. In a letter dated August 18, 2006, to David L. Bibb, Deputy Administrator, Ms. J. Sharon Heywood, Forest Supervisor, Shasta-Trinity National Forest, requested, on behalf of the Forest Service, a modification of ABAAS Sections F206.2.1 (Site Arrival Points) and 1003.2 (Accessible Routes).

ABAAS is GSA's new implementing standard for the Architectural Barriers Act of 1968 (42 U.S.C. 4151, *et seq.*) (the "Act"). Pursuant to Section 4156 of the Act, the Administrator of General Services is authorized to modify or waive the applicability of the standards on a case-by-case basis upon application to GSA … only if the Administrator determines that such a modification or waiver is clearly necessary. The Administrator delegated this authority to the Commissioner, Public Buildings Service, by GSA Order ADM 5450.126 dated September 28, 1993.

ABAAS Sections F206.2.1 and 1003.2 require accessible routes from the site parking area to the gangways to three floating piers in the proposed Turntable Bay Marina. The three floating piers will provide moorage for rental boats, midsized private vessels, and larger houseboats, respectively. This ABAAS modification is requested for all times, other than when the proposed gangways to the floating piers have a direct connection to the parking area.

The reason for this request is that several specific site constraints, in combination, make it structurally impracticable to construct accessible routes to the three floating piers:

1. The lakebed where the marina will be located has an extreme slope, varying from 50 percent to 62 percent at its steepest point. The lake bottom's steep slopes at Turntable Bay make it a desirable site for a new marina; the steeper the slopes, the deeper the port. The deep port criterion for Shasta Lake is critical because of the significant annual drop in the water level of the reservoir.

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2. Water levels in the bay fluctuate an average of 77.42 vertical feet annually and have been documented to drop as much as 225 vertical feet during drought years. As a result of this dramatic fluctuation, the planned floating piers will move into the deeper sections of the lake as the water level recedes during the year and move back toward the lake shore as the water level rises.

3. When the water level is at its historically lowest level, 249 feet below the level of the parking lot, the floating piers will be approximately 2000 feet from the shore, and an accessible route constructed in the lakebed would have to be a switch-back design over a mile long, which could not always achieve slopes less than 1:12 on the switchback structure or connect the landings on the switchback structure with the floating piers.

While the requirement for accessible routes from the site parking area to the gangways must be modified, all the other accessibility requirements of the ABAAS will be met. The gangways and three proposed floating piers will be designed to comply with ABAAS Sections F235 (Recreational Boating Facilities) and 1003 (Recreational Boating Facilities). In addition, the Forest Service will meet its obligations under Section 504 of the Rehabilitation Act of 1973 through providing an alternative means of accessibility for persons with disabilities to the programs and services provided at the proposed Turntable Bay Marina.

Over the past six months, GSA and the United States Access Board have conducted a series of meetings and conference calls to review and discuss the proposed marina design and background materials submitted by the Forest Service as supporting data for this modification request, as well as to request and then review additional supporting data to document the severe fluctuations in water levels and verify the lake bed slopes and depths. GSA, in consultation with the Access Board, has also provided a draft of the modification request itself to the Forest Service to ensure that it addresses the specific and unique site constraints embodied in the Turntable Bay location of the proposed marina.

Based on the previous reviews and final supporting documentation, I recommend approval of this modification of ABAAS Sections F206.2.1 (Site Arrival Points) and 1003.2 (Accessible Routes) to require accessible routes from the parking area of the proposed Turntable Bay Marina to the gangways to the three floating piers only at times when the proposed gangways have a direct connection to the parking area.

APPROVAL:

OCT 1 0 2006

David L. Winstead, Commissioner

GSA

GSA Public Buildings Service

OCT 10 2006

Ms. J. Sharon Heywood
Forest Supervisor
Shasta Trinity National Forest Headquarters
3644 Avtech Parkway
Redding, CA 96002

Dear Ms. Heywood:

Thank you for your letter of August 18, 2006, requesting a modification of Sections F206.2.1 (Site Arrival Points) and 1003.2 (Accessible Routes) of the Architectural Barriers Act Accessibility Standards (ABAAS) to require accessible routes from the parking area of the proposed Turntable Bay Marina to the gangways to the three floating piers only at times when the proposed gangways have a direct connection to the parking area.

I have reviewed your request and the extensive and thorough documentation you have provided to support it. After concluding my review, by the authority delegated to me by the Administrator of General Services, I have determined that it is in the best interest of the citizens of California to grant this modification.

If you have any questions after reviewing this letter, please contact me at (202) 501-1100. Staff inquiries may be directed to Mr. Thomas Williams, National Accessibility Officer, at (202) 501-3280.

Sincerely,

David L. Winstead
Commissioner

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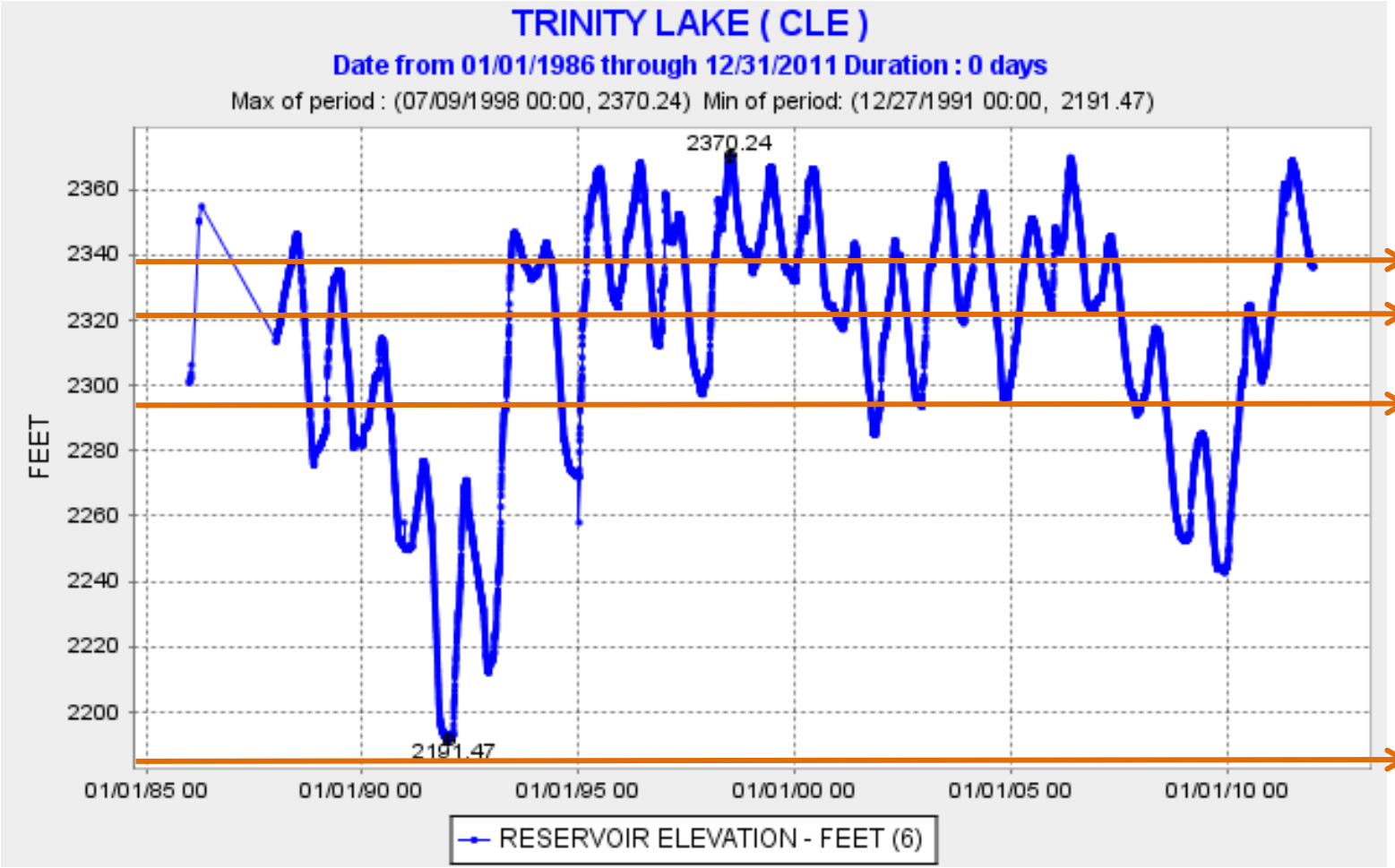
Appendix F

Trinity Lake Water Fluctuations and Boat Ramp Access 1986 through 2011

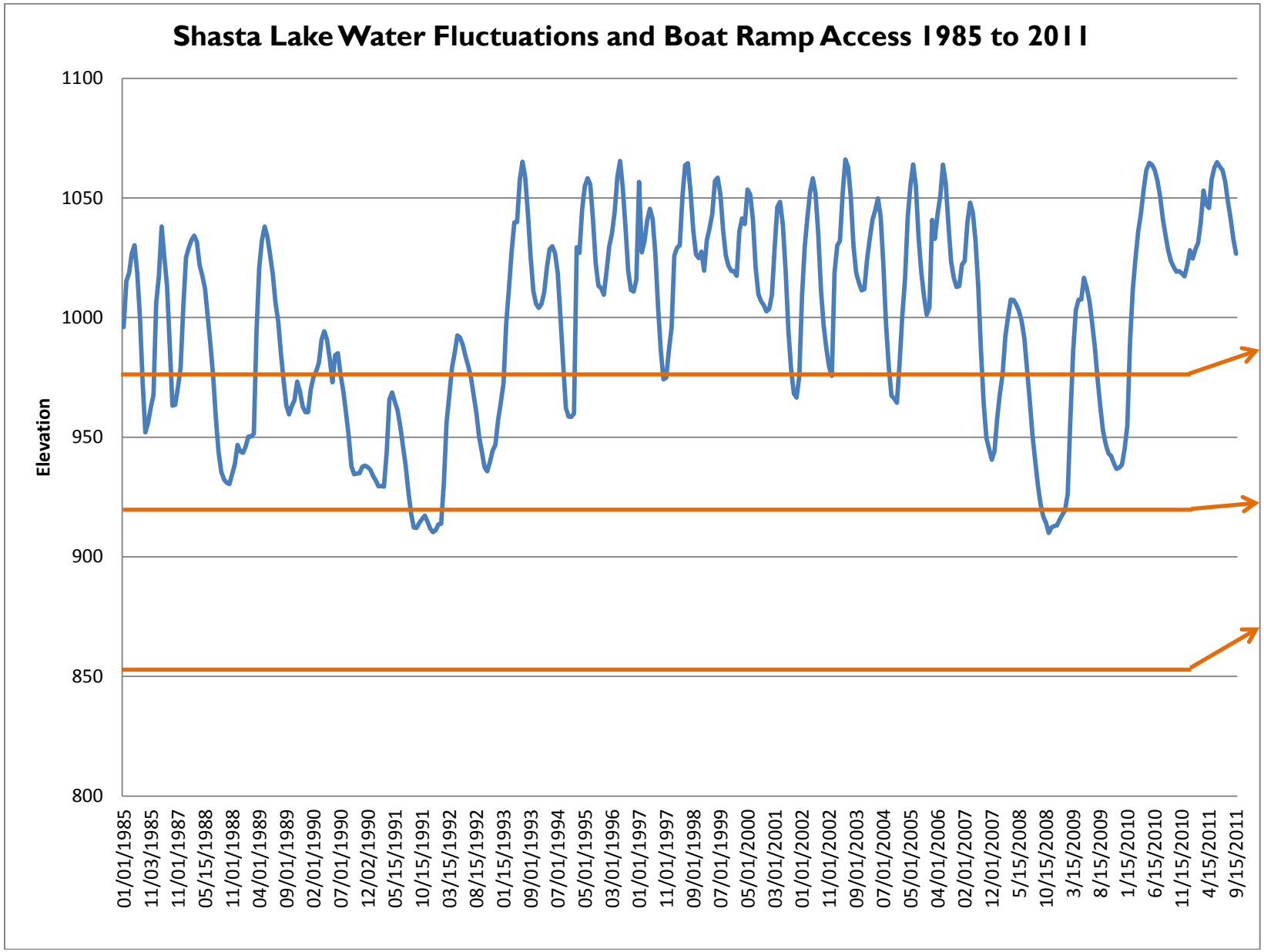


Trinity Lake Boat Ramps and End of the Ramp Elevations (in feet)

Stuart Fork 2338

Clark Springs & Bowerman 2323
Fairview 2313
Trinity Center 2295

Minersville 2170



Shasta Lake Boat Ramps and End of the Ramp Elevations (in feet)

1016 –Hirz Bay #1
1013 -Bailey Cove
991 – Antlers
976 – Jones Valley #1
970 - Hirz Bay #2
951 – Sugarloaf #1
947 – Packers Bay
939 – Centimudi #1
920 – Jones Valley #2 and Hirz Bay #3
914 – Sugarloaf #2
872 – Centimudi #2
852 – Jones Valley #3
844 – Centimudi #3