Tule River Reservation Protection Project

Specialist Report

Cultural Resources

and

Tribal and Native American Interests

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Introduction

The Tule River Reservation Protection (TRRP) Project is located in the Giant Sequoia National Monument and the Sequoia National Forest. Cultural Resources within the TRRP Project are defined and regulated based on the Giant Sequoia National Monument Plan 2013.

> The monument also has many archaeological sites recording Native American occupation and adaptations to this complex landscape, and historic remnants of early Euro-American settlement as well as the commercial exploitation of the giant sequoias (Proclamation).

Cultural resources are an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties (FSM2360.5). These resources are not mutually exclusive and can oftentimes overlap either in time and space (e.g., an historic building on a prehistoric archaeological site). Descriptions of each type are given below.

Cultural resources are archaeological, cultural, and ecological legacies from out past. Cultural resource information often includes environmental data, and can explain past relationships between people, climate, and the land. Study of cultural-ecological relationships help us understand how cultures changed, how culture affected and was affected by the environment, and how that information can be used to influence our future.

Current Management Direction

Cultural Resources are protected under the Organic Act of 1897 (Title 16, United States Code (U.S.C.), section 473-478, 479-482, 551), Antiquities Act of 1906 (16 U.S.C. 431), Historic Sites Act of 1935 (16 U.S.C. 461), National Historic Preservation Act of 1966, as amended (NHPA) (16 U.S.C. 470) and its implementing regulation 36 CFR 800, National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4346), Archeological and Historic Preservation Act of 1974 (AHPA) (16 U.S.C. 469), Federal Land Policy and Management Act of 1976 (FLPMA), (43 U.S.C. 1701), National Forest Management Act of 1976 (NFMA) (16 U.S.C. 1600), Archaeological Resources Protection Act of 1979 as amended (ARPA) (16 U.S.C. 47Oaa et seq.) as implemented by 36 CFR part 296, Native American Graves Protection and Repatriation Act of 1990 as amended (NAGPRA) (25 U.S.C. 3001) as implemented by 43 CFR part 10, Subpart B – Human Remains, Funerary Objects, Sacred Objects, or objects of Cultural Patrimony From Federal or Tribal Lands, Federal Lands Recreation Enhancement Act of December 8, 2004, (REA) (16 U.S.C. 6801-6814), Executive Order 11593 - Protection and Enhancement of the Cultural Environment, issued May 13, 1971, Executive Order 13007 - Indian Sacred Sites, issued May 24, 1996, Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments, issued November 6, 2000, and Executive Order 13287 – Preserve America, issued March 3, 2003. In addition archaeological

collections are managed by Curation of Federally-owned and Administered Archaeological Collections, 36 CFR part 79.

The Forest Service implements these laws and regulations through Forest Service Manual 2300, Chapter 2360, Heritage Program Management.

The Forest Service mandates its Heritage Program activities to address three broad areas of responsibilities to:

1. Protect historic properties,
2. Share their values with the American people, and
3. Contribute relevant information and perspectives to natural resource management (FSM 2360.6).

Also it is the policy of the Forest Service to:

1. Establish and maintain effective relationships with federal, state, Tribal, and local governments and historic preservation organizations at all levels of the agency to ensure protection of cultural resources and to promote Heritage Program efficiencies.
2. Fully integrate opportunities for preservation, protection, and utilization of cultural resources into land use planning and decisions.
3. Manage cultural resources through a process of identification, evaluation, and allocation to appropriate management categories that protect cultural resource values and benefit the public.
4. Recognize cultural resources through National Register of Historic Places nomination, National Historic Landmark recommendation, and other special designations.
5. Provide opportunities for public use and enjoyment of cultural resources through education and outreach programs that promote resource stewardship.
6. Facilitate scientific research of cultural resources to increase understanding of past human cultures and environments.
7. Use cultural resource data to increase scientific understanding of the evolution and condition of ecosystems and to benefit Forest Service land management practices.
8. Protect cultural resources from the effects of Forest Service or Forest Service-authorized undertakings, unauthorized use, and environmental damage (FSM 2360.3).

The Sierra Nevada Forest Plan Amendment described the following elements of managing cultural resources (Volume 2, Chapter 3, Part 5.8, p. 510):

- Conducting inventories of proposed project areas to identify types and locations of heritage resources
- Determining sites that are eligible for the National Register of Historic Places
- Assessing potential project effects of cultural resources
- Avoiding or mitigating effects on sites eligible for the National Register or other significant sites
- Follow-up monitoring to assess the effectiveness of management procedures.

Standards and Guidelines for Cultural Resources under the Giant Sequoia National Monument Plan (2013 Monument Plan p. 104)

- Fully integrate opportunities for preservation, protection, and utilization of cultural resources into land use planning and decisions through (Standard 1):
    1) Assessing potential effects on heritage resources on a project-specific basis.
    2) Avoiding or mitigating effects on sites eligible for the National Register or other significant sites.
    3) Follow-up monitoring to assess the effectiveness of management procedures.
    4) Post and sign (e.g., tractors prohibited, Antiquities Act) selected cultural resource sites where such signing will not endanger the sites.
    5) Monitor number of sites for protection visits on revolving basis, and prioritize according to resource significance and vulnerability as developed in the forest overview.
    6) Develop and provide interpretive brochures for selected sites.
- Conduct inventories as necessary, occasionally doing non-project-specific surveys. Complete archaeological reconnaissance reports and site records to allow evaluation of site significance. Release those site locations declared not significant for other management activities. Approach systematically the reduction of the existing forest backlog of sites to be evaluated. Those types of sites deemed more potentially critical in the forest overview will receive priority.
- Regularly consult with Native Americans as interested parties on proposed undertakings (Standard 4).

In addition the Sequoia National Forest conducts 36 CFR 800 pursuant to the *Programmatic Agreement Among the U.S.D.A. 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 Processes 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* (Regional PA).

Types of Cultural Resources

Archaeological Sites: Prehistoric and Historic

Archaeology is the physical evidence of human actions in specific locations and interactions with the environment over the broader landscape. This evidence includes structures, remains of structures, accumulated or deposited trash, physical evidence of food extraction, mining, logging, livestock grazing, or agriculture. Archaeological evidence is often defined as a site, which under the NRHP is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure (whether standing, ruined, or vanished), where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure.

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The Tule River Reservation Protection Project currently has over 900 recorded archaeological sites. These sites are the physical remains of human occupation over the last 9,000 years and range from small-scale obsidian flake scatters to large-scale complex Native American village sites occupied for thousands of years. Historic sites chronicle some of the earliest Euro-American exploration, settlement, and development of the southern Sierra Nevada. Historic sites in this part of California date from roughly 1850 to the 1960s.

Architectural Resources: Buildings and Structures

The NRHP divides architectural sites into buildings and structures. A building is created principally to shelter any form of human activity, while a structure is used to distinguish buildings whose functional constructions were usually made for purposes other than creating human shelter (e.g. dams, railroad grades, canals).

Cultural Landscapes and Districts

Cultural landscapes are geographic areas, subsuming both cultural and natural resources, and the wildlife or domestic animals therein, associated with an historic event, activity, or person, or exhibiting other cultural or aesthetic value. Cultural landscapes are not a recognized property type under the NRHP but are recognized as districts. The NRHP defines districts as possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. A district derives its importance from being a unified entity, even though it is often composed of a wide variety of resources. The identity of a district results from the interrelationship of its resources, which can convey a visual sense of the overall historic environment or be an arrangement of historically or functionally related properties. Cultural landscapes are also ecological legacies from our past.

Ethnographic and Traditional Cultural Properties

Traditional Cultural Properties (TCPs) are important places because of their association with the cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. TCPs include sacred sites, natural resource collection areas, and the occasional archaeological site associated with ancestral Native American groups. TCPs must be a tangible property, that is a district, site, building, structure, or object as defined in 36 CFR 64.4 (FSM 2360.5).

Objects and Museum Collections

The NRHP describes objects to be relatively small things that are associated with a specific setting or environment. These objects are often recorded or catalogued and then remain in their original context (e.g., large mining and logging equipment), where they can be used for interpretation. All artifacts and associated records (i.e. catalogues and photographs) removed from NFS lands remain federal property and must be managed according to 36 CFR Part 79.

The types and distribution of cultural resources in the TRRP Project are determined by what, where, why, and how people of the past used the land. An overview of prehistoric and historic land use patterns and how that is manifested in currently known cultural resources is presented below.

Description of Proposal

The proposed action is to reduce surface and ladder fuels on approximately 1,400 acres using a combination of treatments. These treatments include constructing shaded fuel breaks along ridgelines, private land boundaries and road edges; reducing fuels in planted areas; and prescribed burning in a portion of these and additional areas using jackpot burning, pile burning, and understory burning techniques.

Alternative 1

Under Alternative 1 (No Action), current management plans would continue to guide management of the project area. No reduction in the risk of wildland fire starting on the Sequoia National Forest or private lands, and spreading onto the Tule River Indian Reservation (Reservation) would be implemented to accomplish the purpose and need at this time.

Alternative 2

The proposed action is to reduce surface and ladder fuels on approximately 1,400 acres using a combination of treatments. These treatments include constructing shaded fuel breaks along ridgelines, private land boundaries and road edges; reducing fuels in planted areas; and prescribed burning in a portion of these and additional areas using jackpot burning, pile burning, and understory burning techniques. The diameter limit for all the fuels reduction activities in the project area has been lowered to be 12 inches dbh.

There are three treatment areas proposed in Alternative 2, and each has a specific set of prescriptions as described in further detail in the following paragraphs

- Planted Stands
- Shaded Fuel Breaks
- Understory Burning

A portion of the trees may be removed as fuelwood under the terms and conditions of firewood/fuelwood permits. Fuelwood cutting only allowed within the administrative boundary of the sequoia grove by specific permission in accordance with the Monument Plan (USDA 2012, pp. 36 and 39).

The project area is within the old forest emphasis land allocation of Giant Sequoia National Monument. Snags are an important component of old forest habitat in this land allocation. Therefore, where trees over 15 inches dbh are available, a minimum of four snags per acre would be retained averaged across 10 acres.

Planted stands

The TRRP project area contains approximately 400 acres of planted stands. Therefore, Alternative 2 proposes to reduce fuels while creating more heterogeneity and resiliency by using hand treatments to

vary spacing both in the direction of travel (i.e., upslope/downslope) and wherever possible, in alternate directions (i.e., side slope). Specific treatments include:

- Vary spacing to favor the retention of the largest trees, according to the species priority described below (in descending order of importance):
    1) Retain all trees greater than 12 inches diameter breast height (dbh);
    2) Giant sequoia;
    3) Black oak;
    4) Pine; and
    5) An average of five hardwoods per acre.
- Cut trees up to 12 inches dbh following the priority list.
- Where the largest trees are less than eight inches diameter at breast height (dbh), thin trees to 100 trees per acre (i.e. average tree spacing of 20 feet apart).
- Where the largest trees are eight inches and larger, thin trees to 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Remove sufficient surface fuels to produce an average flame length of four feet or less by piling existing dead and down material between one and eight inches dbh.
- Leave trees may be limbed to reduce fire risk if deemed necessary.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Shaded fuel breaks:

Alternative 2 would establish several fuelbreaks using hand treatments across approximately 730 acres. Based on terrain and vegetation features these fuelbreaks would vary in width from 150 to 400 feet wide:

1) Construct a 150 foot wide shaded fuel break along the northern boundary of the Reservation on and to the east of Black Mountain.
2) Construct a 200 foot wide shaded fuel break (100 feet on both sides of the road) along Forest Roads (FR) 21S94, 21S12 (from 21S94 to 21S25), 21S12b, 21S25, 21S25a, 21S25b, 21S25c, 21S25d, and 21S58.
3) Construct a 200 foot wide shaded fuel break on National Forest land adjacent to private property.
4) Construct a 300 foot wide shaded fuel break along the eastern boundary of the project area.
5) Construct a 400 foot wide shaded fuel break along the western boundary of the project area.

Construction of the shaded fuel breaks would include one or more of the following treatments:

- Target shade-tolerant tree species (incense cedar, white fir and red fir) for cutting and retain giant sequoia, oak, and pine trees.
- Remove sufficient surface fuels to produce an average flame length of four feet or less after project implementation, by piling existing dead and down material between one and eight inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height[1] of 20 feet, by:
    a. Cutting and piling brush,

[1] Canopy base height is the average distance from the ground to the lowest portion (base) of the tree crown.

b. Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre (i.e. average tree spacing of 25 feet apart).

- Where shaded fuel break and spotted owl protected activity centers overlap (approximately 130 acres), cut and pile brush and trees (less than six inches dbh).
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.

Understory Burn:

Understory burning is proposed on approximately 280 acres between the thinned planted areas and some of the shaded fuel breaks. This prescribed burning would reduce surface fuels to retain an average of 15 tons per acre. The burn area would have hand lines constructed and incidental small trees, generally less than six inches dbh, would be pruned or cut to prepare for burning. Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Alternative 3

Alternative 3 was developed to address the issues of high snag density; high concentrations of fuel below Forest Service Roads 21S94 and 21S12; and the risk of fire spreading from Camp Nelson, Rogers Camp, Simmons Post Camp, Mountain Aire, and Bateman Ridge private lands, especially in the upper end of Wilson Creek. This alternative proposes to reduce surface and ladder fuels on approximately 2,830 acres within the project area. Alternative 3 would treat the same areas as Alternative 2, and add a fourth treatment area to further reduce fuels:

- Planted Stands
- Shaded Fuel Breaks
- Understory Burning
- Other Fuel Treatments

A portion of the trees may be removed as fuelwood under the terms and conditions of firewood/fuelwood permits. Fuelwood cutting only allowed within the administrative boundary of the sequoia grove by specific permission in accordance with the Monument Plan (USDA 2012, pp. 36 and 39).

Below is a complete description of the treatment areas and the management activities that are being proposed for each one.

Planted stands

The TRRP project area contains approximately 400 acres of planted areas, which range in age from X to Y years old. Therefore, Alternative 3 proposes to reduce fuels while creating more heterogeneity and resiliency by using hand treatments to vary spacing both in the direction of travel (i.e., upslope/downslope) and wherever possible, in alternate directions (i.e., side slope). Specific treatments include:

- Vary spacing to favor the retention of the largest trees, according to the species priority described below (in descending order of importance):
  2) Retain all trees greater than 12 inches diameter breast height (dbh);

3) Giant sequoia;
4) Black oak;
5) Pine; and
6) An average of five hardwoods per acre.

- Cut trees less than 12 inches dbh following the priority list.
- Where the largest trees are less than eight inches diameter at breast height (dbh), thin trees to 100 trees per acre (i.e. average tree spacing of 20 feet apart).
- Where the largest trees are eight inches and larger, thin trees to 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Remove sufficient surface fuels to produce an average flame length of four feet or less by piling existing dead and down material between one and eight inches dbh.
- Leave trees may be limbed to reduce fire risk if deemed necessary.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Shaded fuel breaks:

Alternative 3 would establish several fuelbreaks using hand treatments to meet Shaded Fuelbreak Guidelines, across approximately 690 acres. Some of the fuelbreaks would be narrower than those proposed in Alternative 2, because of the added fuel treatment areas proposed in Alternative 3. Based on terrain and vegetation features these fuelbreaks would vary in width from 150 to 300 feet wide:

1) Construct a 150 foot wide shaded fuel break along the northern boundary of the Reservation on and to the east of Black Mountain.
2) Construct a 200 foot wide shaded fuel break (100 feet on both sides of the road) along FRs 21S94, 21S12 (from 21S94 to 21S25), 21S12b, 21S25, 21S25a, 21S25b, 21S25c, 21S25d, and 21S58.
3) Construct a 200 foot wide shaded fuel break on National Forest land adjacent to private property.
4) Construct a 300 foot wide shaded fuel break along the eastern and northwestern boundaries of the project area.

Construction of the shaded fuel breaks would include one or more of the following treatments:

- Target shade-tolerant tree species (incense cedar, white fir and red fir) for cutting and retain giant sequoia, oak, and pine trees.
- Remove sufficient surface fuels to produce an average flame length of four feet or less after project implementation, by piling existing dead and down material between one and eight inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height[2] of 20 feet, by:
  a. Cutting and piling brush,
  b. Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Where shaded fuel break and spotted owl protected activity centers overlap (approximately 130 acres), cut and pile brush and trees (less than six inches dbh).

[2] Canopy base height is the average distance from the ground to the lowest portion (base) of the tree crown.

- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.

Understory Burn:

Understory burning is proposed on approximately 240 acres between the thinned planted areas and some of the shaded fuel breaks. This prescribed burning would reduce surface fuels to retain an average of 15 tons per acre. The burn area would have hand lines constructed and incidental small trees, generally less than six inches dbh, would be pruned or cut to prepare for burning. Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Other Fuels Treatments:

Alternative 3 proposes approximately 1,500 more acres of fuels reduction treatments within the project area than under Alternative 2. These treatments would focus on reducing surface and ladder fuels in the area between the planted areas and the fuelbreaks using the following criteria:

- Remove sufficient surface fuels to produce an average flame length of less than six feet after project implementation, by piling existing dead and down material up to 8 inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height of 20 feet, by:
  1) Cutting and piling brush
  2) Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre.
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.
- Where these fuel treatments and spotted owl protected activity centers overlap (305 acres), cut and pile brush and trees (less than inches dbh).
- After the cutting and piling, use jackpot burning and pile burning to reduce fuel loading. Where these fuel treatments and fisher den buffer overlap, (approximately 45 acres), only pile and burn methods would be used.

Affected Environment

Our knowledge of cultural resources in the TRRP project area is derived from eleven archaeological surveys that have been completed, see Table 1 and ten archaeological sites recorded within the Area of Potential Effect, see Table 2.

SURVEYNUMBER	PROTOCOL	SURVEY_NAME	AUTHOR
R1980051352009	SI, SG	Crawford Road Project	FSA
R1982051352001	SI	Rogers Special Salvage Timber Sale	PARA
R1983051352001	SI, SG, SC	Solo Timber Sale	CT
R1986051352002	SI	Black WDTH SSTS	PARA
R1988051353013	SC	CR Survey of Junction, Red, Nelson, and Freeman Timber Sales	CT
R1989051352004	SI	Red Helicopter Timber Sale	FSA

R1991051352009	SI, SG	Red Hill Timber Sale Addendum	FSA
R1991051352010	SG, SC	Rogers Camp Salvage Area	CT
R1991051353001	SI	Slate Special Salvage Timber Sale	FSA
R1994051352005	SI	Tule River and Hot Springs Roadside Hazard Tree Removal	FSA
R2010051352029	SI, SG, SC	Tule River Reservation Protection Project	CT

Table 1: Surveys in TRRP Project Area of Potential Effect

Cultural resources in the TRRP Project are ten prehistoric and historic archaeological sites (Table 2). These resources reflect early settlement, use, and management of the lands by indigenous people; westward expansion of Euro-American people (as well as Asian, African, and other non-European people) and resource extraction through logging.

Information is also derived from

FSSITENUMBER	TYPE	ST_SITE_NUM
05135200067	PRE	CA-TUL-562/1029
05135200068	PRE	CA-TUL-1028
05135200138	PRE	CA-TUL-1030
05135200139	HIS	CA-TUL-1026H
05135200191	MUL	CA-TUL-2068H
05135200199	MUL	CA-TUL-1484H
05135200300	HIS	
05135200341	PRE	
05135200342	PRE	
		CA-TUL-3890

Table 2: Sites within TRRP Project Area of Potential Effect

The following discussion of cultural resources is based on the general overview presented in the Giant Sequoia National Monument Specialist Report, Cultural Resources and Tribal and Native American Interests (Gassaway, 2012) and the specific cultural resource research of Theodoratus Cultural Research (1984).

Prehistoric Background

People first arrived in California more than 13,000 years ago (Johnson et al. 2002). Occupation of the higher elevations (above 7,000 ft) of the southern Sierra Nevada would have been limited prior to 14,000 years ago during the Tioga glaciation. Archaeological data indicates that humans have inhabited the Southern Sierra Nevada. While currently there are no known sites older than 7,000 years old, there is the potential in the GSNM to have some of the oldest sites in the Sierra Nevada; since this portion of the Sierra Nevada was not extensively glaciated during the Tioga glaciation. The earliest human occupation of the Monument could have come from either the west (Tulare and Buena Vista Lakes) or southeast (Great Basin), where fluted projectile points have shown the presence of people 8,000 to

10,000 years ago. Few large-scale archaeological excavations or data syntheses of sites in the southern Sierra Nevada have been undertaken, thus leading to the use of chronologies based on those from sites in the Mojave Desert and Great Basin with their emphasis on pinyon procurement, a resource not commonly found in the TRRP Project. Using data from lower elevation sites in the foothills of the San Joaquin Valley, Moratto et al. (1978) hypothesized that early prehistoric settlement was large villages along the lower reaches of rivers near junctions with main tributaries, and large scale sites did not appear in the mid-elevations until after 3,000 years Before Present (B.P.). Unpublished data from archaeological sites in the Monument, however, have indicated that there were major villages located away from large rivers at times much earlier than Moratto et al. (1978) suggest. McGuire and Garfinkel (1980, pp. 49-53) defined a sequence of prehistoric phases of settlement for the southern Sierra Nevada. By default this sequence can be used when discussing the TRRP Projects prehistory. These phases of settlement according to McGuire and Garfinkel (1980, pp. 49-53) are as follows:

Paleoindian (9,000 to 6,000 B.P.): This phase is represented by isolated points, such as Lake Mojave and Silver Lake found in high altitudes, around 8,000 feet. McGuire (1981, p. 18) suggested that the associated sites resulted from trans-Sierran travel or temporary camps for hunting large game. Generally, the area was only used by nomadic groups on a sporadic basis.

Lamont Phase (6000 to 3200 B.P): This phase is marked by a dry period in the southwestern Great Basin. Prehistoric sites are located on ridges, saddles, and meadows. Visits to the area are sporadic and associated with the occasional gathering of pinyon nuts. Projectile points consist of Pinto series points (Campbell and Campbell 1935). The sites and points seem to be associated with large game hunting. Basalt was the choice material for flaked stone tools. It is thought that the warming conditions of the Altithermal climatic period caused the shift and expansion into the pinyon-juniper zones (Moratto 1984, p. 333).

Canebrake Phase (3200 to 1400 B.P.): This phase suggests that pinyon exploitation began around 3,200 years ago, and that by 1,400 years ago, regular use of the pinyon resources was taking place (Moratto 1984, p. 333). Characteristic artifacts include Elko series projectile points, manos, metates, blades, choppers, and hammerstones. Bedrock mortars and pestles are not present. Trading is for obsidian from the east and marine shell beads from the west. McGuire (1981, p. 21) suggested that this phase is the first intensive occupation within the southern Sierra Nevada and involved the beginning of a shift toward a more intensive use of plant resources.

Sawtooth Phase (1400 to 700 B.P.): This phase sees a shift from the atlatl and dart to the bow and arrow. Rose Spring and Eastgate are the typical projectile points and bedrock mortars now appear, indicating a more diverse subsistence. Sites are more dispersed in location and increase in number (Moratto 1972). The typical artifacts and features are bedrock mortars, cobble pestles, obsidian oval scrapers, flaked knives, and triangular drills (Bennyhoff 1956). Bedrock mortars and pestles also appear for the first time in this phase. Bennyhoff (1956) suggested that the use of bedrock mortars indicates an

intensification of acorns processing. Trade may be lacking due to the limited amount of shell beads present, although some Olivella Spire-lopped beads have been found (Moratto 1984, p. 333).

Chimney Phase (700 BP to historic period): This phase is marked by high intensity use and great growth in occupation in the region. Sites are now located near major rivers. Sites include large villages, house pits, bedrock mortars, formal cemeteries, Owens Valley Brownware pottery, soapstone objects, Olivella and clam shell beads, Desert Side-notched and Cottonwood Triangular projectile points, pestles, manos, metates, historic glass beads, pictographs, and a variety of other artifacts (Moratto 1984). Villages were being reused, populations were increasing in size, ceremonial areas developed, and long distance trading occurred.

Ethnography

The Yokut are the ethnolinguistic group whose traditional territories are now within the TRRP Project.

The Yokut are a part of a broad ethnolinguistic group that is further divided into tribal groups or triblets. The tribelet was the basic political unit for the ethnographic groups in California. A tribelet is: 1) recognized by name, 2) occupied a recognized territory, usually included one or two drainage systems with several groups sharing a range during the year (Kroeber 1925, p. 497; Gayton 1945, pp. 415, 419; 1948a, pp. 95-97; Spier 1978, p. 492), 3) had a distinct dialect, 4) utilized autonomous social control, and 5) was headed by one or more acknowledged chiefs. Each tribelet was centered on a major winter village, which might encompass one or more secondary satellite communities (Gayton 1945, page 409). Although the tribelet was autonomous, it did engage in interrelationships with neighboring tribelets. This was in the form of marriages, use of one another's gathering areas, attendance at ceremonies, and sometimes engaging in hostilities (Gayton 1948).

The Yokuts speak dialects of Yokutsan which is a language group in the Penutian language family. The Yokutsan speaking groups are part of a widespread and populous set of peoples occupying the San Joaquin Valley from the Sacramento Delta to the Tehachapis, north and south, and from the east side of the southern Coast Ranges to the Sierra Nevada foothills, east and west. The "Yokutsan" language family is related to several other large central California language families, Wintuan, Maiduan, and Utian. Yokuts languages and dialects are subgrouped into three divisions which correspond only roughly to the environmental zones occupied: Foothill Division, Valley Division, and Buena Vista Division. The Yokuts seem to have been well established in their regions over a significant period of time, certainly in excess of 1,000 years.

The TRRP Project area is the traditional territory of the *Yaudanchi* Yokuts. The *Yaudanchi* had its residential core on the North and Middle Forks of the Tule River at the main winter village of *Shawahtau*. "*Ketilmuh* was a Yaudanchi summer village at Camp Nelson" (Latta 1949:23).

Subsistence and Material Culture

The Yokuts relied on a hunting, fishing and gathering economy. This economy adapted to seasonal change wherein specific resources were targeted based on the season. Spring gathering involved

young plants and greens such as clover (*Trifolium* spp.) and yucca blossoms (Yucca L.). Summer, the principal gathering season, brought a diversity of plant foods including varieties of grasses, seeds, tubers and berries. In summer the population of major villages would often divide, departing for temporary camps in the valley and foothills. Late summer provided the most essential storage foods including pine nuts (or piñon nuts) and acorns (Theodoratus Cultural Research 1984).

This economy caused tribelets to have seasonal rounds where "permanent" villages were occupied for the most part in the winter months. During the summer, villages would split into groups of two or three families and travel to summer camps. The elderly or sick were left in the village with someone in attendance. Although there were no definite tribal boundaries, village sites were regarded as the seat of the tribelet, and territories were confined to hunting and gathering areas. In times of food shortage, adjacent tribes, who maintained friendly relations, shared available resources (Gayton 1930a).

Houses were constructed of thatch or cedar bark with a frame and support of thick but pliable willow or live oak branches. They were conical shaped measuring between six and twelve feet in diameter. Other village structures included storehouses or granaries for acorns and a sweathouse. Sweathouses were semi-subterranean and were constructed of one or two large center posts with a possible gable beam resting between the forks of two posts. Brush and willows were then piled onto the structure. The floor was excavated and the earth was then piled onto the top of the brush, securing the walls of the sweathouse so as to hold in the heat.

Winter villages were in the lower elevations where groves of black oaks (*Quercus kelloggii*) grew. Acorns were obtained while they were still slightly green and were knocked out of the trees by men using wooden hooks. Women would gather the acorns and carry them home in their burden baskets. Most acorns were stored in granaries outside the houses. Acorns were pounded, leached and then boiled in a water tight basket and cooked with hot stones.

Pine nuts were gathered by the men, who would hoist themselves into the pine trees and use the hooked stick to knock down the cones. "Green" or unopened pine cones would be placed on a big bed of coals. Once the opened cones cooled they were fully opened with obsidian blades and the nuts were removed.

Manzanita (*Arctostaphylos manzanita*) berries were gathered to create a refreshing cider drink. Once gathered, the berries were mashed with a pestle and put in a sieve above a large mush basket. Water was poured over the mash and the cider gathered in the large basket below. Yucca (Yucca L.) plants were gathered in the fall to obtain their roots for roasting, returning to the same patches again in the spring with hooked sticks to collect the tall blossom buds.

While women were the principal gatherers, men were responsible for fishing and hunting. Fish were obtained by various methods, including poisoning, spearing and trapping with weirs. Weirs were composed of woven willows braced with stones; a net bag was then arranged in the structure that would ensnare the fish. Poisoned fish floated to the surface and were collected into baskets.

A large variety of game animals were readily available and included mule deer, tule elk, antelope, black bear, rabbits and ground squirrels, as well as a variety of birds such as quail, pigeons and waterfowl (Theodoratus Cultural Research 1984). Bows and arrows were used most frequently, but snares and traps were also utilized. Both the plain bow, constructed of pepperwood or California Laurel (*Umbellularia californica*) and strung with a two-ply sinew cord and the sinew-backed bows made of juniper wood (*Juniperus* sp.) were utilized in the area. Obsidian for arrow points was traded in a rough form from the Great Basin. Spring traps were used to snare rabbits, jays and squirrels. Birds such as quail were shot, not trapped.

A variety of baskets and pottery vessels were produced for the acquisition, storage and consumption of foods. Twined baskets, including cooking baskets, sieves, burden baskets, seed-beaters, and triangular winnowing trays, were decorated with horizontal bands of redbud (*Cercisorbiculata*). Washing baskets, water baskets, serving containers, and bottleneck baskets for "treasures" were coil-made. Baskets were mainly produced with a creamy yellow background and decorated with red, reddish brown (redbud) or black (fern).

Rolled coiled clay pottery production was practiced throughout the region. These clay coils were flattened with a stone and the inside was scraped with Live Oak bark. The raw pots were then sun-dried for approximately two days and soapstone was rubbed over the entire surface as a finish. Pots were gradually fired in a pit for a period between 10 and 18 hours. When the pots were still at high heat a lacquer of acorn gruel was applied to the pots and at that point the pots were allowed to cool. Large pots were used primarily for cooking meat and sometimes for cooking acorn mush. Medium sized pots were serving vessels and small spherical dishes were used as cups or scoops.

A significant part of the economy was trade. The tribes from both sides of the Sierra Nevada traveled across the mountains for trade. Items brought from the east were rock salt, pine nuts, mountain sheep skins, moccasins, buckskin jackets, leggings made of fox skin, rabbit skin blankets, baskets, pine sticks, sinew-backed bows, and unfinished obsidian blanks. Items taken east were beads, acorn meal and baskets. In later times the tribes of the Great Basin desired red beads and Spanish blankets for trade. Shell beads or "money" had derived from the west in the form of slender tubular beads called "humana" beads by the Yokuts and Mono. Also valued were small clamshell discs. These smaller beads were measured around the hand or wrist for their worth as a measure of money.

Native Americans, Vegetation Manipulation, and Fire

Native Americans and the groups that inhabited the area now known as the southern Sierra manipulated the vegetation in order to provide diverse and sustainable food and material supply. This manipulation came in the form of gathering, cutting, sowing, burning, hunting, and limited planting (Anderson 1988). Direct intense hand manipulations would have been limited by population size, distance from habitation sites, and length of occupation. More indirect manipulations, such as fire, would not have had such limits and would have only been limited by the susceptibility of fuels to burn. Fire was used to promote vegetation regeneration, for hunting, to capture insects for food, and for

other activities (Blackburn and Anderson 1993; Anderson and Moratto 1996; Lewis 1973; Bean and Lawton 1973). While the extent and scale of environmental impacts from Native American burning has been highly contested between anthropologists and natural scientists (Denevan 1992; Boyd 1999; Vale 2002; Whitlock and Knox, 2002; Lewis and Anderson, 2002; and Anderson, 2005), most scientists agree that within areas of habitation and traditional gathering Native Americans purposefully used fire and had a high degree of impacts. The loss of fire due to disruption of traditional tribal practices, plus subsequent fire suppression, has profoundly changed the forests. At 68 sites in Sequoia National Park adjacent to the Sequoia National Forest, the median year of the last "natural" fire in 1875 (Caprio et al. 1997). The year 1875 also roughly corresponds to the time that logging and its effects began to become prevalent in the southern Sierra Nevada (Otter 1963).

Euro-American contact and settlement in the 19th century ended much of the tribal manipulation of the area's ecosystems.

> Settlers often prevented the Indians from providing for themselves. To flush out a variety of animals, including fowl, Indians had long practiced the art of burning, especially during the dry season. In fact, the whites called the area from the Four Creeks [the four channels of the Kaweah River] to the Kings River the "burnt district" because much of it was covered in potash. On threat of severe punishment, settlers prohibited Indians from setting fires. When, in July 1856 along the Kings River, three Indians defied the order, whites killed one and forced his companions to flee. Subagent M. B. Lewis commented on the act: 'The justification of this unexpected and rash treatment towards these Indians for the exercise of a privilege which they have been allowed from their infancy, it is rather hard to explain to them.' (Phillips 2004)

Social Organization

The fundamental unit within each tribelet was the paternal lineage. Each lineage possessed a totemic animal that was inherited by the children along the male line. A women would retain her totem upon marriage, however, it was not passed onto her children. Totemic lineage determined a person's basic societal role. Certain activities were exclusive to each lineage and were for the most part ceremonial (Gayton 1930a).

Each village had a least one chief. Their duties were many and included decision-making in regards to the time for ceremonies, the time to move, and when one was to be punished or, for instance, sanctioning the killing of malicious shamans or other evildoers. Chiefs also saw that the needy were fed and sheltered. A chief's power was not absolute and he was seen rather as a benevolent governor and advisor. A chief usually held council with his brothers or elders of his village so that his decisions were supported and acceptable to all. A chief kept an alliance with the shaman who he call on to work harm against his enemies or evildoers. Within a lineage, the position was passed on to son or brother, depending on who was fit for the title. An outgoing chief would name his preference for the successor, but his choice ultimately had to meet with that of his fellow villagers.

Other significant positions within a tribe included a secondary chief or sub-chief, and the official messenger. Secondary chiefs functioned as financial sponsors. They would aid in the expenses for mourning ceremonies or other celebrations. The official messenger was responsible for taking messages to and from his chief, or between people who would hire him. The messenger's other duties included supplying the chief with wood and water, giving orders around the village, and directing the proceedings at ceremonies. Women of the messenger's family would cook and serve food at ceremonies and would keep peace among quarrelsome women. The messenger carried a cane approximately eight feet long painted with red horizontal stripes and a string was tied on the top. This cane was recognized between villages. When a messenger was seen approaching a village he would be greeted by the local messenger and then ushered to the home of the chief. Messengers operated for specific people including the chief or the shaman. Messengers from differing villages would work together during intertribal ceremonies or the annual mourning ceremony.

Historical Background

Contact, Missionization, and Mexican Rule

Prior to direct contact between Europeans, and Native American cultures in the Sierra Nevada, Native Americans were impacted by European exploration and settlements outside the region. Europeans brought guns, horses, and diseases which caused catastrophic plagues that decimated the indigenous peoples. These impacts also caused large-scale changes and interruptions in trade and social networks. Diseases brought death and large-scale depopulation which caused fluctuation in tribal boundaries. Horses brought changes in tribal interactions including the horse raiding staged by the Yokuts in the 1820s through 1840s (Phillips 1993).

Cook (1978) estimated that the native population in California as a whole, between 1770 and 1830, declined from 310,000 to approximately 245,000, the true extent and details of tribal change prior to direct contact is largely speculation at this time.

The first Spanish settlements along the California coast, starting in 1769, heavily impacted the population of coastal Indians, and these effects were also felt by peoples of the San Joaquin Valley and the Sierra foothills. The Spanish did not just stay in a small strip along the coast and by 1776, Spanish missionary Francisco Garces, with a small group of soldiers, explored the eastern San Joaquin Valley visiting the Kern Valley, the White River, and possibly California Hot Springs, including the *Bokninuwad* village of Hoin Tinliu Yokuts (Latta 1977). The *Tubatulabal* were known to have come in contact with the Spanish at Mission San Buenaventura while on trading trips to the coast (Smith 1978). In 1806, Gabriel Moraga traversed the western foothills in search of favorable mission sites, ascending and camping along a river to which he gave the name *El Rio de Los Santos Reyes* (River of the Holy Kings), now known as the Kings River, and passing through the areas now occupied by Visalia and Porterville. Though subsequent plans to establish a mission near Visalia never materialized, the route traveled by Moraga and others during the Spanish and Mexican periods became known as the Old Spanish Trail,

and later the Tulare or Visalia Trail (Hoover et al. 1966, p. 91). In 1819, Lt. Estudillo explored the Tule River and Deer Creek in Yokuts territory (Larson 1985, p. 4, Theodoratus Cultural Research 1984). In addition to direct contact with Spanish missionaries, soldiers and settlers, Native American populations also came into contact with "neophytes" (i.e., people newly converted to a belief, as a heathen, heretic, or nonbeliever) who were either released or had run away from the mission system.

The Mexican War of Independence from Spain ended with the *Plan of Iguala* peace treaty on February 24, 1821. This establishment of the First Mexican Empire an independent monarchy separate from Spain. This monarchy was short lived and by March 19, 1823, the Mexican Republic was established. What would become California was part of Mexican state of Californias. Independence of Mexico from Spain brought in new laws to the Region. The *Plan of Iguala*, also known as Plan of the Three Guarantees ("*Plan Trigarante*"), had three main goals "*Religión, Independencia y Unión*", (Religion, Independence and Unity) which were the establishment of Roman Catholicism, the proclamation of Mexico's independence, and social equality for all social and ethnic groups in the new country. This guaranteed citizenship to Native Americans and the protection of their person and property. Despite this legal guarantee, Mexican rule brought a significant increase in large land grants resulted in increased demand for labor and many Native Americans were forced into the slave-like "hacienda-peonage system," providing for the Mexican ranchos (Theodoratus Cultural Research 1984).

The early 1800s also brought an increase in American explorers passing through the southern Sierra Nevada including Jedediah Smith, who explored the upper reaches of the Kings and Kaweah Rivers in 1827, Joseph Walker in 1834, and Peter Skene Ogden in 1843 (Farquhar 1966; Hoover et al. 1966, p. 561). Ewing Young noted strong Hudson's Bay Company presence and evidence of a malaria epidemic among the Yokuts with funeral pyres and scattered corpses, between the Kings and San Joaquin Rivers in 1833-34 (Rehart et al. 2007, p. 5). Early mapping efforts of the region included that of John C. Fremont and Joseph Walker in 1845-46. Fremont with Kit Carson explored the upper North Fork of the Kings River and portions of the Tule River (Hoover et al. 1966, p. 561, Larson 1985, p. 11).

The Mexican Period also brought increased resistance by Native Americans to Euro-American intrusions into their territories. But nothing prepared the Native Americans for the population influx that was created by the Gold Rush.

On June 14, 1846 a group of American settlers in Sonoma on what they claimed to be orders of Col. John C. Fremont, imprisoned General Vallejo, raised the Bear Flag, proclaiming independence from Mexican rule and a free country called the California Republic. A month later the Mexican-American War broke out and Commodore John D. Sloat of the United States Navy sailed into Monterey Bay beginning the military occupation of California by the United States. On January 13, 1847, the Capitulation of Cahuenga was signed securing American control in California.

Following the Mexican-American War, Mexico ceded California to the United States and it became the 31st state admitted to the union on September 9, 1850. Also in 1850, Lieutenant George H. Derby of the Topographic Engineers traveled up Deer Creek close to California Hot Springs (Larson 1985, p. 12).

The Gold Rush, Native Decline and Reservations

The 1850s brought large-scale change to California and Sierra Nevada. The discovery of gold and the subsequent Gold Rush in 1849 brought some 100,000 gold miners into California. This influx of outsiders brought a devastating decline in the Native American population. Between 1845 and 1855, California's native population went from approximately 150,000 to 50,000 (Cook 1978). Miners brought whiskey, prostitution, rape, disease and murder which further impacted Native American cultures (Theodoratus Cultural Research 1984).

Discovery of gold in the southern Sierra Nevada during the early 1850s brought non-natives to the Greenhorn Mountains and the Kern River valley, south of the GSNM. While the majority of miners went North or South of the GSNM others used the trails passing through the mountains and caused development of the Jordan Trail, Camp Nelson, Ponderosa, and Mineral King. There were limited "diggings" in the White River area of the GSNM. In addition to miners, military operations also took place within what is now the GSNM; in 1850 Lieutenant George H. Derby of the Topographical Engineers carried out some surveys in the area. Much of the trail use and transportation of equipment was undertaken by independent packers who were often Mexicans (Jackson 2004, p. 49).

Native Americans responded to the presence of non-Native miners, explorers, and settlers in a number of ways. The three most common strategies were: 1) they stayed in their traditional area and adapted as needed (somewhat maintaining a traditional lifestyle, or entered the local wage-labor economy working for Euro-American); 2) they fled to areas remote from Euro-American settlements; or 3) they resisted and fought for their territory. These choices were not mutually exclusive or necessarily independent from each other as individuals or tribal groups might do all three throughout their lifetimes or across generations.

The large influx of people into the San Joaquin Valley and Sierra Nevada foothills during the 1850s brought major armed conflicts, including the Mariposa Indian War and the Tule River War which was fight at Battle Mountain near Springville. During the Mariposa Indian War, Company A of the Mariposa Battalion under Captain J. Kuykendall rounded up Native Americans between the Kings and Kaweah rivers. While pursuing "fugitives" towards the headwaters of the 'Kah-we-ah' Kuykendall observed "as to this region east and southeast of the termination of our pursuit, I have only this to say, that it is simply 'indescribable'."

While the governor was sending militia to fight, punish, and bring Native Americans to reservations, President Millard Filmore, in 1851, sent three agents (O. M. Wozencraft, Redick McKee and George W. Barbour) to negotiate treaties with the California tribes. The agents negotiated and signed 18 treaties with representatives of various Native groups including four Yokut groups close to the GSNM – the *Chunut*, *Wowol*, *Koyeti* and *Yowlumne*. The treaties released tribal lands in exchange for reservations and governmental services and supplies (Theodoratus Cultural Research 1984). One of the proposed reservations was the Tulare Lake Reservation to be located between Tulare and Buena Vista Lakes. The proposed Tule Reservation extended from the Tule River south to Paint Creek. The treaty also

promised 200 head of beef cattle per year for the next two years (http://www.tulerivertribe-nsn.gov/history). None of these treaties were ever ratified by the U.S. Senate and, thus, the reservation was never formed and no cattle ever given to the tribes.

Subsequently, Congress authorized seven reservations of 25,000 acres each to be set aside. This was considerably less than what was agreed to by the treaties and many reservations were never 25,000 acres. Throughout the 1850s Tribal members were moved from one reservation to another. First Fort Tejon was formed in 1853, then the Tule Farms/River Reservation (also known as Madden Farm) was established in 1856; the Fresno River Reservation was established in 1857. In 1861, both the Fresno and Tule River were combined and moved to the mountains where the Tule River Reservation exists today (Theodoratus Cultural Research 1984).

The shuffling and segregation of Native American people continued when President Ulysses S. Grant issued an executive order on January 9, 1873, establishing the Tule River Indian Reservation at its present location. The new reservation comprised about 48,000 acres but was almost doubled in size on October 3, 1873, when President Grant issued a second executive order resetting the northern boundary to the drainage between the Middle and North Forks of the Tule River. The expanded reservation did not last long when, in 1878, President Rutherford B. Hayes cut the reservation to its original size and returned all the additional land to the public domain (http://www.tulerivertribe-nsn.gov/history).

The Indian Homestead Act of 1884 permitted Native Americans to homestead land similar to the way non-Native American settlers acquired land. But it was not until the General Allotment Act of 1887 that Native Americans not residing on reservations could receive title to land from the public domain. This latter act enabled Native Americans to obtain land in or near traditional tribal territories. The Mono and "San Joaquin Indians" (possibly Foothill Yokuts – no further specification or tribal affiliation was made) received 30 allotments (Theodoratus Cultural Research 1984).

Throughout the late 1800s, missions and mission schools were established in Native American communities and on Rancherias. These schools worked under the premise that Native American survival and success depended upon the Native Americans ability to assimilate into American society, both through religious conversion and complete immersion of American culture most often by removing children from their families and culture. Many families viewed enrollment in such schools as virtual kidnapping their children, as the children were not allowed to return for several years. This had widespread repercussions for continuation of Native culture as children were separated from their families during formative years, when they would normally learn traditional life skills and native language (Theodoratus Cultural Research 1984).

Emergence of Timber and Grazing

While the area that is now the GSNM was largely left untouched by miners, the Gold Rush left a significant impact on the San Joaquin Valley west of the GSNM. The growth of the Euro-American occupation in the GSNM is closely tied to that of the growth of the eastern San Joaquin Valley. By the

mid-1850s the town of Visalia was a major station along the Stockton-Los Angeles and Butterfield Stage Roads, and in 1852 Tulare County was organized. Fresno County was organized in 1856. Cattle ranching and timber harvesting quickly spread eastward from Visalia into the foothills and mountains. By the early 1860s, foothill communities like Squaw Valley and Poso Flat were being settled and people were traveling through the area that would become the GSNM on the Dennison, Jordan and Hockett Trails.

Trails through the region generally followed Indian trails but were widened and rerouted to accommodate stock. The early 1860s saw construction of the Jordan and Hockett trails. The Jordan trail, built by John Jordan and finished by G.G. Warner in 1861 and 1862 opened to pack stock in June of 1862. The trail, which extended almost one hundred miles, enabled travelers to go from Independence to Visalia in three days and was used by Union soldiers patrols in 1863 (Jackson 2004, p. 53; Larson 1985, pp. 32-33).

The Hockett Trail started in 1863 by John Hockett with construction help by Union soldiers, was completed in 1864 and "remained the principal trail route across the southern Sierra for the next forty years" (Jackson 2004, pp. 53, 57).

Another trail in the GSNM was the Dennison Trail which "was a rough, winding affair that linked nearly every mining camp, stock range and sheep camp south of the Kings River" (Jackson 2004, p. 53).

A drought in 1863-64 caused ranchers to drive their sheep, cattle and horses into the Sierra Nevada, following the Hockett and Jordan trail, for relief from the heat and provide forage in the mountain meadows. The number of livestock increased throughout the late 1800s with estimates of almost 1 million sheep in the San Joaquin Valley in the 1870s (Rose 2005, p.8).

By the mid-1850s, the demand for lumber in the valley brought loggers to the mountains. By 1865, James R. Hubbs had established the first sawmill in the Tule River basin.

These earliest lumber mills were located in the lower elevations, investments were minor and the operations were small. "In addition, these mills were technologically primitive, compared with the mills soon to follow. These technologies were not restricted to a single type, but they did generally represent low-level stages within the evolution of the sawmill" (Brown and Elling 1981, p. 54). The first sawmills "were always built where they could recover the most wood with the least effort. So, as trees continued to be felled, the sawmill sites moved progressively farther up into the mountains (Larson 1985, p. 58). The mills of this period were mostly owned by individuals or by small partnerships, operating with minimal capital, a small labor force, and served primarily local markets. Mills were "...changing hands, names, owners, and locations very often – so often, in fact, that accounts of this area during this period are often disorganized and confusing..." (Brown and Elling 1981, p. 48). They usually focused on sugar pine or yellow pine and only logged those redwoods in their way.

As the logging industry expanded timber was viewed as Central California's "first merchantable wealth" and one writer, in describing the symbiotic relationship of lumber, mining, and agriculture stated: "The history of the lumber business is identical with that of the country. The progress of one is essential to the prosperity of the other" (Barton 1907, p. 1, as quoted in Brown and Elling 1981, p. 48).

During the mid-to-late 1800s, despite difficulties involved in transporting the lumber (only primitive roads and trails were available and loggers utilized animal power), the lumber industry had developed a strong foothold including Grover Mill, Redfield (Peel) Mill, and Parsons Mill. The late 1800s brought the introduction of well organized "outside" interests, and the local lumber industry transitioned from individual business enterprises to large corporate operations.

The expansion of associated settlements into the mountains also took place with the establishment of California Hot Springs by the Witt brothers in 1883 (Muller 1990, p. 1), Pine Flat in 1883, Camp Nelson in 1886, and Springville in 1890.

Expansion of Euro-American populations into the San Joaquin Valley in the late 1800s brought the establishment of new towns including Porterville, Ducor, and Terra Bella and the need for more lumber, thus the growth of the timber industry and mills.

The southern Sierra Nevada was open range and the high meadows were grazed by stockmen and settlers. During the Civil War many stockmen turned to sheep due to the loss of cotton and the need for wool. The turn to sheep brought foreign-born Basque, Portuguese, Mexican and Chinese herders who started as hired workers to the stockmen but later struck out on their own. The limited resources of the high meadows and the increasing numbers of cattle and sheep caused "grass wars". Drought in 1877 and 1898 brought increased pressure and violence. The area of Wishon Fork and Peck's Canyon of the Tule River was one of the many areas that were fought over (Rose 2005, p. 40).

Tourism and Recreational Development

Early recreation in what is today the GSNM began in the 1870s and 1880s with families heading to higher elevations to escape the summer heat of the San Joaquin Valley. Families would explore the backcountry by pack trains, exploring "the old sheep, cattle, mining, and Indian trails". By 1868, Frank Dusy was offering professional packing and guiding services into the Kings and Kaweah backcountry. Mountaineering parties began to use the Dennison, Jordan, and Hockett Trails to access Mount Langley and Mount Whitney. (Jackson 2004, p. 65)

By the 1890s, John Nelson and Carmel Wilson opened a commercial pack station near Springville taking tourists and supplies to Camp Nelson. In 1895 John Dolye patented a tract of land in the North Fork of the Tule River that he called Summer Home (Sillars 2010, p.47). After selling 125 house or tent lots for summer occupancy the area was named Balch Park (Sillars 2010, p.47). By 1898 he and his wife had moved to Doyle Springs where they established an apple orchard (Sillars 2010, p.47-48).

In the early 1900s, realizing that tourism and recreational development of the region was suffering from lack of access, both local interests and Congress began to contribute to the establishment of pack trails and roads into the forest and the national parks. Early tent resorts in the parks became popular with visitors from the San Joaquin Valley in search of an escape from the oppressive summer heat and the opportunity to camp outdoors among the groves of giant sequoias (Tweed 1972). Road improvements resulted in marked increases in visitors, particularly as automobiles became an alternative means of transportation. During the 1890s, only a few hundred persons each year made the trek to the Sequoia and General Grant National Parks (Small 1926, p. 254). In 1907, however, the parks recorded approximately 2,000 visitors, and by the mid-1920s, numbers had jumped dramatically to more than 80,000 persons (National Park Service n.d; Small 1926, p. 254).

Early tourism in the Sequoia National Forest was somewhat hampered by the fact that the Forest Service did not consider recreation to be a primary use of public lands. Management and expenditure of funds on recreational development was initially limited to purposes of fire prevention and public safety (Lux et al. 2003, p. 29).

In the 1910s, however, the dramatic growth of automobile tourism, and consequent increased public demand for recreational development on national forests, led to Congress passing the Occupancy Permits Act (1915). This law allowed the Forest Service to issue permits of up to 30 years for concessions, organizational camps, and private recreation residence tracts on forest land. Throughout the 1920s, virtually all recreational development in pacific southwest forests occurred from lease permits, and lease fees on recreation facilities came to represent a significant source of regional income (Lux et al. 2003, pp. 24, 30). In most cases, foresters would identify and survey suitable locations for permitted recreational facilities. Such locations included not only the most scenic and popular tourist spots, but previously used sites or semi-developed areas with good access roads and nearby guard stations for purposes of fire prevention.

The dramatic growth of the automobile industry and auto tourism in the 1910s and 1920s resulted in a correspondingly larger need for more recreational facilities on public lands. New roads were pushed further into scenic forest and mountain areas, and existing routes were improved for automobile passage.

Development of Towns on Tule River

Porterville began as the Butterfield Overland Stage, Tule River Station. Located near Scenic Hill, Royal Porter Putnam began working at the station in 1859 and was promoted to Station Agent later that year. Soon the station became known as Porter's Station. Royal traded to ranchers, farmers and Native Americans. In 1861 when the stage line closed Royal moved the Station and set it up as a General Store and Inn. After expansion of his store Royal purchased land between his store and the newly founded Vandalia. Located around Signal Hill, Vandalia was founded by C. and George McKelvey. A flood in 1867 divested Vandalia.

Porterville: Porterville grew as Royal gave lots away to anyone who would live there and in 1870 the Post Office and school district were started. As Porterville expanded it subsumed the town of Plano that had been founded by A. Adams 1879.

Springville: Originally Daunt after William G. Daunt who had begun a general store in the 1860s. By 1889, Avon M. Coburn, Daunt's son-in-law, was operating a sawmill on Bear Creek near where it joins the North Fork of the Tule River. Coburn first expanded the rough mill to a finished lumber, box factory and wood products manufacturer and laid out a 18-acre townsite. At first he sold lots to his mill employees and then he bought Daunt's general store.

Doyle Springs: Started in 1881 by John and Wilber Doyle when they each bought 160 acres under the Timber and Stone Act and took up timber harvesting on the North Fork of the Middle Tule River (Shoup 1985:11).

Wilber's homestead was at the springs that became known as Doyle Spring. The soda springs had been known since 1883. The water was used for medical reasons and a resort grew, including improvements of the Frank Knowles trail down the North Fork. During the 1890s the Doyles spent the summer in Wilbur's redwood shake cabin near the springs. An apple orchard was planted and the apples were packed and sold at Summer Home (Shoup 1985:12). By 1892, two buildings and a fence at Doyle Springs on the Thompson Atlas of Tulare County. However, no one lived year round in the area until after 1902, when Albert Graves Wishon thought the area would be good for a hydroelectric project (Shoup 1985:13).

John began a venture of Summer Home, designed for valley people to escape the heat of Porterville, and quickly sold 125 lots.

Camp Wishon: Camp Wishon, began as Camp One and in 1914 became a public pack station. By 1922 a grocery store and meat market and several rental cabins were present at the camp. The camp declined after World War II.

Camp Nelson: John M. Nelson settled in the area in 1886. By the 1890s Nelson was entertaining numerous summer visitors and built his first hotel and a small store to accommodate these visitors. People began constructing cabins in the area and the town expanded. At its height, Camp Nelson included a two-story hotel, privately owned cabins, a store, a pack station, outdoor dance platforms, and a six-hole golf course. While some resorts continued to operate during the 1930s and later but many closed or reduced capacity.

Government Management: the Search for the Greatest Good, a Struggle of Utilitarian Conservation, Restoration and Preservation

The area that is now the GSNM, the surrounding Sequoia National Forest, and the Sequoia and Kings Canyon National Parks have been the focus of battling views on how to manage timbered lands and

Sequoiadendron giganteum since Euro-Americans began utilizing and settling in the area. Differences in opinions of what is the most appropriate management have ranged from exploitation to preservation. These opinions have been manifested in actions from all three branches of the government: Executive, Legislative, and Judicial and has left its mark on the land and in the cultural resources that remain on the landscape.

Past management of what is today the TRRP project is dominated by the private ownership and the Forest Service with the influence of Tule River tribal practices that borders the project area. The major influences of private ownership were presented previously and the Forest Service influence is presented below. Anthony Godfrey (2005) outlines eleven historic periods of Forest Service management in The Ever-Changing View: A History of the National Forests in California. These phases are summarized below and in the following table. For an extended discussion on the Forest Service History see Gassaway 2012.

Table 3 Forest Service Historic Periods (Godfrey 2005)

Period	Theme
Pre 1889	California's Forests Prior to Federal Controls
1890-1904	California's Forest Conserved Under Federal Control
1905-1911	Rise and Early Development of National Forests System
1911-1918	California National Forest System Grows and goes to war
1919-1932	Maturation of District 5 to Region 5 and the Great Depression
1933-1941	A New Deal for Region 5 (Multiple-purpose and multiple-use management)
1941-1945	Region 5 at War
1946-1954	Golden State of Managing Growth and Multiple Use
1955-1967	Programmed Multiple use Maximus
1967-1978	Region 5 Conservation Contested
1978-1987	Recommitment and Roots of Ecosystem Management

Environmental Effects

Effects on cultural resources are described in terminology consistent with the regulations of the Council on Environmental Quality and in compliance with the requirements of both the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). The determination of effect for the undertaking (implementation of the alternative) required by Section 106 of the NHPA is included in the summary of effects for each alternative.

Legal and Regulatory Compliance

Applicable law, policy and Forest Service Manual direction provide the basis for protection of cultural resources. Activities are subject to the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and as promulgated by 36 CFR 800, to address effects to cultural resources. Section 106 of the NHPA requires a federal agency to consider the effects of its actions on properties included in, eligible for inclusion in, or potentially eligible for inclusion in the

National Register of Historic Places and provide the Advisory Council on Historic Preservation a reasonable opportunity to comment.

In addition to following 36 CFR 800, the Sequoia uses a number of Programmatic Agreements outlining alternative procedures, per 36 CFR 800.14, developed by the Pacific Southwest Region including the Programmatic Agreement Among the U.S.D.A. 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 Processes 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 (Regional PA).

Analysis Assumptions and Methodology

This impact analysis methodology applies to primary types of cultural resources found within the Area of Potential Effect (APE), archaeological sites.

The assumptions used in this effects analysis include:

- Cultural resources will be managed according to existing laws, regulations, and policy to protect these resources according to societal expectations.
- Active management, encompassing the greatest acreage, would provide the best opportunities for identifying, protecting, and interpreting cultural resources.
- Events outside of management activities, such as wildfires, have the greatest potential to negatively affect cultural resources; these unplanned activities do not lend themselves to identification, anticipation, or mitigation.
- Ground-disturbing management activities could have direct adverse effects on cultural resources.
- Reduction of fuel loads on and around a cultural resource has a long-term protective effect.
- High intensity fire can have a detrimental effect to all cultural resources, regardless of class.
- Emphasizing fire suppression without an aggressive prescribed fire program would increase risks to cultural resources from catastrophic wildfires.
- Prescribed fire programs pose less risk to cultural resources than fuels management based primarily on fire suppression.

As a rule, any activity that causes ground disturbance (disturbance to the soil matrix that contains the cultural resource) has the potential to adversely affect cultural resources, both directly and indirectly. This results in changes to the physical attributes of the resources that, in turn, compromise the integrity of the cultural resource and its context. Its context (the spatial relationship between the various artifacts, features and components of the cultural resource) is what is scientifically studied and interpreted and is the basis for the site significance determination. This effect is irreparable and considered adverse. Even a scientific archaeological excavation has an adverse effect because it is destroying the integrity and context of the cultural resource by removing its artifacts, features and components. In addition the significance of cultural resources is often dependent on their context in

the larger landscape as much as on their immediate physical features. Combined effects of ground disturbing activities may jeopardize the quality of cultural resources. Ground disturbing activities may affect the "feeling" of a cultural site, even when the activities occur beyond site boundaries. Indirect effects to setting, association, or feeling may also detract from the value of a cultural site for public interpretation and education.

Impact analysis follows established procedures and stipulations outlined in regulations implementing Section 106 of the NHPA (36 CFR 800) and Region PA. These include: (1) identifying areas and types of resources that could be impacted, (2) assessing information regarding historic properties within this area and conducting additional inventories and resource evaluations, as necessary, (3) comparing the location of the impact area with that of important cultural resources, (4) identifying the extent and types of effects, (5) assessing those effects according to procedures established in the Advisory Council on Historic Preservation's regulations, and (6) considering ways to avoid, reduce, or mitigate negative effects.

This methodology focuses on specific activities proposed in the alternatives, as well as areas containing known cultural resources that would be most likely to be negatively affected. Limits to current knowledge add uncertainty to the effects analysis of the alternatives.

Types of Impacts

Impacts are considered either adverse or beneficial to historic properties (cultural resources) when analyzed under NEPA. However, impact type is not viewed this way when conducting analysis under Section 106 of the NHPA for the purposes of assessing effects to historic properties under the Section 106 of NHPA, effects are either adverse or not adverse. Overall, non-beneficial effects usually result in compromising the nature of the cultural resource and may affect its eligibility for inclusion in the NRHP.

Impacts can be either direct or indirect. Direct impacts result from specific actions, such as vegetation removal or use of a bulldozer through a historic property. Direct effects can result both from natural events or processes and human activities.

Indirect impacts generally occur after an action, and are a result of changes in the condition of the landscape (such as loss of vegetation and subsequent erosion). Indirect effects can result from changed visitor use patterns and improved access that brings more visitors, resulting in the deterioration or loss of the site. Studies have shown that effects on sites have three basic characteristics: (1) impacts tend to be multiple (that is, several different impacts to the same site); (2) impacts are cumulative; and (3) many impacts are the result of land use activities rather than deliberate vandalism (Marshall and Walt 1984, US Army Corps of Engineers 1988).

There is also the potential for previously unknown cultural resources to be discovered through exposure and/or damage by land use activities that involve surface disturbance.

Duration of Impact

Impacts to historic properties (cultural resources) could be of short-term, long-term, or permanent duration. Analysis of the duration of impacts is required under NEPA, but is not required and is not usually considered in assessing effects in terms of Section 106 of NHPA.

For cultural resources, the duration of an impact is usually not considered in assessing effects in terms of the NHPA. This is because, unlike most other types of resources, cultural resources are basically non-renewable resources. Damage or destruction to cultural resource sites is generally permanent. Effects on some cultural resources (such as the upgrading of windows in an historical building with non-compatible materials [wooden windows to aluminum]) can be reversed; however, until that happens, the effect is ongoing and potentially adverse.

Unlike most other types of resource values, cultural resources are basically non-renewable resources. Damage or destruction to cultural resource sites is generally permanent. Effects on some cultural resources (such as the upgrading of windows in an historical building with non-compatible materials (wooden windows to aluminum) can be reversed; however, until that happens, the effect is ongoing and potentially adverse.

Intensity of Impact

The main focus of the effects analysis for cultural resources is the intensity within the context of NRHP eligibility and integrity. The significance of cultural resources, particularly ethnographic, and cultural landscapes, often depends on their context in the larger landscape as much as their immediate physical features. Activities that occur beyond the physical boundaries of the cultural resource can affect the historic property if they affect the larger, landscape-level context.

The significance of cultural resources, particularly Traditional Cultural Properties and cultural landscapes, often depends on their context in the larger landscape as much as their immediate physical features. Activities that occur beyond the physical boundaries of the cultural resource can affect the historic property if they affect the larger, landscape-level context. Negligible: Impacts would be barely perceptible changes in significant characteristics of a historic property.

Minor: Impacts would be perceptible and noticeable, but would remain localized and confined to a single element or significant characteristic of a historic property (such as a single archaeological site containing low data potential within a larger archaeological district or a single contributing element of a larger historic district).

Moderate: Impacts would be sufficient to cause a noticeable but not substantial change in significant characteristics of a historic property.

Major: Impacts would result in substantial and highly noticeable changes in significant characteristics of a historic property.

Duration plays a key role in the overall effect; impacts of minor intensity over a long duration may have the same effect on the characteristics of heritage resources as would impacts of moderate intensity over a short duration.

Mitigation of Impacts to the Cultural Environment

NEPA calls for a discussion of the "appropriateness" of mitigation, and an analysis of the effectiveness of mitigations. A reduction in intensity of impact from mitigation is an estimate of the effectiveness of this mitigation under NEPA. It does not suggest that the level of effect, as defined by implementation regulations for Section 106 of the National Historic Preservation Act (36 CFR 800), is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effects remain adverse. Therefore, measures to address impacts under NEPA may not be sufficient to address the effects under NHPA. The Secretary of the Interior has published regulations designed for the preservation, restoration and rehabilitation of cultural resources. The Regional PA provides a list of standard protection measures that can be used, per 36 CFR 800.14. Ultimately, the universal mitigation measures will always be in compliance with the vast array of historic preservation legislation and mandates.

Mitigation generally includes the avoidance of adverse effects. Standard mitigation measures in this document are from Regional PA developed in consultation with the State Historic Preservation Officer.

Archaeological Resources

Type and Duration of Impacts

A change in the physical attributes of an archaeological site that affects the information contained in that site is irreparable and considered adverse and of permanent duration. Adverse impacts to archaeological resources can result from manual or mechanical fuels treatment, direct heating during fire, vegetation removal, ecological restoration and recreation construction. The intensity of impacts to archaeological resources can range from negligible to major, depending on the management actions taken and/or the intensity of burning or ground disturbance. The majority of these impacts are long-term in duration.

Fuel reduction and ecological restoration can also have beneficial impacts to archaeological resources. Burning duff and forest litter exposes mineral soil not visible during inventories of unburned areas, allowing for greater accuracy in documenting site constituents and boundaries. Burning within a natural fire regime also reduces the threat of high-intensity fire and the need for suppression activities. Restoration of unstable hydrological areas can stabilize and eliminate the loss of archaeological deposits.

Intensity of Impact

The intensity of impact to an archaeological resource would depend on the potential of the resource to yield important information, as well as the extent of the physical disturbance and/or degradation. For example, moving earth at an archaeological site(s) with low data potential might result in a minor, adverse impact.

Negligible: Barely perceptible and not measurable, and would usually be confined to archaeological site(s) with low data potential.

Minor: Perceptible and measurable, and would remain localized and confined to archaeological site(s) with low to moderate data potential.

Moderate: Sufficient to cause a noticeable change, and would generally involve one or more archaeological site(s) with moderate to high data potential.

Major: Substantial and highly noticeable changes, involving archaeological site(s) with high data potential.

Mitigation of Impacts

For archaeological resources, mitigation includes site avoidance during activities, protection of flammable materials during burns, and reducing heavy fuel loads in a manner that preserves and protects the site. In some situations standard treatments such as complete site documentation may be appropriate as a way to preserve site information and forego continued site management.

Measures or Factors Used to Assess Environmental Consequences

In all of the alternatives, the types of management activities proposed could directly, indirectly or cumulatively affect cultural resources and are subject to the regulations outlined in Section 106 of NHPA, as amended and as promulgated by 36 CFR 800, to address those effects to cultural resources.

The following factors were determined to be the best factors indicating potential effects on cultural resources:

- Total acres of potential ground disturbance.
- Ability to mitigate impacts through Regional PAs standard protection measures

Direct Effects to Cultural Resources

Effects of Vegetation Management on Cultural Resources

The vegetation management with in the TRRP project includes felling trees, dragging of logs and trees on certain types of cultural resources, or by erosion caused by vegetation removal or damage. Vegetation removal could also increase the visibility of cultural resource sites, which may result in increased vandalism. Road work on permanent or temporary roads could also affect cultural resources.

Prescribed burning could damage or destroy cultural resources.

Effects of Fire and Fuels on Cultural Resources

Fire and fuels management in all alternatives focuses on creating defensible space and fuels reduction through shaded fuel breaks and understory burning.

Any fire can potentially affect cultural resources. The effects of fire on cultural resources are often divided into and described as direct fire, operational, and post-fire effects. Direct effects are those caused by the fire itself. These are caused by either direct contact with flames or being in close proximity to heat produced by combustion or smoke. Operational effects are the result of management operations like fire line construction or staging. Post-fire effects are most often those caused by the change in soil stability and vegetation following a fire.

The differences in effects on cultural resources from fire come with the differences in the intensity of a fire, the ability to identify cultural resources and initiate protective measures, the type of management actions taken to control the fire, and the post-fire effects.

The potential effect on cultural resources from direct fire depends on the material components of the cultural resource and the magnitude of the heating and combustion generated by a fire. Specifically, fire and its byproducts can alter such resources through total consumption, melting, breakage, spalling, charring, and discoloration. Different materials are vulnerable based on the peak and duration of the exposure to heat and combustion. For example, a wooden structure may easily ignite and be fully consumed, whereas a bedrock milling feature in the same fuel model is relatively impervious to fire. Further, some raw materials may have multiple importance attribute classes that are affected at different temperatures and/or durations. For example, in the case of obsidian artifacts, hydration rinds can be compromised at relatively low temperatures (<200–300°C), whereas severe morphological damage such as breakage or melting generally does not occur until higher temperatures (>700°C) are reached (Deal 2001).

Perishable artifacts (those that have carbon in their makeup) have virtually no tolerance for fire and would be destroyed by it. Non-perishable artifacts (depending on the artifact type) will tolerate only low- or moderate-intensity fire. Cultural landscapes can tolerate fire intensity that will not cause the introduction of non-compatible elements (such as bulldozed fire lines) or a change in vegetation community (chaparral to grasslands).

The magnitude and duration of the heat pulse depends on fuel loading, fuel moisture content, fuel distribution, rate of combustion, soil moisture content, and other factors. The movement of heat into the cultural material is not only dependent upon the peak temperature reached, but even more so upon the length of time that the heat source is present and the composition of the cultural resource. Because fuels are not evenly distributed on or around a cultural resource, and due to the variability of materials types that make up a cultural resource site, a mosaic of heating and corresponding effects usually occurs. The highest heat pulses are usually associated with areas of greatest fuel consumption and the areas that burn the longest.

Artifacts surrounded or in contact with fuels such as wood and duff are most susceptible to direct contact with flames and heat. These artifacts are affected by convection, radiation, and conduction heat transfer. Artifacts and features above the ground surface (i.e., structures, arboglyphs, rock art, etc.) are susceptible to preheating, convection heat transfer, and smoke impacts. Thus, surface and

shallow cultural resources consisting of flammable organic components (i.e., wooden structures, botanical remains) are at greatest risk from direct flame impingement, especially high intensity fire.

High-intensity fire in general has a greater potential to negatively affect cultural resources than low-intensity fire. Fires with cool combustion temperatures, generated by sparse understories and light fuels, have a lower potential to affect diagnostic artifact characteristics. Fires designed for cool combustion temperatures, such as controlled burns, can avoid major impacts on archaeological sites and artifacts. Thus, prescribed burns can be effectively used to control vegetation on archaeological sites without damage to cultural resources (U.S. Army Corps of Engineers 1989a).

Operational effects are usually from ground-disturbing activities, but can also be from backfires and burnouts, and the use of fire retardants. They are not limited to wildfires, but can also occur during prescribed burns. These effects are not always in the immediate vicinity of a fire, but can occur miles away as a result of the construction of camps, fire lines, etc. Operational effects can be mitigated, if planned in advance, to avoid and protect cultural resources.

Wildfire ignitions are unplanned and thus limit the ability for prior cultural resources identification and the development and implementation of protective measures for cultural resources. These increase the potential for negative effects on cultural resources. Extreme fire behavior associated with uncontrollable wildfire has a higher potential to affect cultural resources. Suppression actions taken for uncontrolled wildfire typically have limited cultural resource management input and have a greater potential to negatively affect cultural resources than pre-planned projects. Managed wildfires, while often having lower fire intensity than uncontrolled wildfire, usually have limited cultural resource management input and also have more potential to negatively affect cultural resources than prescribed fire.

Activities associated with wildfire suppression that cause ground disturbance (such as fire lines, helicopter bases and heliports, base/spike camps, and drop points) can affect cultural resources. Foam or water applied to hot rock surfaces causes spalling, "potliding," or fracturing that can damage archaeological features. Water and retardant drops can damage or destroy historical structures or hasten their deterioration.

Any type of vegetation removal, from either hand treatment or fire, reduces protective vegetative cover and increases the visibility of cultural resources, which can result in unlawful collecting and excavation. The lack of vegetation can also contribute to an increase in erosion that can damage or destroy the site matrix. Fire on any level can result in the loss of ethnographic resources and the disturbance and degradation of traditional plant gathering areas, cultural sites, and sacred or spiritual places.

Fuelbreaks and other ground disturbances associated with fire protection often provide access into areas that were previously inaccessible, resulting in an increased potential for site damage and

vandalism. Erosion runoff from these sites can affect cultural resource sites located within or adjacent to these features.

Low-intensity fire and planned vegetation reduction has a beneficial effect of protecting cultural resources from catastrophic, high-intensity fire and large-scale post-fire erosion.

Post-fire effects include increased erosion of soils that can remove or bury archaeological resources, increased tree mortality resulting in impacts from trees falling or uprooting, increased rodent and insect populations that can alter subsurface soil structure, intentional and inadvertent looting, increased microbial activity which can lead to increased feeding on organic matter within archaeological soils, and the addition of "new" carbon, which can be move through the soil column of archaeological sites by a variety of agents. These potential effects can be mitigated during prescribed burns through the use of fire prescriptions that limit the intensity of the fire.

In the case of fuels reduction, either by hand treatments or prescribed fire, the project planning process allows time to identify cultural resources and to develop and implement protective measures. This planning leads to greater protection of cultural resources and longer-term protection of cultural resources because of reduced fuel loads. The potential for operational effects is greatly reduced because control lines and staging can be placed to avoid cultural resources. The potential for direct fire and post-fire effects are also reduced because site-specific projects are planned to avoid extreme fire intensity, which has the greatest potential to negatively affect cultural resources.

Wildfire

Due to the present situation with vegetation, including high surface fuel loads, overstocked stands, and longer fire seasons, an increase potential for wildfires.

Mitigation measures for cultural resource site protection include a program of pre-fire surveys of high-susceptibility areas, potential fire control lines, and other fire suppression-related activity locations. Where cultural resources are found, programmatic agreement standard protection measures would be used, such as project redesign, relocation, protective buffer areas, and monitoring to protect affected cultural resources. Inventories should also occur during fire suppression activities in areas not inventoried. Effective treatment measures should be used to rehabilitate fire suppression-related ground disturbance.

Summary of Environmental Consequences by Alternative for Cultural Resources

Alternative 1

The lack of active management and fuels reduction decreases the potential for surface impacts to cultural resources from management actions but continued accumulation of surface and ladder fuel in

Alternative 1 has a higher potential for unplanned wildfire impacting cultural resources than either of the action alternatives 2 and 3.

Alternative 2

Alternative 2 identifies 1,410 acres of shaded fuel beaks and understory burn. The decrease in surface and ladder fuel in Alternative 2 would have a greater beneficial effects on cultural resources than Alternative 1 because the reduced surface and ladder fuels would lead to decreased heat pulse and fire effects on cultural resources at 70% of the sites within the project.

While creation of fuel breaks and preparation for understory burns increases activity in and around cultural resources increasing the potential for effects on cultural resource sites, these managed actions enable cultural resources to be identified and monitored. Fuels reduction on and near cultural resource sites would protect the sites from high-intensity fire.

The potential effects from fire breaks and understory burning on cultural resources under Alternative 2 would be greater than under Alternative 1. Due to fewer acres being treated in Alternative 2 fewer sites are potentially affected by fuels treatments than Alternative 3. Since fewer acres are treated in Alternative 2 more sites are still at risk from high intensity unplanned wildfires than Alternative 3 but less than Alternative 1.

Alternative 3

The addition of 1,500 acres of fuels treatments in Alternative 3 would also increase the number of cultural resource sites, which would be protected from high-intensity fire. While Alternative 2 protects 70% of cultural resources within the project area, Alternative 3 protects 100% of the sites. (Table 4)

Potential negative effects from ground disturbance during fuels treatment would be greater than under Alternatives 1 and 2. But the protection from high intensity unplanned fire is greatest in Alternative 3.

FSSITENUMBER	TYPE	Alt 2	Alt 3
05135200067	PRE	Understory Burn	Other Fuel Treatments
05135200068	PRE	Planted Stand	Planted Stand
05135200138	PRE	Understory Burn	Understory Burn
05135200139	HIS	No Treatment	Other Fuel Treatments
05135200191	MUL	Understory Burn	Understory Burn
05135200199	MUL	Planted Stand	Planted Stand
05135200300	HIS	No Treatment	Other Fuel Treatments
05135200341	PRE	Shaded Fuel Breaks	Shaded Fuel Breaks
05135200342	PRE	Planted Stand	Planted Stand
CA-TUL-3890		No Treatment	Other Fuel Treatments

Table 4: Sites by Alternative

Mitigations

By following the mitigation measures outline, impacts and surface effects to cultural resource from construction of fire breaks, fuel treatments, and understory burn will be reduced to No Affect to Cultural Resources.

Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may affect historic properties, unless specifically identified in stipulations below, shall occur within historic property boundaries, including any defined buffer zones. Portions of undertakings may need to be modified, redesigned, or eliminated to properly avoid historic properties.

All historic properties within APEs shall be clearly delineated prior to implementing any associated activities that have the potential to affect historic properties.

(1) Historic property boundaries shall be delineated with coded flagging and/or other effective marking.
(2) Historic property location and boundary marking information shall be conveyed to appropriate Forest Service administrators or employees responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts, and permits (e.g., clauses or stipulations in permits or contracts as needed).

Buffer zones may be established to ensure added protection where qualified Heritage Program staff determine that they are necessary. The use of buffer zones in avoidance measures may be applicable where setting contributes to property eligibility under 36 CFR 60.4, or where setting may be an important attribute of some types of historic properties (e.g., historic buildings or structures with associated historic landscapes, or traditional cultural properties important to Indians).

(1) The size of buffer zones must be determined by qualified Heritage Program staff on case-by-case bases.
(2) Landscape architects and qualified Heritage Program staff may be consulted to determine appropriate view sheds for historic resources.
(3) Indian tribes, or their designated representatives, and/or Native American Traditional Practitioners shall be consulted when the use or size of protective buffers for Indian traditional cultural properties needs to be determined.

When any changes in proposed activities are necessary to avoid historic properties (e.g., project modifications, redesign, or elimination; removing old or confusing project markings or revising maps or changing specifications), these changes shall be completed prior to initiating any project activities.

Monitoring by heritage program specialists may be used to enhance the effectiveness of protection measures. The results of any monitoring inspections shall be documented in cultural resources reports and the Infra database.

The Zone Archaeologist in conjunction with fuels, vegetation management, or fire specialists as necessary, shall develop treatment measures for at risk historic properties (as defined in SHPO

approved Region 5 modules and agreements) designed to eliminate or reduce potential adverse effects to the extent practicable by utilizing methods that minimize surface disturbance, and/or by planning project activities in previously disturbed areas or areas lacking cultural features.

(A) Fire lines or breaks may be constructed off sites to protect at risk historic properties.
(B) Fire shelter fabric or other protective materials or equipment (e.g., sprinkler systems) may be utilized to protect at risk historic properties.
(C) Vegetation may be removed and fire lines or breaks may be constructed within sites using hand tools, so long as ground disturbance is minimized and features are avoided, as specified by the qualified Heritage Program staff.
(D) Fire retardant foam and other wetting agents may be utilized to protect at risk historic properties and in the construction and use of fire lines.
(E) Surface fuels (e.g., stumps or partially buried logs) on at risk historic properties may be covered with dirt, fire shelter fabric, foam or other wetting agents, or other protective materials to prevent fire from burning into subsurface components and to reduce the duration of heating underneath or near heavy fuels.
(F) Trees that may impact at risk historic properties should they fall on site features and smolder can be directionally felled away from properties prior to ignition, or prevented from burning by wrapping in fire shelter fabric or treating with fire retardant or wetting agents.
(G) Vegetation to be burned shall not be piled within the boundaries of historic properties unless locations (e.g., a previously disturbed area) have been specifically approved by qualified Heritage Program staff.
(H) Fire crews may monitor sites to provide protection as needed.

Qualified Heritage Program staff shall determine whether fire, prescribed fire, or treatments within site boundaries shall be monitored, and how such monitoring shall occur.

Use of any standard protection measures on historic properties for fire, and hazardous fuels, shall be documented in heritage program reports, detailing equipment type, extraction techniques, conditions of use, environmental conditions, project results, effectiveness of protection measures, need for changes, and recommendations for future use.

Felling and removal of hazard, salvage, and other trees within historic properties under the following conditions:

(A) Trees may be limbed or topped to prevent soil gouging during felling;
(B) Felled trees may be removed using only the following techniques: hand bucking, including use of chain saws, and hand carrying, rubber tired loader, crane/self-loader, helicopter, or other non-disturbing, qualified Heritage Program staff -approved methods;
(C) Equipment operators shall be briefed on the need to reduce ground disturbances (e.g., minimizing turns);
(D) No skidding nor tracked equipment shall be allowed within historic property boundaries; and

(E) Where monitoring is a condition of approval, its requirements or scheduling procedures should be included in the written approval.

Post-project monitoring shall be implemented and qualified Heritage Program staff shall complete in treatment areas where deferred inventory was approved. The qualified Heritage Program staff shall determine the scope and schedule for any additional associated monitoring. Information from any post-project inventory, monitoring, or evaluation shall be used to assess the effectiveness of this non-intensive inventory approach. The results shall be reported in the Forest's Annual PA Report or supplemental report.

Cumulative Effects for Cultural Resources

There are no reasonably foreseeable projects that will be occurring in this project area that would also affect the cultural resources analyzed in this document. Cultural Resources outside this project are analyzed on a project by project bias and for sites on Sequoia National Forest the vast majority of projects use standard mitigations which greatly reduce or eliminate effects to those resources. The greatest cumulative effect to cultural resources comes from projects not on federal lands. Because of the rapid rate of urbanization, the loss of cultural resources, often unmitigated, is putting greater significance on the cultural resources on Sequoia National Forest. The cultural resources on National Forest System lands are afforded a higher level of protection than those on private lands, thus the public looks to the national forest cultural resources as a more valued resource. At the same time, given the changing cultural demographics, some national forest users may not see the relevance of cultural resource protection to their cultural norms and values, which impedes the effort to protect cultural resource sites.

Through implementation of the above mitigation measures which are consistent with the Regional PA, there is no differences in cumulative effects on cultural resources by authorized activities under the different alternatives is low. The difference between alternatives and their potential effects to cultural resources comes from the potential difference in fire effects from an unplanned wildfire. Large scale, crown fire potential in Alternative 1 could adversely affect cultural resources while the large decrease in potential for crown fire in Alternative 3 would greatly decrease the potential heat pulse to archaeological soils, destruction to burnable artifacts and features, and the decrease in potential erosion and run off post burn that could move archaeological deposits and damage sites. See Table 5 for the potential effects to cultural resources by alternative.

Potential effect from	Alternative 1	Alternative 2	Alternative 3
management actions	None	Minor	Slightly more than Alt. 2
Unplanned wildfire	High	Low to Moderate	Low

Table 5. Potential Effects by Alternative

Tribal and Native American Interests

Current Management Direction Tribal and Native American Interests

Management of the resources within TRRP Project in terms of cooperation with Native American and Tribal interests is governed by Archaeological Resources Protection Act (Public Law 96-95, October 31, 1979), Native American Graves Protection and Repatriation Act (NAGPRA) (Public Law 101-601, November 16, 1990), National Indian Forest Resources Management Act (NIFRMA) (Public Law 101-630, November 28, 1990), American Indian Religious Freedom Act (AIRFA) (Public Law 103-344, October 6, 1994), Executive Order 13007 "Indian Sacred Sites", Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments", Executive Memo, April 29, 1994 "Government-to-Government Relationship", Executive Memo, September 23, 2004 "Government-to-Government Relationship", Tribal Forest Protection Act of 2004 (Public Law 108-278, July 22, 2004), Healthy Forest Restoration Act (HFRA) (Section 303 of Public Law 108-148, December 3, 2003), Farm Bill: Food, Conservation, and Energy Act of 2008 (Public Law 110-234)

The Forest Service implements these laws and regulations through Forest Service Manual (FSM) 2300 Chapter 2360 Heritage Program Management, FSM 1500 - External Relations, FSH 1509.13 - American Indian and Alaska Native Relations Handbook. The Forest Service also follows Department of Agriculture Departmental Regulation 1350-001, September 11, 2008 and Departmental Regulation 1340-007, March 14, 2008.

In addition Region 5 has additional direction under Forest Service Manual Pacific Southwest Region (Region 5) Vallejo, Ca, FSM 1500 - External Relations, Chapter 1560 - State Tribal, County, And Local Agencies; Public and Private Organizations (2007).

American Indians and Alaskan Natives have a unique legal and political relationship with the government of the United States. This relationship is defined by history, treaties, statutes, executive orders, policies, court decisions, and the US Constitution. Forest Service policy in general states that the Forest Service will:

- Maintain a governmental relationship with federally recognized tribal governments;
- Implement our programs and activities honoring tribal rights and fulfill legally mandated trust responsibilities;
- Administer programs and activities to address and be sensitive to traditional relations beliefs and practices; and
- Provide research, transfer of technology, and technical assistance to Tribes.

Tribal relations standards and guidelines have been developed to address the tribal concerns described in Chapter 1 of the 2001 SNFPA FEIS (p. 35). The direction is to:

1. Establish Tribal Relations Programs managed by qualified individuals on each national forest and develop formal protocols for government-to-government relations and other agreements as needed;
2. Consult prior to resource protection closures and road decommissioning;
3. Protect indigenous knowledge to the extent provided by law, including obtaining written permission prior to releasing traditional information to a third party;
4. Assess traditional cultural knowledge and needs of traditional practitioners during landscape or watershed scale ecosystem analysis and incorporate them into project implementation;
5. Ensure fire protection to all trust lands;
6. Establish herbicide free zones where needed; and
7. Give priority to noxious weed removal projects that restore, enhance, and maintain culturally significant species and their habitats. Inventories of culturally significant species are needed in order to provide protection and monitor their condition. In the absence of such inventories, the standards and guidelines and monitoring protocols for the various ecosystems and species would provide a proxy indicator of the status of traditional species and habitats. Description of Proposal

Giant Sequoia National Monument Management Plan strategies for fuels reduction (p. 48)

> Locate the tribal fuels emphasis treatment area (TFETA) along the eastern boundary of the Tule River Indian Reservation.... Focus fuel treatments in the TFETA to slow the spread of fire and to protect the objects of interest in the Monument, the reservation, and their watersheds from severe fire effects. The first priority for fuel reduction treatments in the TFETA is those areas within 1/4 mile of the reservation boundary with high and moderate fire susceptibility, and in the Long Canyon area."

Giant Sequoia National Monument Record of Decision (p.15)

> The TFETA was developed in response to discussions with the Tule River Indian Tribe and their concern over fires spreading to the Tule River Indian Reservation. The Tule River Indian Tribe of California is a federally recognized tribe, and as such it is the policy of the USDA to consult and coordinate with them on a government-to-government basis in compliance with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments) prior to making a decision. This land allocation was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

Tribal and Native American Interests

Native Americans and Alaska Natives are recognized as people with distinct cultures and traditional values. Historically, Native Americans have cared for and occupied lands that are currently being administered by the United States government. They have a special and unique legal and political relationship with the government of the United States as defined by history, treaties, statutes, executive orders, court decisions, and the U.S. Constitution. Tribal governments have jurisdictional

powers that are frequently separate and equal to those of state and local governments. The policy of the U.S. Government is to support Native American cultural and political integrity, emphasizing self-determination and government-to-government relationships. This support comes from implementing and following laws aimed at protecting tribal rights and religious beliefs. The American Indian Religious Freedom Act 1978, the Archeological Resources Protection Act 1979, the National Historic Preservation Act 1996, Executive Order 13175 on Tribal Consultation, and others all charge the federal government with protecting areas within public lands that are sacred to native peoples. In addition there are many Forest Service policies, including but not limited to Forest Service Manual 1500, Chapter 1560, the Traditional Gathering Policy, to help and assist with tribal relations between the Forest Service and tribal communities.

There are many rights and privileges associated with treaties, executive orders, and other agreements, such as grazing, hunting, subsistence gathering, and access to and gathering of national forest resources. In addition, land and resources hold a special and unique meaning in the spiritual and everyday lifeways of many Native Americans.

The Sequoia National Forest remains committed to cultivating good relationships with Native American tribes and Native American groups. National Forest System lands and resources represent significant cultural and economic values to Native Americans. Forest Supervisors have the responsibility to maintain a government-to-government relationship with federally-recognized Indian tribes. They are to ensure that forest programs and activities honor Indian treaty rights and executive orders, and fulfill trust responsibilities, as those responsibilities apply to National Forest System lands. Treaties, statutes, and executive orders often reserve off-reservation rights and address traditional interests relative to the use of federal lands.

The Forest Supervisor also administers programs and activities to address and be sensitive to traditional native religious beliefs and practices and provide research, transfer of technology and technical assistance to tribal governments. The Sequoia also confers with non-federally recognized tribes, organizations and individuals.

Currently, the Sequoia has one agreement in place with Native American tribes concerning Sequoia National Forest Protocol for the Inadvertent Discovery and Identification of Native American Human Remains, Funerary Objects, Sacred Objects and Objects of Cultural Patrimony, that applies equally to federally and non-federally recognized tribes.

In 2011 the forest entered into a *Memorandum of Understanding between the Tule River Indian Tribe and the USDA, Forest Service, Pacific Southwest Region, Sequoia National Forest (FS Agreement No. 11-MU-11051352-039)*, that formally recognized the mutual interest in reducing the threat of wildfire spreading to or from National Forest System lands and Reservation Lands.

The Western Divide Ranger District borders over one-half of the entire Tule River Reservation, and approximately 9,000 acres of the upper portion of the South Fork Tule River, to which the Tule River

Tribe has water rights under the Winters Doctrine, are within the Monument. The Winters Doctrine established that when the federal government created Indian reservations, water rights were reserved in sufficient quantity to meet the purposes for which the reservation was established. Water rights affect over 1,500 residents of the Tule River Indian Reservation.

Contemporary uses or concerns have centered on the protection of the Reservation through the reduction of the threat of wildfire spreading to or from National Forest System lands and Reservation lands; and the protection of and access to forest resources of cultural or traditional importance and areas with special or sacred values, often the locales of ceremonial activities. These include access and use of Forest Service roads that access reservation land, and protection of the Tule River watershed.

The Tule River Indian Tribe has a deep emotional, symbolic, and spiritual meanings for those areas that are their traditional lands, including those lands that are publicly owned and managed by Sequoia National Forest. In a general view, these perceptions and meanings influence their current lifestyles, environment, and quality of life (McAvoy and others 2001). Researchers also have noted that the dominant society's (in this case, Anglo-Hispanic) sense of place often conflicts and competes with the minority people's (Native Americans) sense of place, resulting in different realities or "contested terrain" that present challenges for public land management agencies (McAvoy and others 2001).

Following the McNally Fire in 2002, Cedar Fire 2003 and other large scale fires that either burned or threatened Tribal lands across the nation, the Congress proposed and passed the Tribal Forest Protection Act (TFPA; P.L. 108-278). TFPA was enacted in July 2004 to enable Tribes to propose projects on neighboring National Forest or Bureau of Land Management lands that border or are adjacent to tribal lands and pose a threat to tribal lands due to insects, disease, or fire risk, or are in need of restoration activities.

October 2004, the Sequoia National Forest (SQF) received a letter from Tule River Indian Tribal Chairman Neil Peyton stating the Tribes' desire to utilize the TFPA authority to address hazardous fuels issues along the Tribal/Forest Service boundary. From August-October 2005 the Tule River Indian Tribe (Tule) and the SQF conduct a series of meetings to discuss the development of a TFPA project on the Sequoia National Forest, Giant Sequoia National Monument lands that border the northern reservation boundary.

ON November 1, 2005, the Tule Council formally submits the "Tule River Reservation Protection Project" (TRRPP) to Art Gaffney, SQF Supervisor. The proposal identifies threats from Forest Service lands to adjacent Tribal lands and the reservation community, particularly wildfire, insects and disease. On November 23, 2005: Bernard Weingardt, USFS Region 5 Forester submits letter of support to SQF Forest Supervisor. In February 2011 the SQF and Tule signed a Memorandum Of Understanding with one of the objectives of the MOU is for both parties to assist in development of projects to achieve mutual goals of community and resource protection.

Tribal and Native American Interests - Assumptions

Applicable laws, policy, directions, and regulations provide the management direction for tribal relations and issues. Forest Service activities and special use authorizations will comply with the Forest Plan and the Monument Plan.

The following assumptions will apply in the assessment of the environmental consequences of the alternatives:

- Activities that reduce the potential for large scale fire to enter the Reservation have the greatest potential to benefit the tribe.

Direct Effects to Tribal and Native American Interests

Effects of Vegetation Management on Tribal and Native American Interests

Healthy and diverse vegetation potentially provides a wide range of plants that Native Americans use for a variety of cultural reasons. Although invasive species pose a threat to a healthy vegetation community, certain management activities pose environmental consequences that may be considered negative by the Native American community.

The Native American community acknowledges that protection and restoration of the giant sequoia groves was the primary reason for establishment of the Monument and agree that this protection is needed and appropriate. In addition, they acknowledge and urge the Sequoia National Forest to protect giant sequoias by closely linking vegetation management and fuels management. They further urge the forest to reduce the excessive numbers of shade-tolerant species in the groves to provide favorable conditions for giant sequoia establishment, protect the groves, and allow adequate openings for giant sequoia establishment, and growth.

The Tule River Tribe has expressed concerns that vegetation management on the forest should address the potential spread of forest insect and disease activity to tribal forestlands, fuels management within sequoia groves, and proactive management based on scientific research and proven management practices.

Effects of Fire and Fuels on Tribal and Native American Interests

Due to the present situation with vegetation (high concentrations of fuels due to fire suppression over the last 100 years), an increase in acres burned due to wildland fires can be expected. Fire and fuels management is of great interest to tribes and Native Americans, especially to the Tule River Tribe whose reservation is partially surrounded by the Monument.

Wildland fire can disturb and degrade traditional plant gathering areas, archaeological sites, and sacred/spiritual places, as well as cause the loss of ethnographic resources. If not properly managed, prescribed fire can have the same results. However, with proper management, prescribed fire can be

used to help promote the propagation of selected species of plants (basketry plants) important to Native Americans.

Fire of any nature may alter landscapes important to traditional cultural beliefs or practices. An indirect effect of wildland fire is an increase in access created by the removal of vegetation. This access could bring an increase in use to areas essential to Native Americans as places for solitude or privacy.

Wildland fire suppression and fire protection programs (community defense zones) have the potential to introduce foreign visuals (firelines, etc.) into a traditional landscape that may be integral to traditional or contemporary ceremonies and practices.

Prescribed burning may directly damage or destroy cultural resources and other values held to be of significance by contemporary cultures, and it may alter landscapes important to traditional cultural beliefs or practices.

Mitigation measures suggested by the Native American community include focusing on land management activities to hinder the spread and establishment of invasive species. To be effective, eradication should include the correction of the chronic human-related land disturbance activity responsible for the conditions that facilitate the establishment of invasive species, and it should restore the native vegetation and natural disturbance regime (including fire). The use of alternative methods of plant control such as hand weeding or hand-removal (though potentially costlier) would reduce concerns about the use of herbicides as a vegetation management tool. If herbicides are chosen as a treatment option then, during the site-specific analysis, consultation with tribes and Native Americans would help identify areas of concern to avoid, identify alternative methods of eradication to minimize effects on these areas, and focus herbicide use in areas of lower sensitivity for the tribal and Native American community.

Effects to Tribal and Native American Interests

All Alternatives

The current lack of information is the limiting factor in the assessment of environmental consequences of activities on those items of concern to local tribes, Native American groups, and individuals. The desired information centers on the type of resources used (plants, stone, etc.), resource locations, and the relationship of the natural environment to native people. Fundamental baseline inventory data are limited and usually available on a project-specific basis rather than a landscape level. This is further accentuated by the hesitancy of the Native American population to share information with the national forests out of concern that the information will not remain confidential and the resources of concern will be damaged or destroyed.

Native Americans view their space within the Monument as a participant, not as a manipulator or manager, which is the view of non-indigenous cultures. Any alteration, such as ground disturbance,

that is permanent and not in harmony with the environment could be a negative effect in the Native American view.

They are also concerned with impacts on cultural resources that are associated with their ancestors and other indigenous people who lived in the Monument area. The discussion of environmental effects in the Cultural Resources section of this report that is applicable to Native American cultural resources applies here and will not be repeated. Growing emphasis on Native American input to the management of national forests has the possibility of broadening the understanding and awareness of historical ecosystem management.

Discussions of the potential effects to archaeological resources are included in the Cultural Resources section of this report. Any management direction that could result in alteration of or the introduction of non-natural elements into the natural environment could be an issue of concern to tribes, Native American groups and individuals. Any direction that could promote, improve, preserve, or restore the natural environment and natural features, or promote the fabric of harmonious environment interactions, would probably not be viewed as an issue of concern. Any management direction that promotes the ability to access the natural open space of the national forests would be more acceptable to tribes, Native American groups and individuals than direction that restricts access.

All alternatives would continue tribal relations protocols established by laws and regulation, the Forest Plan, and the 2001 SNFPA. Government-to-government consultation and consultation with non-federally recognized tribal groups and individual Native Americans would continue to follow existing laws and regulations.

Summary of Environmental Consequences by Alternative on Tribal and Native American Interests

Alternative 1

The lack of active management and fuels reduction would allow fuel loads to increase overtime and leave the Reservation vulnerable to unplanned wildfires that move from the forest to the reservation. Alternative 1 has a higher potential for unplanned wildfire impacting Tribal and Native American Interests than either of the action alternatives 2 and 3.

Alternative 2

Alternative 2 identifies 1,400 acres of shaded fuel beaks and understory burn. The decrease in surface and ladder fuel in Alternative 2 would have a greater beneficial effects on Tribal and Native American Interests than Alternative 1 because it reduces the potential for unplanned wildfires to move from the forest to the reservation

The potential beneficial effects from fire breaks and understory burning on Tribal and Native American Interests under Alternative 2 would be greater than under Alternative 1. Since fewer acres are treated

in Alternative 2 Tribal and Native American Interests are at a greater risk from high intensity unplanned wildfires than Alternative 3.

Alternative 3

The addition of 1,500 acres of fuels treatments in Alternative 3 would have the greatest reduction in fire intensity and potential for crow fire and greatly increase the potential of containing a fire on forest service land before it crossed onto the Reservation thus having the greatest potential beneficial effects on Tribal and Native American.

Cumulative Effects for Tribal and Native American Interests

The TRRP project is the first project proposed and analyzed in the TFETA. As directed in the Giant Sequoia National Monument Record of Decision and Management Plan the TFETA is 56,640 acres. The TRRP Project is only 5% of the TFETA. It is reasonably foreseeable that additional fuels reduction projects will be proposed within the TFETA. In addition the Tule have identified their lands immediately adjacent to the forest for fuels reduction and have begun and continue to implement those fuels reduction projects.

Alternative 1 would not move forward with the management objective of reducing fuels and decreasing the potential for unplanned wildfire spread into the Reservation. Overtime the increasing fuel loads and potential fire intensity would reduce the effectiveness of fuels reduction projects completed by the Tule on their land. A decision by the forest to not reduce fuels in this portion of the TFETA and as a project under the TFPA would decrease the potential for future fuel reduction projects within the TFETA. Decreasing the potential for additional fuels reduction in the TFETA would have cumulative negative effects to Tribal and Native American Interests. Thus Alternative 1 would have a largest potential negative cumulative effect.

Alternative 2 would begin management objectives to reduce fuels and decreasing the potential for unplanned wildfire spread into the Reservation. The decreased fuel loads and potential fire intensity would increase the effectiveness of fuels reduction projects completed and planned on the Reservation. The implementation of fuels reduction in this part of the TFETA would increase the ability to implement fuel reduction projects in other portions of the TFETA and give the Tule incentive to propose additional projects under the TFPA. Thus Alternative 2 would have a potential beneficial cumulative effect to Tribal and Native American Interests. Because Alternative 2 only treats 2.5% of the TEFTA its overall effect is less than Alternative 3.

Alternative 3 would do the maximum amount in reaching management objectives to reduce fuels and decreasing the potential for unplanned wildfire spread into the Reservation. The decreased fuel loads and potential fire intensity would increase the effectiveness of fuels reduction projects completed and planned on the Reservation. The implementation of fuels reduction in this part of the TFETA would increase the ability to implement fuel reduction projects in other portions of the TFETA and give the Tule incentive to propose additional projects under the TFPA. Because Alternative 3 treats twice the acreage of Alternative 2 or 5% of the TEFTA its overall effect is greater than Alternative 3.Thus

Alternative 3 would have a greatest potential beneficial cumulative effect to Tribal and Native American Interests.

Literature Cited and References

Anderson, M.K.; Moratto, M.J. 1996. Native American land use practices and ecological impacts. In: Sierra Nevada ecosystem project: final report to congress, vol. II, assessments and scientific basis for management options, Ch. 9. Davis, CA: University of California, Centers for Water and Wildlands Resources: Volume 2 pp. 09-01 to 09-20.

Anderson, R.S. 1994. Paleohistory of a giant sequoia grove: the record from Long Meadow, Sequoia National Park. In:Aune, P., tech. coord., Proceedings of the symposium on giant sequoias: their place in the ecosystem and society. Gen. Tech. Rep. PSW-GTR-151. Visalia, CA U.S. Department of Agriculture, Forest Service, Pacific Southwest Region: 49-5.

Anderson, R.S.; Smith, S.J. 1994. Paleoclimatic interpretations of meadow sediment and pollen stratigraphies from California. Geology 22, pp. 723-726.

Bean, L.J.; Lawton, H.W. 1993. Explanations for the Rise of Cultural Complexity in Native California with Comments on Proto-Agriculture and Agriculture. In Before the Wilderness. T.C. Blackburn and M.K. Anderson, eds. Pp. 27-54. Ramona, CA: Ballena Press.

Beidle, Lawrence R., 1976. Archaeological Reconnaissance Report Crawford Road Project 52-1980-9

Blackburn, T.C.; Anderson, M.K. eds. 1993. Before the Wilderness: Environmental Management by Native Californians. Menlo Park, CA: Ballena Press. 476p.

Brewer, W.H., 1974. Up and Down California in 1860-1864, The Journal of William H. Brewer, Professor of Agriculture in the Sheffield Scientific School from 1864 to 1903. Francis P. Farquhar, ed., Berkeley, CA: University of California Press

Brown, M.R. III, C.M. Elling. 1981. An Historical Overview of Redwood Logging Resources within the Hume Lake Ranger District, Sequoia National Forest, California. Sonoma State University Academic Foundation, Inc. Porterville, California.

Caprio, A.; Conover, C.; Keifer, M.; Lineback, P. 1997. Fire management and GIS: a framework for identifying and prioritizing fire planning needs. Presented at Fire in California Ecosystems: Integrating Ecology, Prevention, and Management, Nov. 17-20, San Diego, CA.

Castillo, E.D. 1978. The Impact of Euroamerican Exploration and Settlement. In California, edited by Robert F. Heizer, pp. 6-15. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institute Washington, D.C.

Cook, S.F. 1978. Historical Demography. In California, edited by Robert F. Heizer, pp. 91-98. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor, Smithsonian Institute Washington, D.C.

Deal, K. 2001. Fire Effects to Lithic Artifacts. Paper presented at the Cultural Resource and Protection and Fire Planning Course, Tucson, AZ.

Dilsaver, L.M.; Tweed W.C. 1990. Challenge of the Big Trees. Sequoia Natural History Association, Three Rivers, California. 379p.

Elsasser, A.B. 1960. The Archaeology of the Sierra Nevada in California and Nevada. Reports of the University of California Archaeological Survey No. 51. University of California Archaeological Survey, Berkeley: 93p.

Elliot, W.W. 1882. History of Fresno County. W.W. Elliot, San Francisco, California.

Farquhar, F.P. 1924. Place Names of the High Sierra. Sierra Club Bulletin 12(1), p. 47-51.

Farquhar, F.P. 1966. History of the Sierra Nevada. University of California Press, Berkeley, California.

Frank, G. 2008. Brief History of the Tule River Indian Reservation: the Struggle to Stay on the Land after 1850. Electronic document, http://tuleriver.org/reservation/reservation_after_1850.html, accessed September 5, 2008.

Gayton, A. H. 1930a. Yokuts-Mono Chiefs and Shamans. University of California Publications in American Archaeology and Ethnology 24, pp. 361-420. Berkeley, California.

Gayton, A. H. 1930b. The Ghost Dance of 1870 in South Central California. University of California Publications in American Archaeology and Ethnology 28, pp. 57-82. Berkeley, California.

Gayton, A. H. 1948.Yokuts and Western Mono Ethnography I: Tulare Lake, Southern Valley, and Central Foothill Yokuts. University of California Anthropological Records 10(1 and 2). Berkeley, California. 301p.

Gayton, A. H. and Newman, S.S. 1940.Yokuts and Western Mono Myths. University of California Anthropological Records 5, pp. 1-110. Berkeley, California.

Gifford, E.W. 1917. Tubatulabal and Kawaiisu Kinship Terms. American Archaeology and Ethnology 12(6), pp. 219-248. University of California Press, Berkeley.

Golla, V. 2007. Linguistic Prehistory. In California Prehistory: Colonization, Culture, and Complexity, edited by Terry L. Jones and Kathryn A. Klar, pp. 71-82. AltaMira Press, Lanham, Maryland.

Graumlich, L.J. 1993. A 1000-year record of temperature and precipitation in the Sierra Nevada. Quaternary Research 39, pp. 249-255.

Gucinski, H.; Furniss, M.J.; Ziemer, R.R.; Brookes, M.H., eds. 2000. Forest roads: A syntheses of scientific information. General Technical Report PNW-GTR-509. Portland, OR: Pacific Northwest Research Station, Forest Service, U.S. Department of Agriculture. 103p.

Hoover, Joanne. 1991. Slate Special Salvage Timber Sale ARR#05-13-52-91-01, on file in District Archaeologist Office, Dunlap, CA

Hoover, Mildred B., Hero E. Rensch, and Ethel G. Rensch. 1966. Historic Spots in California. 3rd Edition (Revised by William N. Abeloe). Stanford: Stanford University Press.

Horne, S.; McFarland, J. 1993. Issue paper – impacts of livestock grazing on cultural resources. Unpublished document on file, Los Padres National Forest, 6755 Hollister Avenue Suite 150 Goleta, CA 93117. 8p.

Hull, K.L. 2007. The Sierra Nevada: Archaeology in the Range of Light. In California Prehistory: Colonization, Culture, and Complexity, edited by Terry L. Jones and Kathryn A. Klar, pp. 177-190. AltaMira Press, Lanham, Maryland.

Hull, K.L.; Moratto, M.J.; McCarthy, H.; Roper, C.K., Spaulding, W.G.; Hale, M.R.; Nilsson, E. 1999. Archeological Synthesis and Research Design, Yosemite National Park, California. Yosemite, Calif.: U.S. Dept of the Interior, National Park Service, Yosemite National Park, Yosemite Research Center.

Jackson, L.A., 2004. The Mule Men: A History of Stock Packing in the Sierra Nevada. Mountain Press Publishing Company, Missoula, Montana. 254p.

Jackson, R. J. 1999. Heritage Resources Management Module for Rangeland Management Activities on National Forest of the Sierra Nevada, USDA Forest Service, Pacific Southwest Region. Prepared for Sequoia National Forest. On file Sequoia National Forest, Supervisor's Office, Porterville, CA.

Johnson, J. R.; Stafford, Jr., T. W.; Ajie, H. O.; D. P. Morris D.P. 2002. Arlington Springs Revisited. In Proceedings of the Fifth California Islands Symposium, edited by D. Browne, K. Mitchell, and H. Chaney, pp. 541–545. USDI Minerals Management Service and the Santa Barbara Museum of Natural History, Santa Barbara.

Johnston, H. 1974. They Felled the Redwoods: A Saga of Flumes and Rails in the High Sierra. Trans-Anglo Books, Coronadel Mar, California. 160p.

Kelly, R.; McCarthy, D.F. 2000. Effects of fire on rock art. Paper presented at the 27th Annual American Rock Art Research Association, Phoenix, Arizona, p. 7.

King, T. 2003. Places That Count: Traditional Cultural Properties in Cultural Resources Management. Altamira Press, Lanham, Maryland. 335p.

Kroeber, A.J. 1976. Handbook of the Indians of California. Reprint originally published in 1925. Bureau of American Ethnology Bulletin 78. Dover Publications, Inc., New York, New York. 995p.

Larson, R.C. 1985. Giants of the Southern Sierra: A Brief History of the Sequoia National Forest. On file: Heritage Resources Office, Sequoia National Forest Supervisor's Office, Porterville, CA.

Latta, Frank F. 1977 Handbook of Yokuts Indians. Bear State Books, Santa Cruz, California

Lewis, H.T. 1972. The Role of Fire in the Domestication of Plants and Animals in Southwest Asia: A Hypothesis. Man, New Series 7(2 June), pp. 195-222.

Lewis, H.T. 1973. Patterns of Indian Burning in California: Ecology and Ethnohistory. Ramona, CA: Ballena Press. 101p.

Lewis, H.T. 1980.Indian Fires in Spring: Hunters and Gatherers of the Canadian Forest Shaped Their Habitat with Fire. Natural History 89(1 Jan.), pp. 76-78, 82-83. 142

Lewis, H.T. 1985. Why Indians Burned: Specific Versus General Reasons. In Proceedings - Symposium and Workshop on Wilderness Fire. J.E. Lotan, B.M. Kilgore, W.C. Fischer, and R.W. Mutch, eds. Pp. 75-80. General Technical Report Int-182: USDA Forest Service, Intermountain Forest and Range Experiment Station, Ogden, UT.

Lewis, H.T. 1989. Non-Agricultural Management of Plants and Animals: Alternative 2urning Strategies in Northern Australia. In Wildlife Production Systems: Economic Utilization of Wild Ungulates. R.J. Hudson, K.R. Drew, and L.M. Baskin, eds: Cambridge University Press. Pp. 54-74.

Lewis, H.T. 1993. In Retrospect. In Before the Wilderness: Environmental Management by Native Californians. T.C. Blackburn and M.K. Anderson, eds. Pp. 389-400. Menlo Park, CA: Ballena Press.

Lux, L.;Rose, J.; Supernowicz, D.; Conners, P.; Brady, J.; Cutts, J.; Brandoff-Kerr, J. 2003. Strategy for Inventory and Historic Evaluation of Recreation Residence Tracts in the National Forests of California from 1906 to 1959. Manuscript on file with the U.S. Department of Agriculture, Forest Service, Pacific Southwest Region, 1323 Club Drive, Vallejo, Sonora, California. 129p.

Marshall, M.P.; Walt, H.J. 1984. Rio Abajo: Prehistory and history of a Rio Grande province. Santa Fe, New Mexico: Historic Preservation Division. Cited in U.S. Army Corps of Engineers. 1988. Site impacts in the Rio Abajo district central Rio Grande River Valley, New Mexico. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-7. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 10.

McAvoy, L.; McDonald, D.; Carlson, M. 2001. American Indians: Sense of place and contested terrain. Final Report: PSW-98-0010CA. Riverside, CA: Wildland Recreation and Urban Cultures, Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 59.

McGuire, K.; Garfinkle, A. 1980. Archaeological Investigations in the Southern Sierra Nevada: The Bear Mountain Segment of the Pacific Crest Trail. USDI, Bureau of Land Management, Bakersfield. 304p.

Mithun, M. 2004. The Languages of Native North America. Cambridge University Press, Cambridge, Massachusetts. Originally published 1999.

Moratto, M.J. 1972. Study of Prehistory in the Southern Sierra Nevada Foothills, California. Ph.D. dissertation, University of Oregon, Eugene. 545p.

Moratto, M.J. 1984. California Archaeology. Academic Press, New York. 757p.

Moratto, M.J. 1988. Archaeological Excavations at Site CA-FRE-1671, Fresno County, California: Final Report. Report submitted to Caltrans, Sacramento.

Moratto, M.J. 1999 Cultural Chronology 2: The Yosemite Data. IN Archaeological Synthesis and Research Design, Yosemite National Park, California, edited by K.L. Hull and M.J. Moratto, pp. 121-204, USDI National Park Service Yosemite Research Center, El Portal, CA, Publications in Anthropology 21.

Moskowitz, Kathy, 1994. Tule River and Hot Springs Roadside Hazard Tree Removal ARR 52-94-05. On file at the Hume Lake Ranger District Office, 35860 E. Kings Canyon Road, Dunlap, California, 93621.

Muller, Jane Guthrie, 1990 History of Deer Creek Hot Springs. Los Tulares, Bulletin of Tulare County Historical Society 170, p.1-3.

Napton, L.K. 1983. Southern Sierra Nevada Archaeology: Cultural Resource Survey of 15 Timber Sales on Sequoia National Forest, California. On file at the Hume Lake Ranger District Office, 35860 E. Kings Canyon Road, Dunlap, California, 93621.

National Park Service. [n.d.] History of Giant Forest Development. Electronic document accessed February 10, 2008, http://www.nps.gov/seki/historyculture/gfhistory.htm,

National Park Service. 1998. Director's Order (DO) 28: Cultural Resource Management Guidelines.

National Park Service. 1995. How to Apply the National Register Criteria for Evaluation. National Park Service Bulletin 15, Washington D.C. 54p.

Parker, P.L.; King, T.F. 1992. Guidelines for Evaluating and Documenting Traditional Cultural Properties. National Park Service Bulletin 38, Washington D.C. 22p.

Phillips, G.H. 1993. Indians and Intruders in Central California, 1769-1839. Norman: University of Oklahoma Press.

Phillips, G.H. 2004. "Bringing Them Under Subjection": California's Tejon Indian Reservation and Beyond, 1852-1864. Lincoln: University of Nebraska Press. 369p.

Powers, B. 1981. Indian Country of the Tubatulabal. Western Lore Press, Tucson.

Powers, S. 1976 [1877]. Tribes of California. University of California Press, Berkeley, California. 480p.

Rehart, C.M.; Secrest Jr., W.; McFarland, J. R.; Laval, E. 2007. "Celebrating the Journey" 150 Years of Fresno County and Beyond. Quill Driver Books. 294p.

Rose, Gene, 2005, Giants Among the Forests: A History of the Sequoia National Forest, Three Forests Interpretive Association, Tollhouse, California

Satterthwaite, J.L. 1994. The Flume that Carried Giant Sequoia. In History Line, A Newsletter of the Forest Service History Program, pp.13-16. U.S. Department of Agriculture, Forest Service.

Sillars, Malcolm, 2010. The Tule River Miiddle Fork and its People: A History of Southern Sierra Nevada Communities, Bear State Books, Exeter, California.

Shoup Laurence H., 1985. Tule River Hydroelectric Project. Vlume 1, Historical Overview. San Francisco: Pacific Gas and Electric.

Silverstein, M. 1978. Yokuts: Introduction. In California, edited by Robert F. Heizer, pp. 446–447. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Small, K.E. 1926. Early History of Tulare County, California. Reprint (2001) by Bear State Books, Exeter, California.

Smith, Charles R. 1978. Tubatulabal. In California, edited by Robert F. Heizer, pp. 437–445. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Speir, R.F.G. 1978. Foothill Yokuts. In California, edited by Robert F. Heizer, pp. 471–484. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Swetnam, T.W. 1993. Fire history and climate change in giant sequoia groves. Science 262, pp. 885-889.

Theodoratus Cultural Research, Inc. 1984. Cultural Resources Overview of the Southern Sierra Nevada: An Ethnographic, Linguistic, Archaeological and Historical Study of the Sierra National Forest, Sequoia National Forest and Bakersfield District of the Bureau of Land Management. Prepared for the USDA Forest Service by Theodoratus Cultural Research Inc., Fair Oaks, California, and Archaeological Consulting and Research Services Inc., Santa Cruz, California. On file at: Sequoia National Forest, Supervisors Office, 1839 South Newcomb Street, Porterville, CA 93257. 672p.

Tule River Indian Tribe, N.D., History of the Tule River Band of Yokut Indians. http://www.tulerivertribe-nsn.gov/history (18 February 2010)

Tweed, W. 1972. Sequoia National Park Concessions: 1898-1926. Pacific Historian (Spring), pp. 37-39.

U.S. Army Corps of Engineers. 1988. Site impacts in the Rio Abajo district central Rio Grande River Valley, New Mexico. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-7. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 10.

U.S. Army Corps of Engineers. 1989a. Effects of forest fires and burn programs on archeological resources. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-8. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 6.

U.S. Army Corps of Engineers. 1990. Impacts of domestic livestock grazing on archeological resources. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-15. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 8.

U.S. Army Corps of Engineers. 1989b. Vandalism to cultural resources of the Rocky Mountain West. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-12. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 9.

U.S. Army Corps of Engineers. 1992. Off-road vehicle impacts to archeological sites. In: Archeological Sites Protection and Preservation Notebook Technical Notes ASPPN I-18. Vicksburg: U.S. Army Engineer Waterways Experimental Station, Environmental Laboratory; 9.

USFS - Forest History Society. 2010.
http://www.foresthistory.org/ASPNET/People/Greeley/Greeley.aspx. Accessed February 1, 2010

Van Ness, James. "Federal Land Management" in Yearbook of Cultural Property Law 2007. Hutt, Sherry, editor. Left Coast Press, Inc Walnut Creek, CA.

Voegelin, E. 1938. Tübatulabal Ethnography. Anthropological Records, 2(1). University of California Press, Berkeley.

Whistler, Kenneth, 1984, "Linguistics," Chapter 6 in. Cultural Resources Overview of the Southern Sierra Nevada, An Ethnographic, Linguistic, Archaeological, and Historical Study of the Sierra National Forest, Sequoia National Forest, and Bakersfield District of the Bureau of Land Management, Submitted by Theodoratus Cultural Research Inc. and Archaeological Consulting and Research Services, Inc, January 1984 to USDA Forest Service South Central Contracting Office Bishop CA.