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Region 5

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Environmental Assessment for

Soquel Ditch Bridge Replacement Project

Sierra National Forest

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SECTION 1. PURPOSE AND NEED

1.1 Document Structure

This Environmental Assessment (EA) is organized into the following parts:

1. *Section 1. Purpose and Need:* This section includes information on the history of the project proposal, the purpose and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

2. *Section 2. Alternatives:* This section provides a more detailed description of the agency's alternatives considered for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

3. *Section 3. Affected Environment and Environmental Consequences:* This section organized by resource area,issues, and describes the current environmental condition with respect to each resource. Effects of the No Action Alternative are also described in this section, which provide a baseline for evaluation and comparison of the proposed alternative.

4. *Section 4. Consultation and Coordination:* This section provides a list of agencies/organizations consulted during the development of the EA as well as a list of specialists developing the EA.

5. *Section 5. References*

1.2 Background

This EA identifies and analyzes the potential environmental effects associated with the demolition and replacement of the functionally deficient Soquel Ditch Bridge over the Siphon Mid Ditch in the Sierra National Forest (SNF). The bridge is located along the Forest Service (FS) Sky Ranch Road (6S10), which provides one of the most directs routes to the northern portion of the SNF. The new bridge would be built with greater load-bearing capacity to accommodate typical vehicles used for all types of forest management activities including, but not limited to, forest fire suppression, timber harvest, and vegetation management. Therefore the new bridge would increase functionality and most important the safety of users.

This EA is prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. Direct, indirect, and cumulative environmental impacts that would result from the project alternatives are disclosed and discussed. Federal actions must be analyzed to determine potential environmental consequences pursuant to NEPA. The Council on Environmental Quality (CEQ) regulations define an EA as a "concise public document" that "shall include brief discussions" of the need for the proposed action, of alternatives to the proposed action, of environmental effects based on the substantive issues, and a listing of agencies and persons consulted (40 CFR 1508.9).

1.3 Location

The Soquel Ditch Bridge is located in Madera County, California, Section 16, Township 6 South, Range 22 East. It is in the SNF on 06S10 where it crosses the Siphon Mid Ditch (Figure 1.1 & 1.2).

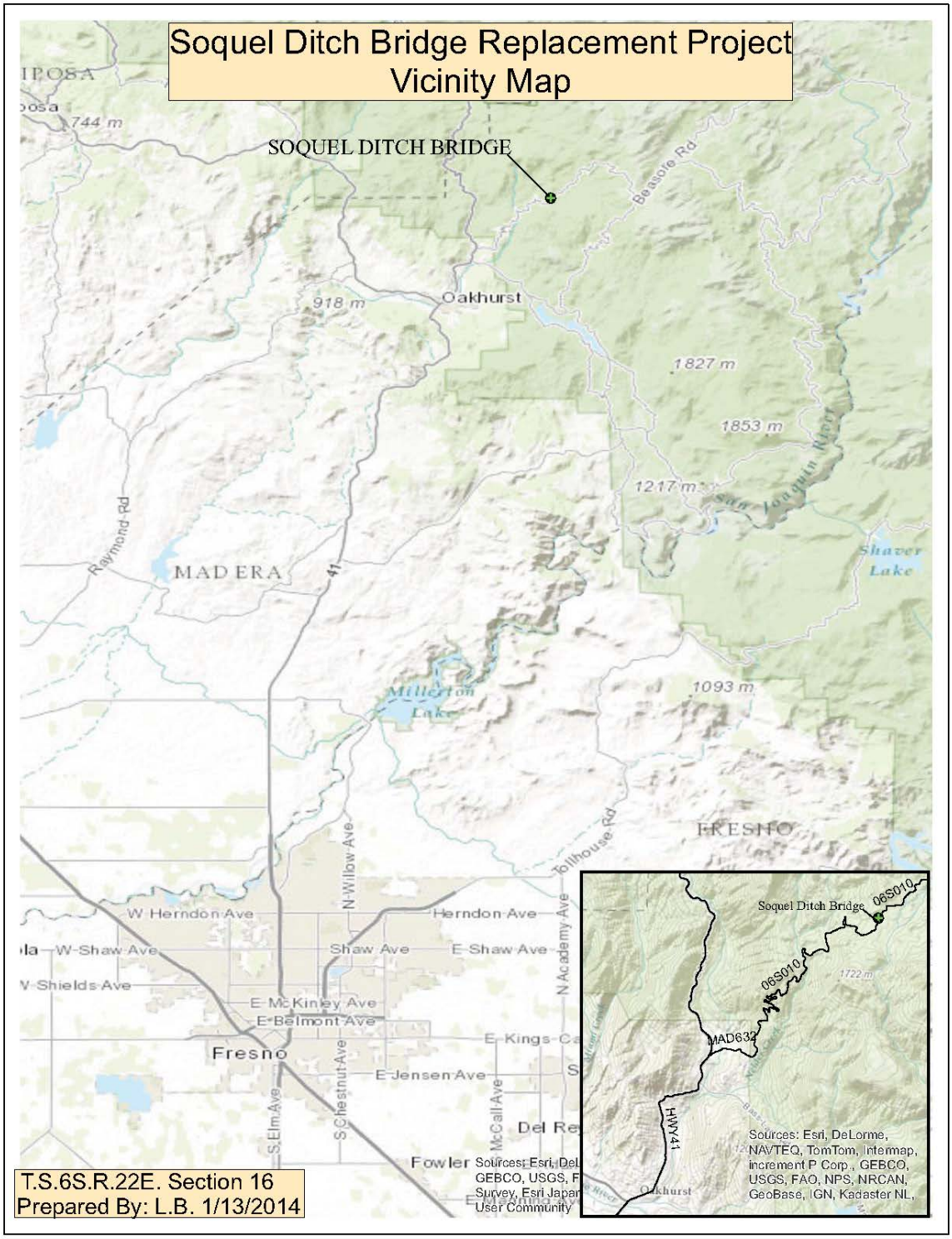


Figure 1.1

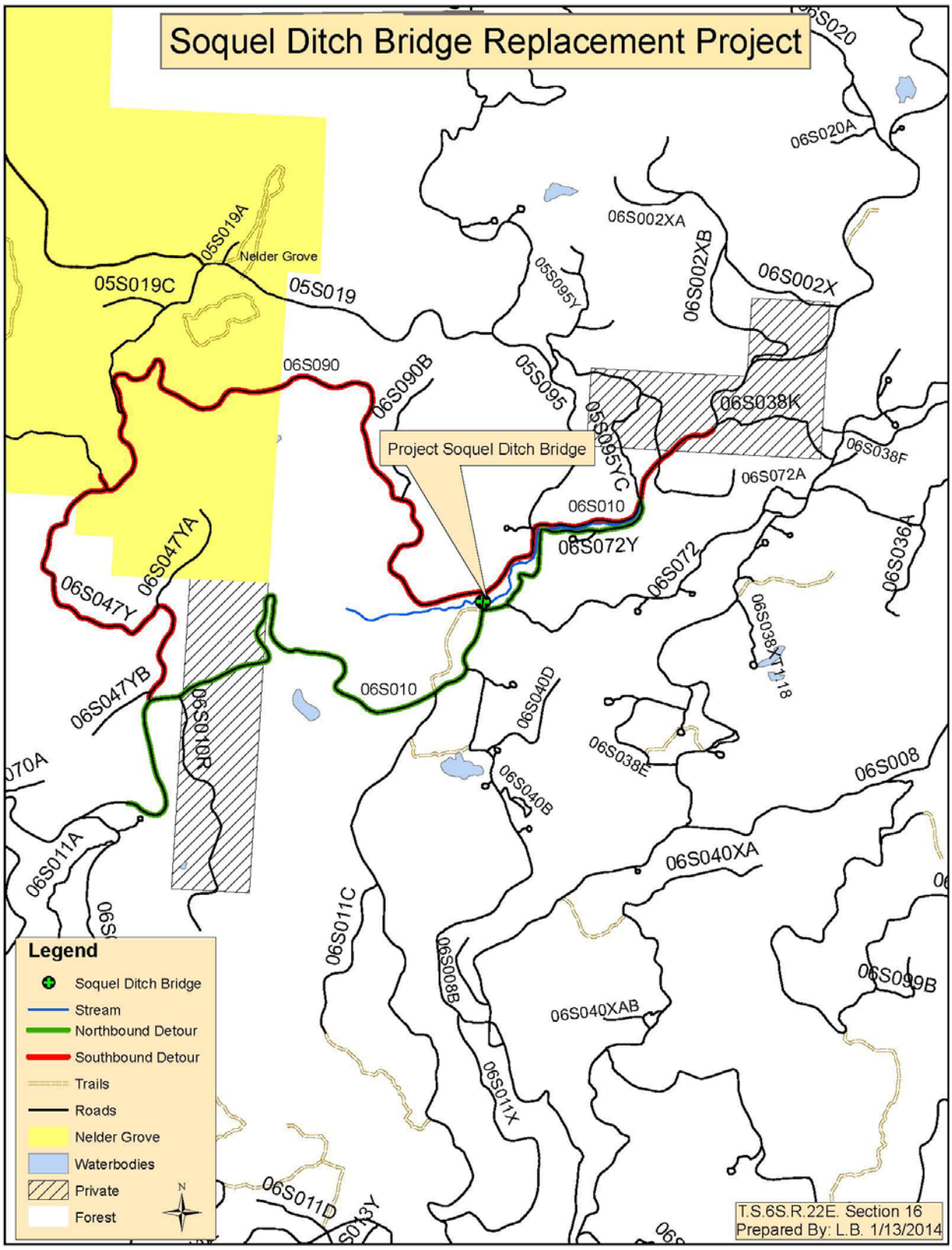

Soquel Ditch Bridge Replacement Project
Project Soquel Ditch Bridge
Nelder Grove
05S019A
05S019C
05S019
06S090
06S090B
05S095
05S095Y
05S095YC
06S002XA
06S002XB
06S002X
06S020
06S020A
06S038K
06S038F
06S072A
06S010
06S072Y
06S072
06S036A
06S038XT118
06S047YA
06S047Y
06S047YB
06S010R
06S040D
06S038E
06S040B
06S008
06S040XA
06S011A
06S011C
06S008B
06S040XAB
06S099B
06S011X
06S011D
Legend
Soquel Ditch Bridge
Stream
Northbound Detour
Southbound Detour
Trails
Roads
Nelder Grove
Waterbodies
Private
Forest
N
T.S.6S.R.22E. Section 16
Prepared By: L.B. 1/13/2014

Figure 1.2

1.4 Purpose and Need for Action

The primary purpose of the Soquel Ditch Bridge Project is to replace the functionally obsolete and structurally deficient bridge. The bridge is no longer adequate to sufficiently accommodate traffic because of its structural deficiencies. As noted on the inspection reports, the superstructure steel trusses are severely rusted, the reinforced-concrete deck has broken up and the existing lead-based paint coating has largely failed and widespread corrosion is attacking the steel truss. In addition, the stream-right abutment is sitting on erodible rock and has been sufficiently undermined leaving the footings partially exposed. This erosion, caused by road runoff, has created concerns about the bridge functionality to the extent that the bridge is constantly monitored.

The Soquel Ditch Bridge was built to standards that are not used today, and does not have adequate capabilities to serve current traffic demand of the area. In addition, there has not been any kind of repair or rehabilitation work since the bridge was built in 1950. The bridge is located in an area that has become very popular among the public. It is very common to see people hiking, riding motorcycles or ATVs, and trucks hauling trailers. This increase in traffic has not been a problem for the Sky Ranch Level 3 road because it has two lanes. On the other hand, the Soquel Ditch Bridge is a single lane bridge. It decreases the traffic flow for trucks, but most important, it increases the chances of an accident as motorists have to stop at one end of the bridge and wait for trucks to cross. Also, a curve on the road is located near south approach of the bridge. This involves certain risks for motorists whom regularly drive at high speeds and the bridge does not have enough space for a car and a motorcycle. Replacing the Soquel Ditch Bridge would enable the Forest Service to protect the public from potential harm resulting from a possible accidental injury while on or near the structure. The Soquel Ditch Bridge is designated as part of a combined use road allowing for highway legal traffic and unlicensed OHV use. Replacing the existing one-lane bridge with 2 lanes will improve traffic safety.

The need for the proposed project also arose as a result of a Fracture Critical Inspection and a Load Rating Analysis that identified specific members of the bridge that need repair. Based on the inspection report of the Soquel Ditch Bridge, performed by Regional Office, the forest posted a 22-ton weight limit restriction. This decision was made after calculations showed that higher weights would overstress critical bridge elements. This weight limit caused the diversion of loaded timber trucks and heavy construction equipment. Although the bridge is posted, big heavy loads occasionally cross the bridge. This has created a concern about public safety. Fatigue issues are also a concern: bridges made from carbon steels will corrode if the paint system is allowed to fail. Corroding members lose strength due to pitting and corrosion. Reduced members cross sections and low temperatures negatively impact the steel's strength. Structural damage sustained by the bridge during the last years, as well as subsequent deterioration of the steel trusses and reinforced concrete, has resulted in the need to replace the bridge.

1.5 Decision Framework

This EA documents the environmental analysis of the alternatives. The Bass Lake District Ranger is the responsible official for this project and will decide whether to approve construction of a new bridge (Proposed Action) or keep the existing bridge. The decision is based on a consideration of the area's existing resource conditions, desired conditions, environmental issues, and the environmental effects of implementing either alternative. The district ranger may select either alternative or may modify an alternative, as long as the result is within the range of effects disclosed in the EA.

This EA is not a decision document. Rather, it discloses the environmental consequences that may occur if one of the alternatives is implemented. If the chosen alternative would result in no significant environmental effects based on this analysis, a Decision Notice and Finding of No Significant Impact, signed by the district ranger, would document the decision made as a result of this analysis.

1.6 Public Involvement

The proposal was first listed on the Sierra National Forest website (http://www.fs.fed.us/sopa/) in the Schedule of Proposed Action on December 24, 2013. A mailing list was compiled of federal, tribal, state, and local agencies, as well as individuals and organizations interested or determined to be potentially impacted by the proposed project. Emphasis was placed on contacting people affected or concerned about the proposed project due to ownership or land use interests.

Scoping documents that included a discussion of the proposed project, a map showing the project location, and a scoping comment form were sent on January 3, 2014, to 87 individuals, organizations, agencies, and tribes on the mailing list. An announcement was also posted on the SNF website (http://www.fs.fed.us/sopa/forest-level.php?110515).

No scoping responses were received.

1.7 Issues

The CEQ NEPA regulations in Sec. 1501.7 (3) require the proponents "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review." Issues eliminated from detailed analysis were:

- Outside the scope of the Proposed Action;
- Already decided by law, regulation, Forest Plan, or other higher level decision;
- Irrelevant to the decision to be made; or
- Conjectural and not supported by scientific of factual evidence.

No new issues were identified during public scoping. The following resources were identified by the interdisciplinary team for evaluation in the EA document because of potential resource concerns and issues:

- Biological Resources were considered because the potential changes in the type and number of environmental components and their interactions among all living and nonliving components that directly or indirectly sustain dynamic diverse and viable ecosystems of the area.
- Hydrology/Water Quality was considered because of the road runoff and the potential addition of contaminants into the water.
- Transportation was considered because of the increase in popularity of the area and interaction of different type of vehicles such as; ATV's, cars, truck with trailers, motorcycles, and bikes on a combine use road.
- Cultural Resources were considered because of the ground disturbing activity potential impacts on heritage sites..
- Public Safety was considered because the Soquel Ditch Bridge is structurally deficient and its width does not meet the traffic demands of the 6S10 road.

SECTION 2. ALTERNATIVES

This chapter discusses the Proposed Action that has been developed to meet the purpose and need of replacing the existing Soquel Ditch Bridge on Sky Ranch Rd (6S10). The Proposed Action is intended to resolve limitations in the original structural design and reductions in structural capacity associated with aging, as well as meet current FS design standards for bridges.

2.1 Three Alternatives were Considered in Detail

Three alternatives were analyzed in detail with respect to the purpose and need for the project: Alternative 1 – No Action, Alternative 2 - Proposed Action (replacement of the existing bridge with a 68'-0" long structure "long bridge"), and Alternative 3 (replacement of existing bridge with 51'-2" long structure "short bridge"). A description of each of the alternatives under consideration is presented below.

2.1.1 Alternative 1: No Action

This alternative provides the baseline for comparison of environmental consequences of the Proposed Action to the existing condition and is a management option that could be selected by the district ranger. The results of taking no action would be the current condition as it changes over time due to natural forces.

Under the No Action alternative, the bridge would not be replaced. The bridge is 63 years old, but it is currently structurally safe for loads up to 22 tons. It would continue limiting the traffic flow on Sky Ranch road from double lane road to a single lane bridge. The bridge would continue to function but will move toward the end of its design life and may eventually have more structural problems based on the age of the Bailey bridge trusses and deteriorated concrete deck. With a considerable rise in the area's traffic, the No Action alternative would also increase the chances of an accident as motorist have to stop at one end of the bridge and wait for trucks to cross. Also, a continued

reduction in maximum gross weight limit which is sufficient for lighter vehicles, but heavier vehicles including emergency vehicles and equipment would have to continue to circumvent the bridge and take longer, more primitive routes to fires and other emergencies. Furthermore, easements or permits would need to be acquired prior to any logging or construction activity commencement, and additional costs associated with logging or construction projects in the area would be incurred as road reconditioning would be required prior to the beginning of logging or construction activities.

2.1.2 Alternative 2: Proposed Action (long bridge)

The SNF proposes to remove the existing structurally limited bridge and construct a new bridge in its place that meets current FS design standards for bridges. The Proposed Action would require two phases: removal of the old bridge structure and construction of the new bridge. The new bridge dimensions are slightly larger and wider than the existing bridge. It would be constructed using the similar alignment and would be extended 10 feet to the south end and 18 feet to the north end of the bridge's existing location. It would also be widened 10 feet upstream. Construction activities would begin in the spring of 2015 as soon as conditions allow in June or July, and total time to complete both phases would be approximately 120-150 days.

The bridge would be temporarily closed to ensure public safety during construction; detour signs would be placed at the junction of Sky Ranch Road and 06S47Y/06S90 (southbound) and at the junction of Sky Ranch Road and 06S72Y (northbound) to direct motor vehicles.

Description of Detour Route

Traffic traveling northbound (uphill) on road 6S10 will be diverted onto road 6S72 approximately 100 yards before the bridge location. The route will continue on road 6S72 for 0.1 mile before turning left on road 6S72Y. Traffic will continue for 0.7 miles on road 6S72Y before intersecting with road 6S10. Traffic traveling southbound (downhill) on road 6S10 will be diverted onto road 6S90 approximately 100 yards before the bridge location. Traffic will continue for 2.5 miles on road 6S90 before merging onto road 6S47Y. Traffic will continue for 1.3 miles on road 6S47Y before intersecting with road 6S10. The route and all intersections will be signed according to Manual on Uniform Traffic Control Devices (MUTCD) standards.

Existing Bridge Removal

All the existing bridge components would need to be demolished and hauled to a certified landfill for disposal. Bridge components to be removed include concrete deck, concrete abutments and wing-walls, and steel trusses. Following removal of the structural components of the bridge, approximately 1350 cubic yards of fill material on both ends of the bridge would also need to be removed; this material would be stored on site within the staging designated area, on 06S10 road south-east of the bridge for use as backfill again after the new bridge is built. See Figure 2.1

Heavy equipment that may be used in the demolition and removal or the existing bridge includes but is not limited to:

- Tracked excavator
- Front-end loader
- Backhoe
- Dump truck
- Skid steer

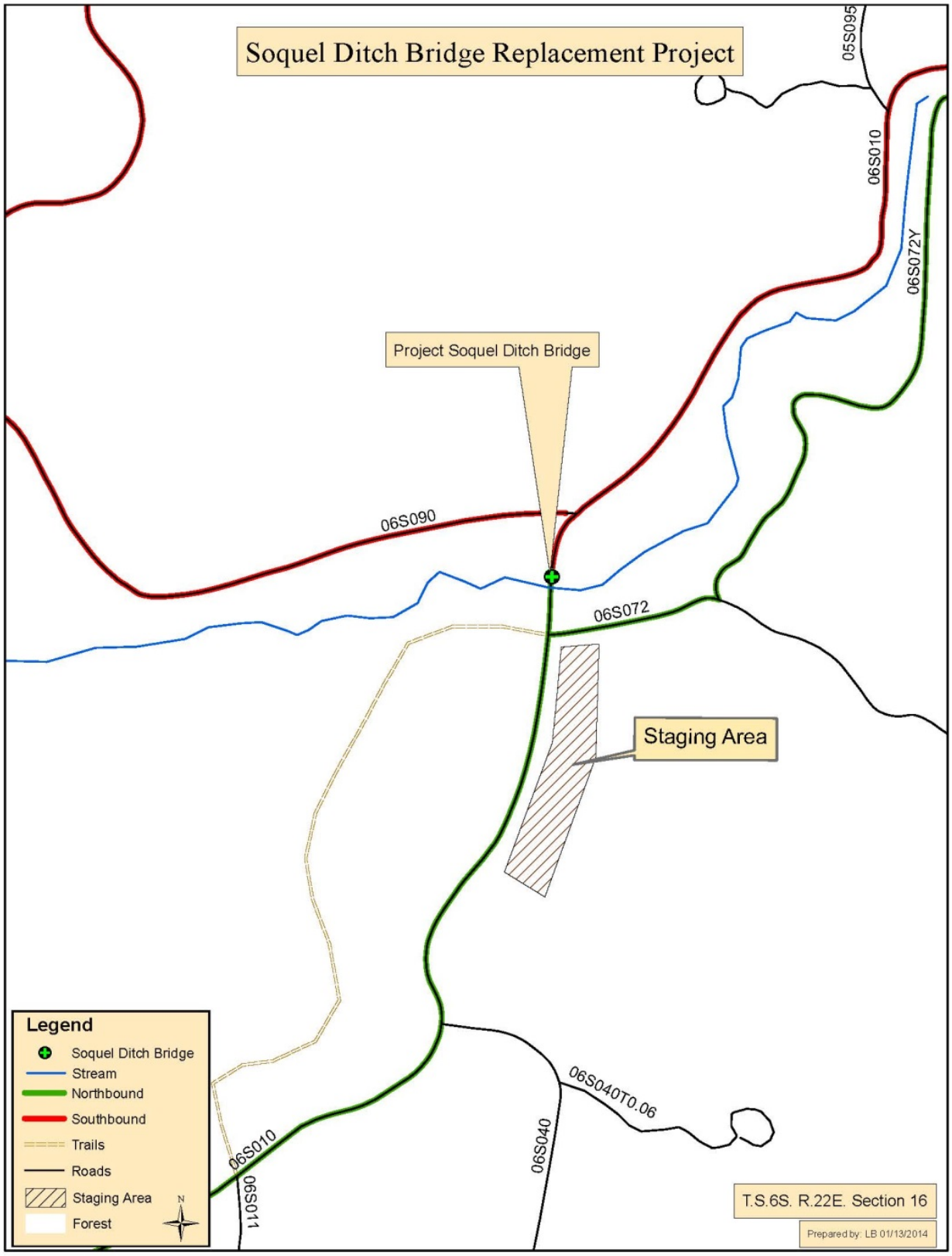
New Bridge Construction

Construction of the new bridge would require excavation and preparation of the site and then installation of the new bridge components. Approximately 1300 cubic yards of rock would be excavated for the new footers, and 120 cubic yards of concrete footers, abutments, and wing walls would be installed. Subsequently, approximately 100 linear feet of bridge stringers and concrete deck would be installed. 450 out of the 1300 cubic yards of stored fill material removed from the old bridge would then be reused as backfill for the new abutments, wing walls, and roadway and would be compacted to appropriate levels. Other necessary structures to be installed include new safety guardrails and riprap protection. Approximately 100 linear feet of bridge guardrail and 100 linear feet of riprap protection would be installed to protect the new bridge structure. New approaches to the bridge at each end would also be constructed and paved with asphalt. These would require reconstruction of the roadway with approximately 100 tons of roadway base and 100 tons of bridge approach asphalt pavement. Erosion control measures would be installed and disturbed ground would be re-vegetated with native species.

Heavy equipment that may be used for bridge construction, in addition to that listed above for bridge demolition/removal, includes but is not limited to:

- Medium-sized crane
- Grader
- Sheepsfoot roller
- Generator
- Guardrail punch / drill truck
- Asphalt lay down machine
- Steel wheel roller

Figure 2.1 Detour roads & staging area



2.1.3 Alternative 3: (short bridge)

Alternative 3 is the similar to alternative 2 except for: the new bridge dimensions are slightly larger and wider than the existing bridge.

Existing Bridge Removal and Detour Route
The removal of existing bridge process, detour route, equipment needed, and activities, including quantities, are the same as the process and activities listed in the Proposed Action.

New Bridge Construction
The differences in quantities and extra work needed for the construction of the alternative 3 bridge are listed below.

- 1400 cubic yards of rock would be excavated for the new footers, abutments, and wingwalls.
- 1300 cubic yards of rock would be reused as backfill.
- Soil nailing on both faces of the ditch to stabilize the channel.
- Rock buttress at the toe and exposed surfaces of the slope to stabilize the channel side slopes.

Design Features (Alternative 2 and 3)

Applicable Forest Plan standards and guidelines, Best Management Practices (BMPs), Forest Service Manual (FSM), and Handbook (FSH) directions would be incorporated in project design and implementation.

The new bridge would meet the Forest Service's current design standards, which follow American Association of State Highway and Transportation Officials (AASHTO) standard HS-20. AASTHO HS-20 indicates a bridge with a load design rating that can accommodate current legal loads for vehicles with three to four axles, e.g., a conventional semi-truck and trailer. Contrary to existing bridge, the proposed bridge would Forest Service-approved bridge guardrail.

NEPA defines "mitigation" as avoiding, minimizing, rectifying, reducing, eliminating, or compensating project impacts presented in the Proposed Action. Table 2.1 is a list of Best Management Practices (BPMs) and other mitigation measures required to address resources management concerns and to guide the removal and replacement of Soquel Ditch Bridge.

Table 2.1 BMPs/Mitigation Measures Required for Proposed Action Alternatives

No.	MITIGATION	PURPOSE
	AREA OF DISTURBANCE	
AD1	Flag or use temporary construction fence at the boundary of staging area(s) and construction zone.	To prevent unnecessary disturbance of areas outside of the construction zone.
AD2	Construction machinery and equipment would be well maintained.	To minimize construction-related noise, spread of oil.
AD3	Limit equipment on-site to the minimum necessary to complete construction. Motor idling would be minimized to the extent practicable.	To minimize construction-related noise.

AD3	Construction activities would be limited to the hours between 6 AM and 6 PM.	To minimize effects from construction-related noise.
	WATER	
W1	Install temporary sediment trapping devices (i.e. silt fence, wattels/sediment rolls, and straw bales) downstream of the construction site during and after construction.	To prevent or minimize sedimentation in Siphon Ditch.
W2	Ensure vehicles and equipment used during construction are properly maintained and regularly inspected.	To prevent leaking of hazardous materials (e.g., oil, gasoline, and other hydrocarbon fluids) into Siphon Ditch or onto permeable soil.
W3	A spill clean-up kit approved by the Forest Service would be on-site during construction activities.	To facilitate the clean-up of and minimize the impacts from an unexpected hazardous material spill.
W4	Construction equipment and vehicles would not be fueled or serviced within or near Siphon Ditch.	To prevent pollutants from being discharged into watercourses.
	VEGETATION	
V1	The Region 5 Native Plant Policy will be followed for any erosion control or planting/seeding	To conserve local native plant biodiversity and ensure the most rapid recovery of vegetation in bare areas.
V2	Any fill material or seed brought in from off-site would be free of invasive species seed.	To prevent the spread of invasive seed.
	INVASIVE SPECIES	
I1	All fill material would be determined to be free of noxious weeds or invasive non-native plants and approved by the Forest Botanist	To minimize the introduction and spread of invasive non-native plants as directed in FSM 2900
I2	All heavy equipment used for the project would arrive clean: free of soil or plant parts that might carry weeds.	To minimize the introduction and spread of invasive non-native plants as directed in FSM 2900
	TRANSPORTATION	
T1	Detour signs would be placed at the junction of Sky Ranck Road to direct motor vehicles to take alternative route 06S90 and 06S47Y southbond, and 06S72Y northbound.	To minimize impact to recreational/public uses.
	CULTURAL/HISTORIC RESOURCES	
C1	An archaeologist will be present to monitor during ground disturbing activities to ensure avoidance of	To protect previously identified cultural resources

	known cultural resources and to document unanticipated discovery of archaeological deposits, human remains, funerary objects, sacred objects, and objects of cultural patrimony.	and ensure compliance with NHPA, ARPA, and NAGPRA.
C2	To ensure compliance with the Archaeological Resources Protection Act (ARPA), in the unlikely event that unanticipated archaeological deposits are encountered, then construction activities in the vicinity of the discovery will cease, until the archaeologist can determine the nature and significance of the deposit.	To ensure compliance with ARPA.
C3	To ensure compliance with the Native American Grave Protection and Repatriation Act (NAGPRA) the SNF and its contractors will follow the forest's Inadvertent Discovery Plan. The Plan states that in the unlikely event that there is inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony, then all construction activity will cease until the SNF can develop a Plan of Action (POA) with the appropriate Indian Tribe(s), or 30 days has passed from the date of discovery.	To ensure compliance with NAGPRA.
WILDLIFE		
WL1	No trash or other construction material would be left on site following construction activities.	To prevent attraction of wildlife to the construction zone.
AQUATICS		
AQ1	Follow water resources BMP's and conduct construction activities when Soquel Ditch is dry.	Avoid inadvertent injury or mortality of aquatic organisms attracted to ephemeral waters.

2.2 Comparison of Alternatives

Table 2.2 provides a comparison of potential effects for implementing the Proposed Action versus the No Action Alternative. The alternatives are compared with respect to each resource or issue identified through public scoping and internal review of the project by SNF resources staff.

Table 2.2 Comparison of Alternatives by Affected Resources or Issue

Resource/Issue	Alternative 1: No Action	Proposed Action (short bridge)	Alternative 2: (long bridge)
Public Safety	The existing bridge has posted weight limit of 22 tons and is not passable by	The new bridge would be constructed to meet current Forest Service design standards for	The new bridge would be constructed to meet current Forest Service design standards for

	heavier vehicles including emergency vehicles responding to fires. The bridge was built to standards that are not used today. It is limiting the traffic flow on the area – single lane bridge on a double lane road.	bridges. All vehicles up current legal loads (including forest management and emergency vehicles) would be allowed to safety use the bridge.	bridges. All vehicles up current legal loads (including forest management and emergency vehicles) would be allowed to safety use the bridge.
Aquatics	No effect	No effect	No effect
Cultural Resources	Indirect and Cummuative Effects. Failure to replace the bridge would terminate the historic function of the historic logging district and adversely impact the agency's historic relevance as a living system. It would have an adverse effect on significant cultural resources in this portion of the forest, by terminating the treatments designed to protect the resources from catastrophic wildfire and return the integrity of setting.	No effect	No effect
Transportation	Decreases the traffic flow for trucks and motorists.	Low effect. During construction, traffic will be diverted to adjacent roads. New routes and all intersections will be signed according to MUTCD standards.	Low effect. During construction, traffic will be diverted to adjacent roads. New routes and all intersections will be signed according to MUTCD standards.
Hydrology/Water Quality	Major effect. The abutments will continue eroding and undermining the	No effects to hydrology of Siphon Ditch would occur. With adherence to mitigation measures	No effects to hydrology of Siphon Ditch would occur. With adherence to mitigation measures

	footings of the structure.	developed, only minor, short-term effects to water quality in the form of increased sedimentation would occur.	developed, only minor, short-term effects to water quality in the form of increased sedimentation would occur.
Wildlife	No effect	May affect, but not likely to result in a trend toward federal listing or loss of viability.	May affect, but not likely to result in a trend toward federal listing or loss of viability.
FS Sensitive Plants	No effect	No effect	No effect
Invasive Plants	No effect	Low Risk	Low Risk

Each alternative was also evaluated for its effects on the resources based on the key issue that drove the development of the alternative. Issue indicators are parameters used to measure the effects of each alternative on the resources emphasized by the issue. The original proposed action was formulated considering an array of internal issues. While external scoping did not identify any issues that would drive another alternative, it did produce concerns that were incorporated into the proposed action design features. Table 2.3 provides a comparison of the alternatives in relation to the issues described in Purpose and Need.

Table 2.3 Comparison of Alternatives in Relation to the Issue

Alternative 1 (No Action)	**Alternative 2: Proposed Action long bridge**	**Alternative 3 -short bridge**
Continues to function within the 22 tons weight limit but would move toward the end of its design life and may eventually have more structural problems. Restricts the traffic flow from double lane road to a single lane bridge.	Improves access for emergency vehicles, logging equipment, firefighting critical equipment, and other administrative access as needed. Improves traffic flow on a double lane road with a two lane bridge.	Improves access for emergency vehicles, logging equipment, firefighting critical equipment, and other administrative access as needed. Improves traffic flow on a double lane road with a two lane bridge.
	Major ground disturbance. • 1300 cubic yards excavation. • 450 cubic yards fill material. • 120 cubic yards reinforced concrete. • Less environment impact. • Soil nailing required.	Major ground disturbance. • 1400 cubic yards excavation. • 1300 cubic yards fill material. • 210 cubic yards reinforced concrete. • Soil nailing required. • Less environment impact.

	• $600,000 construction cost.	• $700,000 construction cost.

SECTION 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, and social environments of the affected project area and the potential impacts to those environments as a result of implementing each alternative. The following resource specialist reports prepared for this project are incorporated by reference in this EA: Terrestrial Wildlife Biological Assessment and Biological Evaluation (BA/BE); Aquatic Wildlife Biological Evaluation (BE); Management Indicator Species; Sensitive Plant BA/BE / Invasive Plant Risk Assessment; Hydrologic Report; Transportation Report; Public Safery Report; and, Cultural Resource Management Report. These reports are available for review as part of the project record.

This is a site-specific project that by itself does not have international, national, regional, or statewide importance. Project activities will occur where the 6S10 (Sky Ranch road) crosses the Siphon MID Ditch. The project area is part of the forest transportation system that provides access to multiple uses identified in the Purpose and Need for Action of this EA.

3.1 Past, Present, and Reasonably Foreseeable Future Activities

For the cumulative effects analysis, the incremental effects within the project's action area (footprint of the bridge structure, associated areas used for staging, and approximately ¼-mile buffer for noise impacts) are added to other past, present, and reasonably foreseeable future actions in the cumulative effects analysis area. The cumulative effects analysis area differs for each resource analyzed, as defined in each resource's environmental consequences section.

3.2 Biological Resources

3.2.1 Wildlife

An assessment was conducted to determine the effects of implementing the alternatives on wildlife species which may be within or adjacent to the project area, and that may be affected by the project. Details of this analysis are included in the Wildlife Resource Report - Soquel Bridge Replacement Project. The following species were addressed in this analysis.

- California spotted owl *Strix occidentalis occidentalis*
- Northern goshawk *Accipiter gentilis*
- Great gray owl *Strix nebulosa*
- American marten *Martes americana*
- Pacific fisher *Martes pennanti (pacifica) DPS*
- Pallid bat *Antrozous pallidus*
- Fringed-tailed Myotis *Myotis thysanodes*

Based on the assessment of direct, indirect, and cumulative effects of the Soquel Bridge replacement project, it has been determined that the no-action alternative will not affect these species, and the

action alternatives, may affect, but not likely to result in a trend toward federal listing or loss of viability. Specifically, there are no nesting, denning, or roosting sites for these species in or near to the project site that would be adversely affected by the action alternatives. The action alternatives may result in noise impacts to terrestrial wildlife species as a result of heavy equipment operation. However, these effects are not expected to be significant because of the limited location of activity on roads and parking areas, as well as the limited duration of the activity during the construction season. If these noises disturb these species then they would most likely move away from the noises and move into the abundant habitat surrounding the project area.

3.2.2 Vegetation

A field survey of the project area was conducted by the forest botanist on January 26, 2014. Because of the low snowpack at that time, it was possible to see most of the plants growing at the site and to determine whether or not noxious weeds or invasive non-native plants were present in the immediate area of the bridge and the staging area. The project area has plants of wet or moist sites growing in the ditch proper, and is surrounded by mixed conifer forest comprised of incense cedar (*Calocedrus decurrens),* white fir (*Abies concolor*), and sugar pine (*Pinus lambertiana*) with primarily mountain whitethorn (*Ceanothus cordulatus*) and greenleaf manzanita *(Arctostaphylos patula*) as understory shrubs.

No FS sensitive plants were observed and none are likely to be present. The fact that the ditch does not run water all year makes it unlikely or impossible for FS sensitive plants of riparian or aquatic habitats to inhabitat the ditch. The center of the ditch is moist year-round however, and characterized by plants of moist sites such as western azalea (*Rhododendron occidentale*), largeleaf avens (*Geum macrophyllum* var. *perincisum*), speedwell (*Veronica* sp.), woodland strawberry (*Fragaria vesca),* self heal (*Prunella vulgaris*), sedge (*Carex* sp.), and a variety of moss and liverwort species typical of moist sites. Native plant biodiversity: any seeding, planting, or erosion control would be done according to the Region 5 Native Plant Policy (USFS, 1994) and approved by the forest botanist, thus the adjacent plant community is expected to recover rapidly from the relatively small area to be disturbed by either action alternative. Short term erosion control will be accomplished using a sterile grain such as Regreen or Quickquard – these temporarily cover the soil well but do not persist and prevent native species from establishing over the long term. A planting plan would be developed for the steepest areas that would remain vulnerable for too long unless revegetation is hastened along. This would require collection of native cuttings or seed from the immediate site and either hiring a nursery/revegetation contractor to grow out container stock a year or two ahead of time in order to have it available when the new bridge is installed.

In summary, no noxious weeds or non-native invasive weeds were observed at the project site. Project design measures for equipment cleaning and use of weed-free fill would be adhered to, the risk of introduction of invasive weeds is determined by the Forest Botanist to be low. Any revegetation or erosion control will follow the FS Region 5 Native Plant Policy and will be done with the approval of the forest botanist, thus the diversity of the native vegetation at and near the bridge site will be conserved under either action alternative. An Erosion Control Plan (ECP) would be designed and implemented prior to ground disturbances. There are no anticipated cumulative effects for any of the atlternatives to western analea, largeleaf avens, woodland strawberry, speedwell, or self heal because of the mitigation of planting plans and weed control measures that will reduce the risk of weeds and ensure vegetation on the slopes.

Without weed prevention measures, this project poses a moderate risk of introducing noxious weeds into the area of the Soquel Bridge Project because heavy equipment will be used and fill will be imported (Alternative 2 - Proposed Action long bridge or Alternative 3 – short bridge). This risk is reduced to a low level if the project design measures for noxious weed prevention (Invasive Species) are followed.

3.2.3 Aquatics

An assessment was conducted to determine the effects of implementing the alternatives on aquatic species which may be within or adjacent to the project area, and that may be affected by the project.The following species were addressed in this analysis:

Amphibians	
California red-legged frog	*Rana aurora draytoni*
California tiger Salamander	*Ambystoma californiense*
Kings River slender salamander	*Batrachoseps regius*
Limestone salamander	*Hydromantes brunus*
Yosemite toad	*Anaxyrus (Bufo) canorus*
Foothill yellow-legged frog	*Rana boylii*
Sierra Nevada yellow-legged frog	*Rana sierrae*
Pacific chorus frog	*Hyla Regilla*
Reptiles	
Southwestern pond turtle	*Actinemys (=Clemmys) marmorata pallida*
Northwestern pond turtle	*Actinemys (=Clemmys) marmorata marmorata*
Blunt-nosed leopard lizard	*Gambelia (=Crotaphytus) sila*
Giant garter snake	*Thamnophis gigas*
Fish	
Owens tui chub	*Gila bicolor snyderi*
Delta smelt	*Hypomesus transpacificus*
Kern brook lamprey	*Lampetra hubbsi*
Hardhead	*Mylopharodon conocephalus*
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*
Paiute cutthroat trout	*Oncorhynchus clarki seleniris*
Central Valley Steelhead	*Oncorhynchus mykiss*
Invertebrates	
Vernal pool fairy shrimp	*Branchinecta lynchi*
Vernal pool tadpole shrimp	*Lepidurus packardi*

Based on the assessment of direct, indirect, and cumulative effects, it has been determined that any of the alternatives for the Soquel Bridge replacement project would not affect these species. Specifically, either these species' elevation ranges do not include the project area; or the species' geographic ranges do not encompass the project area; or the project area does not contain the habitat required by these species. Therefore there is no effect on these aquatic species.

3.3 Transportation

This report identifies and analyzes the transportation system associated with a detour route that will be needed for the demolition and replacement of the functionally deficient bridge over the Siphon Mid Ditch in the SNF. The bridge is located along National Forest System road 6S10 which provides one of the most direct routes to the northern portion of the Sierra National Forest. The demolition of the old bridge and the construction of the new bridge will require road 6S10 to be closed to travel for 90-120 days. Therefore, a detour route has been identified and analyzed to accommodate safe and unobstructed travel for public and administrative traffic for the duration of the project.

Road Maintenance

Routine road maintenance would be needed on the identified transportation system detour route to meet access needs and to correct road deficiencies that are causing adverse environmental impacts. This work includes blading, brushing, culvert cleaning and possible aggregate placement where soil erosion is evident. All roads will be maintained for passenger car travel. All road maintenance shall follow Sierra National Forest Land Resource Management Plan Standards and Guidelines and BMP's.

Road 6S72 and road 6S72Y are maintenance level 2 roads with a native surface and are open to vehicle traffic. Blading and brushing will be needed to ensure safe and accessible passage by vehicle traffic. Road 6S90 is a maintenance level 2 road with a native surface and is open to vehicle traffic. Blading will be needed to ensure safe and accessible passage by vehicle traffic. Road 6S90 is a historic railroad grade and no widening of the road template or through-cuts will occur. Road 6S47Y is a maintenance level 3 road with a well graded aggregate surface and no road maintenance will be needed (see Table 3.1).

Any road conflicts with archeological sites will be addressed with guidance provided by the forest archeologist.

Table 3.1 Road Maintenance Work

Road Number	**Road Name**	**Maintenance Level**	**Mileage**	**Maintenance**
6S72	Boneyard Mdw.	2	0.1	Blading, Brushing
6S72Y	Siphon Overflow	2	0.7	Blading, Brushing
6S90	Sugar Pine	2	2.5	Blading
6S47Y	California Creek	3	1.3	None

Alternative 1 – No Action

Direct/Indirect Effects

The current bridg is adequate for most recreational use vehicles; therefore the No Action Alternative would have not direct impacts on planned land use or recreational activities.

Cumulative Effects

Implementation of the No Action Alternative, along with past, present, and reasonably foreseeable future actions, would have no cumulative effects to land use and recreation resources.

Alternative 2 Proposed Action – Long Bridge & Alternative 3 – Short Bridge

Direct/Indirect Effects

The direct effects on forest users use of road 6S10 would be minimal and only during the time of construction. This impact would be mitigated through signage informing users of an alternative route. No indirect effects would result from the implementation of any of these alternatives.

Cumulative Effects

These effects would be short-therm and minimal.

3.4 Hydrological Resources/Water Quality

Construction adjacent to Siphon MID Ditch has the potential to increase soil mobility and increase turbidity in surface waters, adversely affecting water quality if not properly stabilized during and after construction while the channel is dry. The removal of vegetation would also result in soil disturbances that would require stabilization. Potential stormwater discharges of construction-related contaminants could occur. Asphalt application can contribute concentrations of toxic hydrocarbons, other toxic organic compounds, oils and greases, and metals to stormwater runoff if not properly managed. Construction, stormwater, and erosion BMPs would ensure the protection of water quality in the Siphon MID Ditch and other downstream waterbodies.

The installation of the new abutments and related retention walls on the drainage sideslopes would be completed while the channel is dry, thus reducing the potential to affect the turbidity levels of other downstream water bodies. Precautions would be implemented to ensure that refueling and maintenance of vehicles or machines is completed at designated areas away from water channel. An ECP would be designed and implemented prior to ground disturbances.

Standard erosion control and material capture measures, included with the ECP for the project, would prevent materials from reaching the channel through all phases of the project. Soil stabilization during and after construction would increase soil stability compared to pre-construction conditions. The plan would comply with all applicable permits and policies relevant to the project, and would prevent the potential for degradation of water quality associated with construction activities.

Alternative 1 – No Action

Direct/Indirect Effects

The No Action Alternative would have no immediate direct effects to hydrological resources. However, if the bridge is not reconstructed the erosion of the abutements would continue to supply additional sediment to the watershed due to the continuous runoff.

Alternative 2 Proposed Action – Long Bridge & Alternative 3 – Short Bridge

Direct/Indirect Effects

The two action alternatives would not alter prevailing topography and/or surface relief in the area, nor would it affect the free-flowing nature of Siphon MID Ditch.

During the three-four months of construction, an increase in sedimentation would cause a short-term, minor, direct effect to water quality. Indirect effects in the form of temporary increases in sedimentation would also occur for one month following construction, the approximate time it would take for revegetation efforts to be effective in stabilizing soil. (i.e. seeds to germinate, vegetation mats to take root).

With strict adherence to BMPs/mitigation measures the action alternatives would have no adverse or long-therm effects to the water quality of Siphon MID Ditch. Although this project has the potential to add some sediment to the ditch channel bed during the construction process, since the channel would be dry during construction, and soil and slopes will subsequently be stabilized with rip rap and native vegetation, as appropriate, prior to the rainy season, it is unlikely that there would be measurable change in water quality. Therefore, the long-term negative impacts on water quality from construction of the new bridge will be negligible.

3.5 Cultural Resources

In compliance with Section 106 of the National Historic Preservation Act, the forest's Heritage Program (HP) staff analyzed the potential impacts of the proposed bridge replacement project to cultural resources within the Area of Potential Effect (APE) of the undertaking. The cultural resources identification process included review of existing HP records, and field reconnaissance by HP staff. At the conclusion of the identification phase, it was determined that a total of seven cultural resources are located within, or in the general vicinity of, the APE. Four cultural resources are located within the APE, and an additional three cultural resources are located inside a ¼-mile radius of the APE. The four cultural resources within the APE represent three historic districts and one historic structure. The cultural resources within the APE are comprised of the Soquel Ditch Bridge (FS# 05155101659), Forest system road 6S10 which is associated with the Madera Sugar Pine Lumber Company Historic District (FS# 05155700287), and the Soquel Ditch/Siphon which is thematically associated with both the Madera Flume and Trading Company Historic District (FS# 05155100452), and the Madera Irrigation District Historic District (FS# 051551001554). The three cultural resources outside of, but within a ¼-mile radius are prehistoric sites FS# 05155700077 and FS# 05155700225, and historic site FS# 05155700224.

1. FS# 05155101659, the Soquel Ditch Bridge, is a common deck truss bridge with a continuous span concrete deck and a steel Bailey truss. The bridge was constructed in 1950 to provide enhanced safety and functionality for greater load-bearing vehicles and increased vehicular

traffic. Although the bridge qualifies as an historic resource due to its age (50 years or greater), the bridge does not meet the criteria for evaluation of significance found at 36 CFR 60.4; thus, it is determined to be not eligible for listing in the NRHP and does not qualify as a historic property. The forest has determined that replacement of the Soquel Ditch Bridge will not constitute an adverse effect.

2. FS#05155700287, the Madera Sugar Pine Lumber Company Historic District (MSPLCHD), is an extensive historic railroad logging system comprised of over 200 miles of railroad grades and an additional 200-300 associated cultural features. The historic district has not had its eligibility for listing in the National Register of Historic Places (NRHP) formally evaluated; therefore, the SNF is treating the historic railroad logging system as an NRHP eligible historic district. Within the project area, the MSPLCHD is manifest by the corridor of forest system road 6S10, and a portion of the original grade and a through-cut feature. The current alignment of the road at the ditch crossing represents an alteration in design to the original railroad grade, and the original bridge construction activities altered the design and materials of the historic railroad grade to the point that it has adversely impacted its integrity of setting, feeling, association, design and materials. Therefore, the forest has determined that due to existing impacts to the integrity of the historic district, that the proposed bridge replacement will not adversely effect the MSPLCHD. The forest will have an archaeologist present to monitor construction activities to ensure that the portion of the original railroad grade and through-cut feature on the northwestern edge of the APE are avoided.

3. FS# 05155100452, the Madera Flume and Trading Company Historic District (MFTCHD), is another historic railroad logging system that has already been formally evaluated as eligible for listing in the NRHP with concurrence from the California Office of Historic Preservation (SHPO). Within the APE of the proposed project, the MFTCHD is manifest as the ditch that the bridge spans. The ditch is the remnants of what was once a larger and extensive flume system constructed by the Madera Flume and Trading Company in the latter part of the nineteenth century. The original diversion ditch was installed in the early 1880's and was used to divert water from NF Willow Creek to the Willow Creek Mill and a flume that flowed to California Mill #3 near Nichols Meadow. Most of the original design and materials of the flume system were long gone by the time the MFTCHD was evaluated for the NRHP; thus, the ditch alignment was determined to be a non-contributing element of the historic district with SHPO concurrence. As a non-contributing element, the ditch does not qualify as a historic property; therefore, the forest has determined that the bridge replacement project will not adversely effect the MFTCHD.

4. FS# 051551001554, the Madera Irrigation District Historic District (MIDHD), is a large and extensive water conveyance system constructed to provide irrigation water to agriculture in the San Joaquin Valley. The historic district has not had its eligibility for listing in the NRHP formally evaluated; therefore, the SNF is treating the historic irrigation system as an NRHP eligible historic district. Within the APE of the proposed project, the MIDHD is manifest as the Soquel Ditch/Siphon, or, in other words, the ditch that the bridge spans. The ditch is the remnants of what was once a larger and extensive flume system constructed by the Madera Flume and Trading Company in the latter part of the nineteenth century (see 3 above). Subsequent to the demise of railroad logging in the area (circa 1930s), the MID obtained rights to divert water from the North Fork of Willow Creek to California Creek and the Fresno River

watershed. The ditch does not appear to have been used much, and does not have the appearance of being used for approximately 20-30 years. The ditch has been allowed to "naturalize" and no longer conveys the feeling of a culturally constructed feature, but more closely resembles a natural drainage with a well-established riparian community and conifers along its bed and banks. The portion of the Soquel Ditch/Siphon that crosses the APE of the Soquel Ditch Bridge Replacement project does not appear to be a contributing element to the MIDHD due to loss of integrity of setting, feeling, and association. The forest has determined that the bridge replacement project will not adversely effect the MIDHD.

The three cultural resources located outside of, but within a ¼-mile radius of the APE are prehistoric sites FS# 05155700077 and FS# 05155700225, and historic site FS# 05155700224. These cultural resources are well outside of any proposed impacts, and will not be affected by project implementation. However, the presence of significant cultural resources within the general vicinity of the project indicates that there is an increased potential for unidentified archaeological deposits to be present in the APE. Additionally, the SNF has legal responsibilities under other authorities than the NHPA, namely the Archaeological Resources Protection Act (ARPA) and the Native American Grave Protection and Repatriation Act (NAGPRA).

In order to meet its regulatory requirements to protect cultural resources, the SNF is implementing the following resource protection measures for the Soquel Ditch Bridge Replacement Project.

- An archaeologist will be present to monitor during ground disturbing activities to ensure avoidance of known cultural resources and to document unanticipated discovery of archaeological deposits, human remains, funerary objects, sacred objects, and objects of cultural patrimony.
- To ensure compliance with the Archaeological Resources Protection Act (ARPA), in the unlikely event that unanticipated archaeological deposits are encountered, then construction activities in the vicinity of the discovery will cease, until the archaeologist can determine the nature and significance of the deposit.
- To ensure compliance with the Native American Grave Protection and Repatriation Act (NAGPRA) the SNF and its contractors will follow the forest's Inadvertent Discovery Plan. The Plan states that in the unlikely event that there is inadvertent discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony, then all construction activity will cease until the SNF can develop a Plan of Action (POA) with the appropriate Indian Tribe(s), or 30 days has passed from the date of discovery.

With the incorporation of these resource protection measures, the SNF has determined that the proposed Soquel Ditch Bridge Replacement Project will have no significant impacts to any historic properties, and that the forest's regulatory responsibilities under NHPA, ARPA, and NAGPRA are satisfied.

Alternative 1 – No Action

Direct/Indirect Effects

The No Action Alternative would have no immediate direct effects to the known cultural resoures in the project area. However, if the bridge is not reconstructed, then there would be indirect effects to

the historic function of the railroad logging system by limiting or altering the ability of logging trucks to use the historic logging transportation system. It is important to understand that the SNF's current road system in this portion of the forest is predominantly built on top of the historic railroad grades of the MSPLCHD. Therefore, since the existing bridge cannot support logging trucks, then failure to replace the bridge would terminate the historic function of the historic logging district and adversely impact the agency's mission and historic relevance as a living system.

Cumulative Effects

For the purpose of this project, the cumulative effects spatial boundary is that portion of the Bass Lake Ranger District that is accessed by Sky Ranch Road. The Grey's Mountain Ecological Restoration Project (GMERP) is one current project that is within this boundary. Reasonably foreseeable future actions include, a frequently discussed, but as of yet unfunded, ecological restoration project in the Nelder Grove Special Interest Area (SIA). The GMERP is a large-scale project that includes logging, meadow restoration, and cultural resources protection and enhancement. The Nelder Grove SIA is the only special interst area on the forest that has been designiated for protection, enhancement, and interpretation of cultural resources. In the No Action Alternative, failure to replace the Soquel Ditch Bridge would have an adverse effect on significant cultural resources in this portion of the forest, by terminating the treatments designed to protect the resources from catastrophic wildfire and return the landscape to its integrity of setting.

Alternative 2 Proposed Action – Long Bridge

Direct/Indirect Effects

The Proposed Action will have no adverse effect on any historic properties.

Cumulative Effects

Implementatin of the Proposed Action in conjunction with the Grey's Mountain and Nelder Grove ecological restoration projects will have a positive benefit on cultural resources in this portion of the forest.

Alternative 3 – Short Bridge

Direct/Indirect Effects

The effects on the Alternative 2 (short bridge) would be the same as the direct/indirect effects listed on the Proposed Action.

Cumulative Effects

The cumulative effects for the Alternative 2 (short bridge) would be the same as the cumulative effects listed on the Proposed Action.

3.6 Public Safety

An assessment was conducted to determine the effects of implementing each of the alternatives on public safety which may be within or adjacent to the project area, and that may be affected by the project. Specific safety concerns include the reduced maximum gross weight limit altering emergency response routes and in the increase in public use.

Alternative 1 –No Action

Direct/Indirect Effects

The No Action Alternative would have direct effects to public safety. If the bridge is not reconstructed, search and rescue, emergency fire and medical vehicles would be delayed in responding to emergency incidents by having to take alternate routes. The bridge'slane limitations decreases the traffic flow for trucks, but most important, it has increased the chances of an accident as motorists have to stop at one end of the bridge and wait for trucks to cross.

Alternative 2 Proposed Action – Long Bridge & Alternative 3 – Short Bridge

Direct/Indirect Effects

The improved bridge would allow heavy equipment used in implementation of fuels reduction, timber harvesting, forest health treatments, and construction to access the northeast part of the SNF. Also, the new double lane bridge would improve the traffic flow in the area. Also, any type of timber harvesting, heavy construction or vegetation management activities would occur via a more direct route. It would facilitate the access to the area and, consequently, would provide a safer road to all the motorists.

3.7 Summary

The SNF is considering a proposal to replace a functionally deficient bridge over the Siphon Ditch. The Soquel Ditch Bridge is located in Madera County, 40 miles northeast of NorthFork along 6S10 Road, on the Bass Lake Ranger District. 6S10 provides one of the most direct routes to the northeast portions of the SNF.

Although the existing bridge met the Region 5 design standards for steel/concrete when it was built, the Bailey Bridge panels (steel trusses) are known to suffer fatigue cracks found the welds and panels, and are subject to critical fracture. The bridge is exceeding its intended structural life; it does not meet the Forest Service's current standards; and it is inadequately serving today's functional demants for road 6S10. Currently emergency response vehicles must use less direct and more primitive routes to reach the northern areas of SNF, which can cause substantial delays in response time.

The new bridge would meet the FS's current design standards, which follow AASTHO standard HS-20. This load design rating means that timber hauling and other vegetation management activities can occur through a more direct route and, consequently, will be more effective. More importantly, emergency vehicles and equipment critical for responding to fires on the northern SNF may pass over the bridge. Also, the new bridge would meet the traffic needs of road 6S10. In conclusion, the proposed action would meet the purpose and need of this analysis by providing for public safety, improve traffic flow, and elimitates load restriction issues on a vital road that provides access to the northern portion of the SNF.

SECTION 4 CONSULTATION AND COORDINATION

The following is a list of federal/state/local agencies and organizations contacted during public scoping:

Madera Irrigation District
Eastern Madera Visitor Bureau
CA Department of Fish & Game
Coarsegold Resource Conservation District
Stewards of SN
Eastern Madera County Fire Safe Council

The following is a list of tribes contacted during public scoping:

Sierra Mono Museum
Mono Nation
Sierra Nevada Native American Coalition
Haslett Basin Traditional Committee
American Indian Council of Mariposa
Table Mountain Rancheria
Picayune Rancheria of Chukchansi Indians
Cold Spring Rancheria of Mono Indians

The following is a list of preparers of this Environmental Assessment:

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