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Final Environmental Impact Statement for Revision of the Sequoia and Sierra National Forests Land Management Plans

Pre-objection Version

Volume 4: Appendices C and D

Cover Photo: Sunset in the Dome Land Wilderness, Kern Plateau, Sequoia National Forest. Photo by Jonathan Markovich (USDA Forest Service).

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Acronyms and Abbreviations

AF	acre-feet
AUM	animal use month
BLM	Bureau of Land Management
BMA	backcountry management area
BMP	best management practice
CAR	critical aquatic refuge
CBA	challenging backroad area
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CWHR	California wildlife habitat relationship
CW	conservation watershed
DDT	dichlorodiphenyltrichloroethane
DEIS	draft environmental impact statement
DPS	distinct population segment
DRA	destination recreation area
EIS	environmental impact statement
EPA	Environmental Protection Agency
FEIS	final environmental impact statement
FERC	Federal Energy Regulatory Commission
FSH	Forest Service Handbook
GIS	geographical information systems
GRA	general recreation area
GSNM	Giant Sequoia National Monument
GTR	general technical report
GWPZ	general wildfire protection zone
HUC	hydraulic unit code
HVRAs	highly valued resources and assets
IRA	inventoried roadless area
LRMP	land and resource management plan
MMbf	millions of board feet
MMcf	millions of cubic feet
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NRIS	Natural Resources Information System
NRV	natural range of variation
NVUM	National Visitor Use Monitoring
NWPS	National Wildlife Preservation System
OHV	off-highway vehicle
OSV	over-snow vehicle
PAC	protected activity center
PCT	Pacific Crest Trail
PM	particulate matter
PM_{10}	particulate matter less than 10 micrometers
$PM_{2.5}$	particulate matter less than 2.5 micrometers
RCA	riparian conservation area
RMA	recreation management area
ROS	recreation opportunity spectrum
SIO	scenery integrity objective
SMS	scenery management system
TMDL	total maximum daily load
U.S.C.	United States Code
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WCF	watershed condition framework
WHMA	wildlife habitat management area
WMZ	wildfire maintenance zone
WRAP	watershed restoration action plan
WRZ	wildfire restoration zone
WSR	wild and scenic river

Appendix C.
Wild and Scenic Rivers Study Process

Overview

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Wild and Scenic Rivers Act,[1] which established the system, is notable for safeguarding the special character of these rivers, while recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Section 5(d)(1) of the Act states:

> In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potential. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all federal agencies as potential alternative uses of the water and related land resources involved.

As outlined in the Wild and Scenic Rivers Act, in developing a proposed new plan or proposed plan revision, National Forests are required by the 2012 Planning Rule (36 CFR 219.7(c)(2)(vi)) to "identify the eligibility of rivers for inclusion in the National Wild and Scenic Rivers System, unless a systematic inventory has been previously completed and documented, and there are no changed circumstances that warrant additional review."

The 2012 Planning Rule also requires the Forest Service to manage eligible and suitable rivers to protect the values that provide the basis for their inclusion in the National Wild and Scenic Rivers System.

There is a four-step process outlined in FSH 1909.12, Chapter 80 that provides direction for inventory, eligibility determination, classification, and suitability. Additional guidance can be found in the Interagency Wild and Scenic Rivers Coordinating Council technical paper: The Wild and Scenic River Study Process (Interagency Wild and Scenic Rivers Coordinating Council 1999).

1. **Inventory:** The first step identifies all potential wild, scenic, and recreational rivers flowing wholly or partially on National Forest System lands as identified in the Nationwide Rivers Inventory and by other sources. At minimum, the inventory includes all rivers named on a standard U. S. Geological Survey 7.5 minute USGS quadrangle map. If a systematic inventory of eligible rivers has already been completed, the extent of the study process during plan development or revision can be limited to evaluation of any rivers that were not previously evaluated for eligibility and those with changed circumstances.
2. **Eligibility determination:** The second step is to determine eligibility for inclusion in the National Wild and Scenic Rivers System. To be eligible for designation, a river must be free-flowing and possess one or more "outstandingly remarkable values." Thus, the eligibility analysis consists of an examination of the river's hydrology, including any man-made alterations, and an inventory of its natural, cultural, and recreational resources.

[1] Public Law 90-542; 16 U.S.C. 1271 et seq.

An outstandingly remarkable value must be river-related and determined to be a unique, rare, or exemplary feature that is significant regionally or nationally. Potential outstandingly remarkable values may include scenery, recreation, geology, fish and wildlife populations and habitat, prehistory, history, or other river-related values (i.e., paleontological or botanical). While the spectrum of resources that may be considered is broad, to be "river-related," values should:

- Be located in the river or on its immediate shore lands (generally within ¼ mile on either side of the river);
- Contribute substantially to the functioning of the river ecosystem; and/or
- Owe their location or existence to the presence of the river.

3. **Classification:** The third step is to assign a preliminary classification of "wild," "scenic," or "recreational," to each eligible river or river segment. Classification is based on the condition of the river segment and the development level of adjacent lands as they exist at the time of the study. When levels of human use and activity create different degrees of development within the study area, rivers segments may be further divided into segments and assigned different classifications. In cases where a river has one or more classifications, each river segment identified should be of sufficient length to warrant its own unique management.

   For example, a 100-mile wild and scenic river found to be eligible may be segmented and classified as "wild" for 50 miles, "scenic" for 30 miles, and "recreational" for 20 miles. A final classification will be assigned during the comprehensive river management planning process required by the Wild and Scenic River Act if the river is designated by Congress. The Act and interagency guidelines provide general descriptions of each classification in terms of water resources development, shoreline development, accessibility, and water quality:

   - **Wild:** Free of impoundments. Generally inaccessible except by trail. Shorelines essentially primitive with little or no evidence of human activity. Meets, or exceeds water quality criteria.
   - **Scenic:** Free of impoundments. Accessible in places by road. Shorelines largely primitive and undeveloped with no substantial evidence of human activities. No water quality criteria.
   - **Recreational:** May have some impoundment or diversion, provided the waterway remains generally natural and riverine in appearance. Readily accessible by road or railroad. Shorelines may have some development and substantial evidence of human activity. No water quality criteria.

4. **Suitability:** The fourth step is to study suitability and may occur during forest plan revision but is not required. Suitability studies address these questions:

   - Should the river's free-flowing character, water quality, and outstandingly remarkable values be protected, or are one or more other uses important enough to warrant doing otherwise?
   - Will the river's free-flowing character, water quality, and outstandingly remarkable values be protected through designation?
   - Will the benefits of designation exceed the benefits of non-designation?
   - Is designation the best method for protecting the river corridor?
   - Is there a demonstrated commitment to protect the river by any non-Federal entities that may be partially responsible for implementing protective management?

Suitability was not completed as part of the current forest plan revision process, but will be completed in a future separate National Environmental Policy Act (NEPA) process.

This appendix begins by providing information related to the most recent step in the wild and scenic rivers study process (eligibility study), followed by a summary of the whole process, including the inventory:

- Wild and Scenic Rivers Eligibility and Preliminary Classification Summary
- Detailed Study Results
- Description of the Wild and Scenic Rivers Study Process

Wild and Scenic Rivers Eligibility and Preliminary Classifications Summary

Map C-1 and Table C-1 provide a summary of the river segments within the Sequoia National Forest that were determined to be eligible for inclusion in the National Wild and Scenic Rivers System, including preliminary classification. Map C-2 and Table C-2 provide a summary of the river segments within the Sierra National Forest that were determined to be eligible for inclusion in the National Wild and Scenic Rivers System, including preliminary classification. Larger, higher resolution maps are available to view online at the Pacific Southwest Region (Region 5) web page at: http://www.fs.usda.gov/detail/r5/landmanagement/planning/?cid=STELPRD3833668.

Sequoia National Forest

Table C-1. Sequoia National Forest river segments determined to be eligible for inclusion in the National Wild and Scenic Rivers System

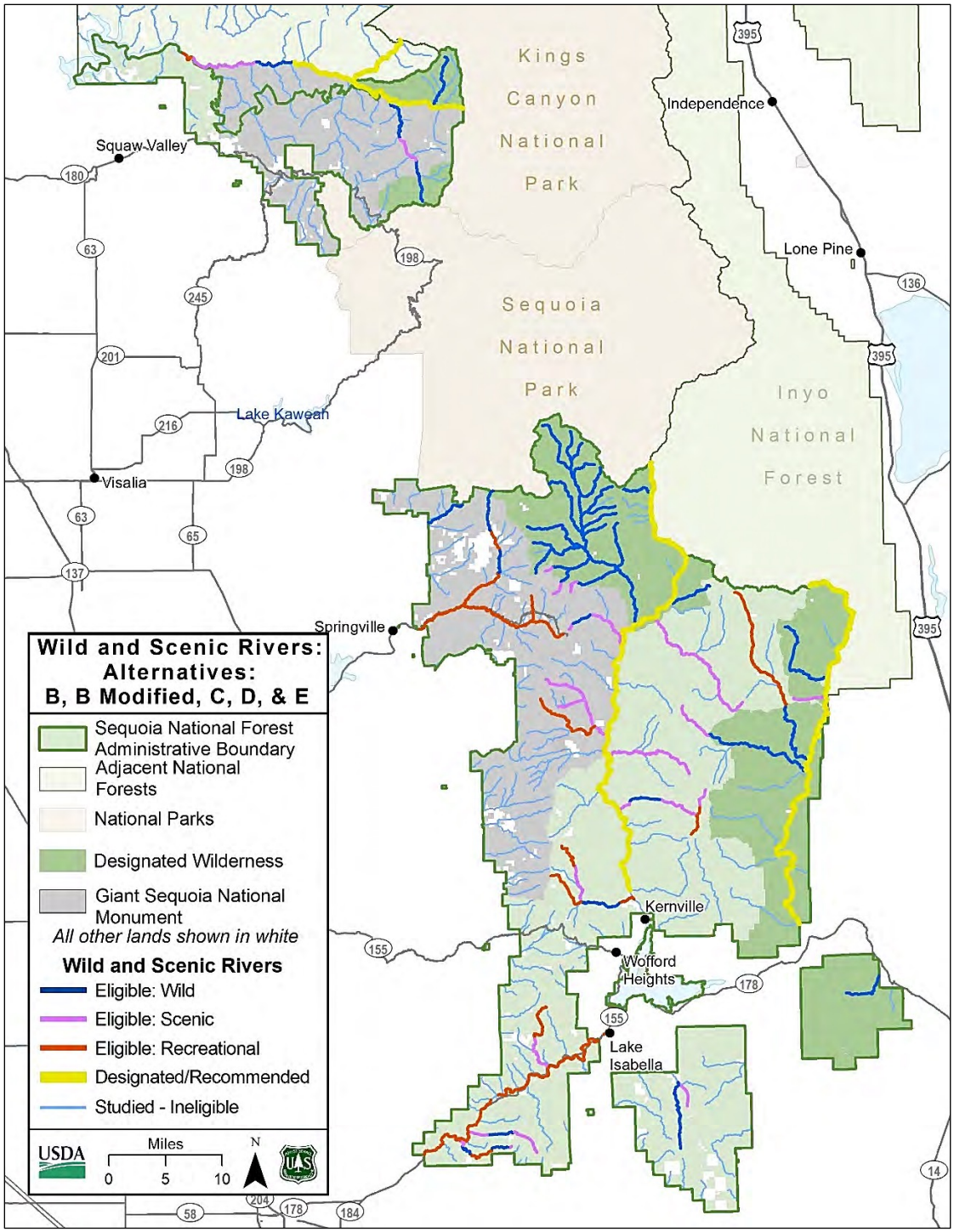
River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
Kern River	2.104.1	0.4	Recreational	Scenery, Recreation, Wildlife Population and Habitat, Prehistory, History
Kern River	2.104.2	0.5	Recreational	Scenery, Recreation, Wildlife Population and Habitat, Prehistory, History
Kern River	2.104.3	3.0	Recreational	Scenery, Recreation, Wildlife Population and Habitat, Prehistory, History
Kern River	2.104.4	12.5	Recreational	Scenery, Wildlife Population and Habitat
Kern River	2.104.6	10.4	Recreational	Scenery, Wildlife Population and Habitat, Prehistory, History
Kern River	2.104.8	0.2	Recreational	Scenery, Wildlife Population and Habitat, Prehistory, History
Little Kern River	2.118	12.4	Wild	Scenery, Recreation, Geology, Fish Population and Habitat, Wildlife Population and Habitat
Little Kern River	2.119	12.0	Wild	Recreation, Fish Population and Habitat, Wildlife Population and Habitat
North Fork Middle Fork Tule River	2.159.1	2.7 (1.9 in GSNM)	Wild	Botany
North Fork Middle Fork Tule River	2.159.2	1.1 (1.1 in GSNM)	Wild	Recreation, Botany

River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
North Fork Middle Fork Tule River	2.159.3	2.3 (2.3 in GSNM)	Recreational	Recreation, Botany
North Fork Middle Fork Tule River	2.159.4	2.3 (2.3 in GSNM)	Wild	Recreation, Botany
North Fork Middle Fork Tule River	2.159.5	5.1 (5.1 in GSNM)	Recreational	Recreation
North Fork Tule River	2.160	3.9 (3.9 in GSNM)	Wild	Recreation, Prehistory, History
Alder Creek	2.5.2	2.7 (2.7 in GSNM)	Scenic	Recreation
Alpine Creek	2.7	7.2	Wild	Fish Population and Habitat
Belknap Creek	2.20	2.3 (2.3 in GSNM)	Recreational	Geology, Prehistory, History
Bitter Creek	2.22	3.3	Scenic	Recreation, Fish Population and Habitat, Prehistory
Boulder Creek	2.28.1	4.0 (1.5 in GSNM)	Wild	Geology
Boulder Creek	2.28.2	2.9 (2.9 in GSNM)	Scenic	Geology
Boulder Creek	2.28.3	4.7 (4.7 in GSNM)	Wild	Geology
Brush Creek	2.30	10.0	Scenic	Scenery, Recreation, Geology, Wildlife Population and Habitat
Bull Run Creek	2.32.1	2.7	Recreational	Prehistory, History
Bull Run Creek	2.32.2	3.9	Scenic	Prehistory, History
Bull Run Creek	2.32.3	4.1	Wild	Prehistory, History
Bull Run Creek	2.32.4	1.7	Recreational	Geology, Prehistory, History
Calf Creek	2.36.2	0.3	Recreational	Prehistory
Clicks Creek	2.45.1	1.3 (1.3 in GSNM)	Scenic	Fish Population and Habitat
Clicks Creek	2.45.2	4.5	Wild	Fish Population and Habitat
Deep Creek	2.60	4.8	Wild	Fish Population and Habitat
Deep Creek	2.61	4.2	Recreational	Geology, Prehistory
Dry Meadow Creek	2.70.1	6.7 (6.7 in GSNM)	Scenic	Recreation, Geology
Dry Meadow Creek	2.70.2	2.6 (2.6 in GSNM)	Scenic	Scenery, Recreation, Geology, Prehistory
Fish Creek	2.78.1	1.5 (1.5 in GSNM)	Scenic	Recreation, Prehistory, Fish Population and Habitat
Fish Creek	2.78.2	4.4	Wild	Recreation, Prehistory, Fish Population and Habitat
Fish Creek	2.79.1	15.3	Recreational	Fish Population and Habitat, Wildlife Population and Habitat, Prehistory
Fish Creek	2.79.2	8.1	Wild	Fish Population and Habitat, Wildlife Population and Habitat, Prehistory
Freeman Creek	2.81.1	0.7 (0.7 in GSNM)	Scenic	Recreation, Prehistory, Botany
Freeman Creek	2.81.2	1.8 (1.8 in GSNM)	Wild	Recreation, Prehistory, Botany

River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
Freeman Creek	2.81.3	4.9 (4.9 in GSNM)	Scenic	Recreation, Prehistory, Botany
Greenhorn Creek	2.89.1	4.4	Recreational	Geology, History, Prehistory
Greenhorn Creek	2.89.2	4.0	Scenic	Geology, History, Prehistory
Grizzly Creek	2.90	5.5 (0.1 in GSNM)	Wild	Scenery, Geology
Jacks Creek	2.99	4.4	Wild	Wildlife Population and Habitat
Lion Creek	2.114	3.5	Wild	Fish Population and Habitat
Little Kern Lake Creek	2.117	3.1	Wild	Geology, Prehistory
Lost Creek	2.125	9.4	Wild	Recreation, Fish Population and Habitat, Prehistory
Lucas Creek	2.126.1	3.2	Scenic	Wildlife Population and Habitat, History, Prehistory
Lucas Creek	2.126.2	2.6	Wild	Wildlife Population and Habitat, History, Prehistory
Lucas Creek	2.126.3	1.7	Scenic	Wildlife Population and Habitat, History, Prehistory
Lucas Creek	2.126.4	0.1	Recreational	Wildlife Population and Habitat, History, Prehistory
Middle Fork Erskine Creek	2.137	2.4	Scenic	Geology, Wildlife, Botany
Middle Fork Tule River	2.138	5.1 (4.7 in GSNM)	Recreational	Recreation, History, Prehistory
Mountaineer Creek	2.146	5.5	Wild	Fish Population and Habitat, Prehistory
Nobe Young Creek	2.153.1	5.2 (5.2 in GSNM)	Recreational	Prehistory, History
Nobe Young Creek	2.153.3	2.6 (2.6 in GSNM)	Recreational	Prehistory, History
North Fork Clicks Creek	2.155.1	0.8 (0.8 in GSNM)	Scenic	Fish Population and Habitat
North Fork Clicks Creek	2.155.2	1.7	Wild	Fish Population and Habitat
Osa Creek	2.163	4.5	Wild	Fish Population and Habitat
Pistol Creek	2.173	2.0	Wild	Fish Population and Habitat
Rattlesnake Creek	2.181	14.7	Scenic	Fish Population and Habitat
Rifle Creek	2.186	2.9	Wild	Fish Population and Habitat
Salmon Creek	2.190.1	2.0	Recreational	Scenery, Recreation, Wildlife Population and Habitat, Prehistory
Salmon Creek	2.190.2	4.4	Scenic	Scenery, Recreation, Wildlife Population and Habitat, Prehistory
Salmon Creek	2.190.3	3.1	Wild	Scenery, Recreation, Wildlife Population and Habitat, Prehistory
Salmon Creek	2.190.4	1.3	Scenic	Scenery, Recreation, Wildlife Population and Habitat, Prehistory
Salmon Creek	2.252.1	1.9	Scenic	Prehistory, History, Botany
Salmon Creek	2.252.2	0.9	Recreational	Prehistory, History, Botany
Sheep Creek	2.197	2.8	Wild	Fish Population and Habitat
Shotgun Creek	2.199	3.8	Wild	Fish Population and Habitat, Scenery, Recreation
Soda Spring Creek	2.205	7.2	Wild	Fish Population and Habitat, Prehistory

River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
South Fork Erskine Creek	2.210	6.9	Wild	Botany, Geology, Wildlife Population and Habitat
South Fork Middle Fork Tule River	2.213.1	5.5 (5.5 in GSNM)	Recreational	Scenery, Recreation, and Botany
South Fork Middle Fork Tule River	2.213.2	6.6 (6.6 in GSNM)	Recreational	Recreation
South Mountaineer Creek	2.215	3.1	Wild	Fish Population and Habitat
Stark Creek	2.219.1	0.4	Scenic	Wildlife Population and Habitat, History
Stark Creek	2.219.2	1.5	Wild	Wildlife Population and Habitat, History
Stark Creek	2.219.3	3.0	Recreational	Wildlife Population and Habitat, History
Stark Creek	2.219.4	1.5	Wild	Wildlife Population and Habitat, History
Stark Creek	2.219.5	0.7	Scenic	Wildlife Population and Habitat, History
Stark Creek	2.219.6	0.2	Recreational	Wildlife Population and Habitat, History
Table Meadow Creek	2.223	2.4	Wild	Fish Population and Habitat, Prehistory
Tamarack Creek	2.224	3.9	Wild	Fish Population and Habitat
Trout Creek	2.233.1	4.0	Scenic	Fish Population and Habitat, Prehistory
Trout Creek	2.233.2	11.8	Wild	Fish Population and Habitat, Prehistory
Willow Creek	2.242	4.3	Wild	Fish Population and Habitat
Total	—	351.9 (75.7 in GSNM)	—	—

Notes: For the purposes of the current study, all rivers in the inventory south of the Kings River and Monarch Divide are included in the Sequoia National Forest section of this study and the Sequoia National Forest tables and totals. The Kings River and all rivers in the eligibility study inventory north of the Kings River and Monarch Divide are included in the Sierra National Forest section of this study and Sierra National Forest tables and totals. However, the administrative boundary between the two forests is actually south of the Kings River, as shown on the maps. For rivers south of the Kings River that are included in the Sequoia National Forest section of this study that are actually within the administrative boundary of the Sierra National Forest, footnotes in the "River Segment Details" section indicate the number of miles within the Sierra National Forest; however, none of these segments are found eligible. River segment mileages within the Giant Sequoia National Monument (GSNM) are also provided.



Map C-1. Sequoia National Forest wild and scenic river eligibility and preliminary classifications

Note: For the purposes of the current study, the Kings River and all rivers in the inventory north of the Kings River and Monarch Divide are included in the Sierra National Forest section of this study and Sierra National Forest tables and totals. All rivers in the eligibility study inventory south of the Kings River and Monarch Divide are included in the Sequoia National Forest section of this study and the Sequoia National Forest tables and totals. However, the administrative boundary between the two forests is actually south of the Kings River, as shown on the maps. For rivers south of the Kings River that are included in the Sequoia National Forest section of this study that are actually within the administrative boundary of the Sierra National Forest, footnotes in the "River Segment Details" section indicate the number of miles within the Sierra National Forest; however, none of these segments are found eligible.

Sierra National Forest

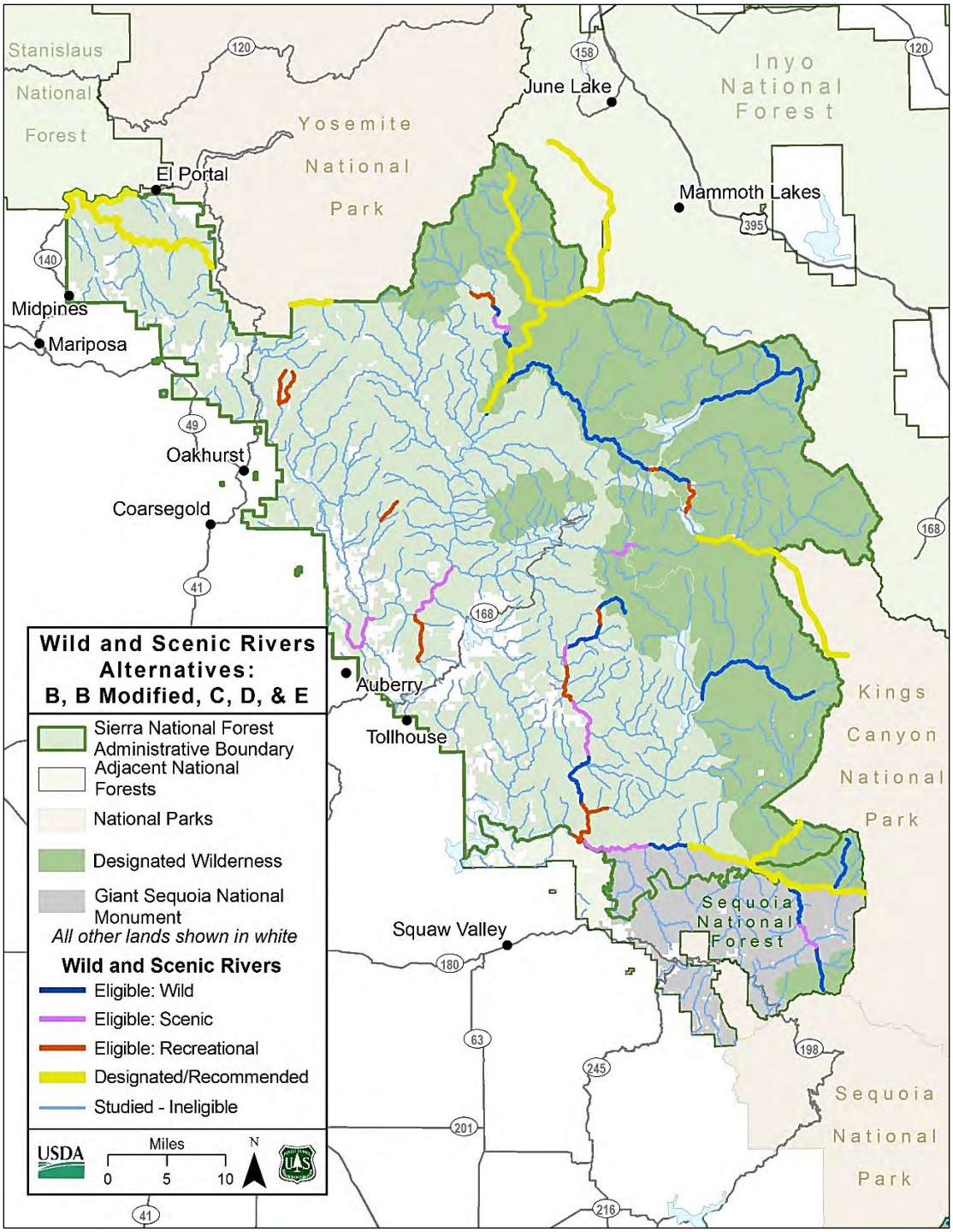
Table C-2. Sierra National Forest river segments determined to be eligible for inclusion in the National Wild and Scenic Rivers System

River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
California Creek	3.34	3.9	Recreational	Scenery, Recreation, Botany
Dinkey Creek	3.68.1	4.0	Wild	Recreation, Geology
Dinkey Creek	3.68.2	1.8	Recreational	Recreation, Geology
Dinkey Creek	3.68.3	4.1	Wild	Recreation, Geology
Dinkey Creek	3.68.4	1.7	Scenic	Recreation
Dinkey Creek	3.68.5	4.0	Recreational	Recreation, History, Prehistory
Dinkey Creek	3.68.6	6.5	Scenic	Recreation
Dinkey Creek	3.68.7	6.1	Wild	Recreation
Dinkey Creek	3.68.8	1.1	Recreational	Recreation
East Fork Big Creek	3.77.2	3.0	Scenic	Wildlife Population
Granite Creek	3.107.1	0.9	Recreational	Recreation
Granite Creek	3.107.2	1.5	Wild	Recreation
Granite Creek	3.107.3	2.7	Scenic	Recreation
Granite Creek	3.107.4	2.1	Wild	Geology
Hopkins Creek	3.119	3.8	Wild	Wildlife Population
Jose Creek	3.133.2	4.7	Recreational	Wildlife Population
Kings River*	2.106.1	3.9 (3.9 in GSNM)	Wild	Scenery, Recreation, History, Prehistory, Wildlife Population and Habitat
Kings River*	2.106.2	7.5 (4.8 in GSNM)	Scenic	Scenery, Recreation, History, Prehistory, Wildlife Population and Habitat
Kings River*	2.106.3	1.3	Recreational	Scenery, Recreation, History, Prehistory, Wildlife Population and Habitat
Mono Creek	3.166.1	3.5	Wild	Prehistory
Mono Creek	3.166.2	9.9	Wild	Prehistory
Nelder Creek	3.173.1	3.2	Recreational	Scenery, Recreation, Botany
North Fork Kings River	3.177.2	15.6	Wild	Recreation
North Fork Kings River	3.177.8	4.9	Recreational	Recreation
Owl Creek	3.190	2.3	Recreational	Botany
San Joaquin River	3.233.1	0.4	Wild	Recreation
San Joaquin River	3.233.4	5.5	Scenic	Recreation
San Joaquin River	3.233.6	6.1	Scenic	Recreation
South Fork San Joaquin River	3.260.2	3.6	Recreational	Recreation
South Fork San Joaquin River	3.260.3	3.3	Wild	Recreation

River Name	GIS Number	Miles	Preliminary Classification	Outstandingly Remarkable Values
South Fork San Joaquin River	3.260.4	0.8	Recreational	Recreation
South Fork San Joaquin River	3.260.5	20.3	Wild	Recreation
West Fork Granite Creek	3.294.3	2.3	Recreational	Recreation
Total	—	146.3 (8.7 in GSNM)	—	—

Notes: For the purposes of the current study, the Kings River and all rivers in the inventory north of the Kings River and Monarch Divide are included in the Sierra National Forest section of this study and Sierra National Forest tables and totals. All rivers in the eligibility study inventory south of the Kings River and Monarch Divide are included in the Sequoia National Forest section of this study and the Sequoia National Forest tables and totals. However, the administrative boundary between the two forests is actually south of the Kings River, as shown on the maps. For rivers south of the Kings River that are included in the Sequoia National Forest section of this study that are actually within the administrative boundary of the Sierra National Forest, footnotes in the "River Segment Details" section indicate the number of miles within the Sierra National Forest; however, none of these segments are found eligible. River segment mileages within the Giant Sequoia National Monument (GSNM) are also provided.

* In the 1991 eligibility study, GIS numbers 2.106.1 and 2.106.2 were identified as within the Sierra National Forest, and GIS number 2.106.3 was within the Sequoia National Forest, as described below in the "Sierra National Forest, River Segments Previously Studied" section (Table C-15). GIS numbers 2.106.1 and 2.106.2 are entirely within the administrative boundary of the Sierra National Forest. The beginning point of GIS number 2.106.3 (end point of GIS number 2.106.2) is the western boundary of the Kings River Special Management Area. Downstream of this point, the administrative boundary between the Sierra and Sequoia Nationals Forests is the Kings River itself. For the purposes of the current study, GIS numbers 2.106.1, 2.106.2, and 2.106.3 are all included in the Sierra National Forest section of the study and Sierra National Forest tables and totals.



Map C-2. Sierra National Forest wild and scenic river eligibility and preliminary classifications

Note: For the purposes of the current study, the Kings River and all rivers in the eligibility study inventory north of the Kings River and Monarch Divide are included in the Sierra National Forest section of this study and Sierra National Forest tables and totals. All rivers in the inventory south of the Kings River and Monarch Divide are included in the Sequoia National Forest section of this study and the Sequoia National Forest tables and totals. However, the administrative boundary between the two forests is actually south of the Kings River, as shown on the maps. For rivers south of the Kings River that are included in the Sequoia National Forest section of this study that are actually within the administrative boundary of the Sierra National Forest, footnotes in the "River Segment Details" section indicate the number of miles within the Sierra National Forest; however, none of these segments are found eligible.

Detailed Study Results

Sequoia National Forest

Eligibility Study Results Summary

Eighty-six river segments (approximately 351.9 miles) are eligible because they are free flowing and have outstandingly remarkable values. Table C-3, the following evaluation maps, Map C-19, and the River Segment Details section below provide more information about these river segments.

Table C-3. Sequoia National Forest wild and scenic river eligibility study results summary

Study Results	Number of River Segments	Approximate Mileage
Total Eligible	86[2]	351.9
Preliminarily Classification: Wild	38	175.4
Preliminarily Classification: Scenic	23	80.0
Preliminarily Classification: Recreational	25	96.5

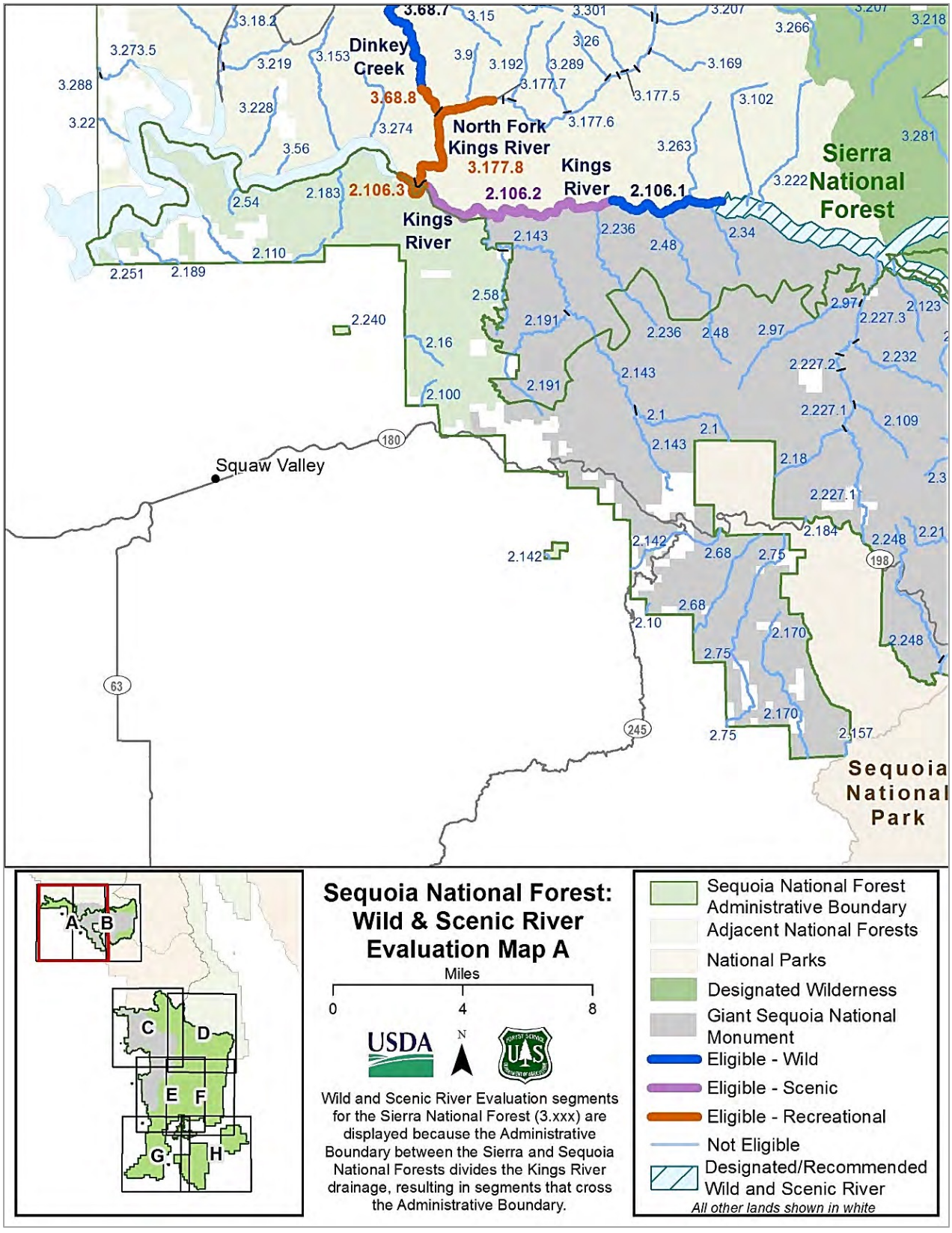
River Segments Not Previously Studied

Two river segments (approximately 7.3 miles) had not been previously studied because at the time of previous studies, the lands surrounding these segments were U.S. Army Corp of Engineers lands, related to Lake Isabella. These lands are now within the Sequoia National Forest and these river segments are included in the current study. Table C-4, the preceding evaluation maps, and Map C-19 provide more information about these river segments.

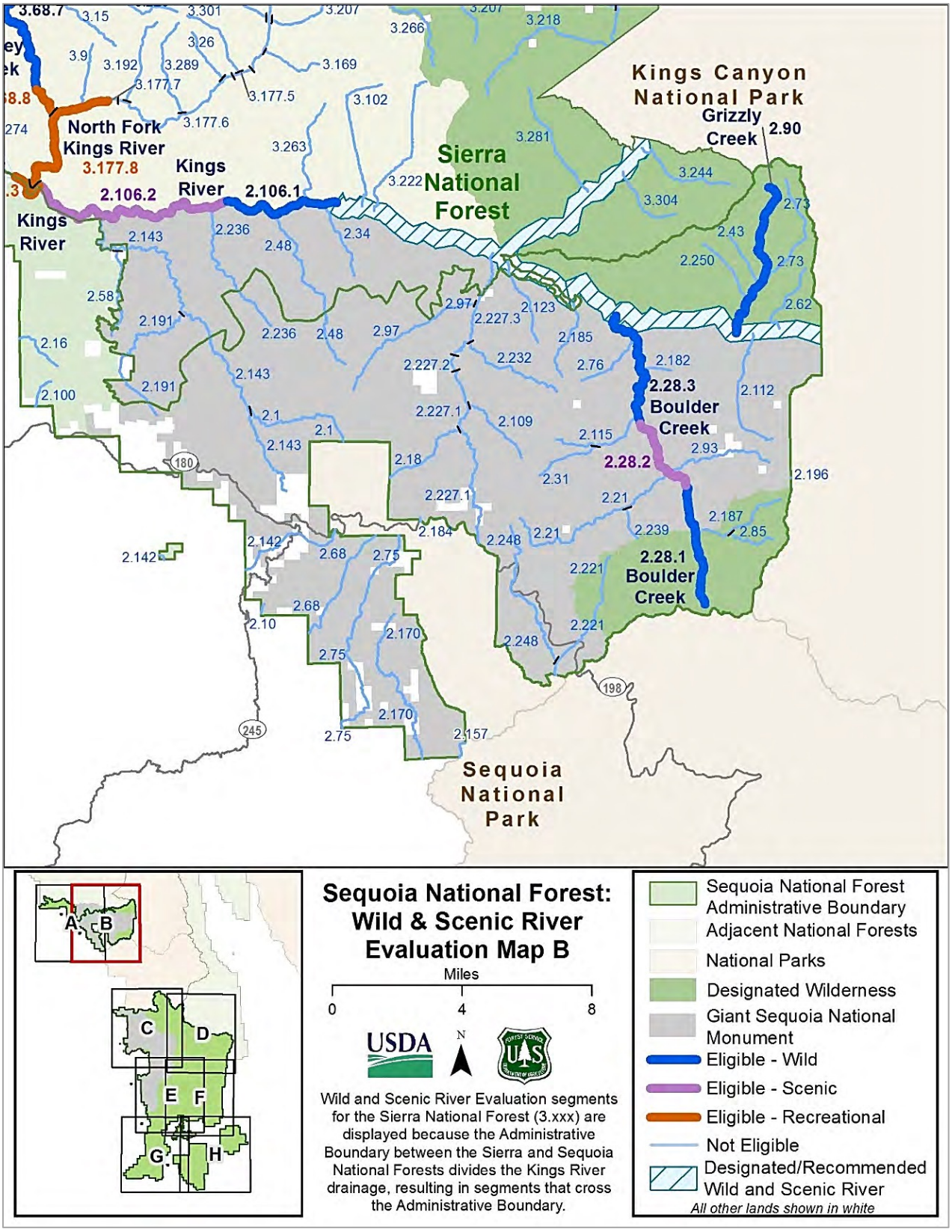
Table C-4. Sequoia National Forest river segments not previously studied

Segment Name	GIS Number	Mileage	Free Flow
South Fork Kern River	2.212.2	3.1	No, Lake Isabella (Reservoir) impedes natural flow
Kern River	2.2	4.2	No, Lake Isabella (Reservoir) impedes natural flow
Total	—	7.3	—

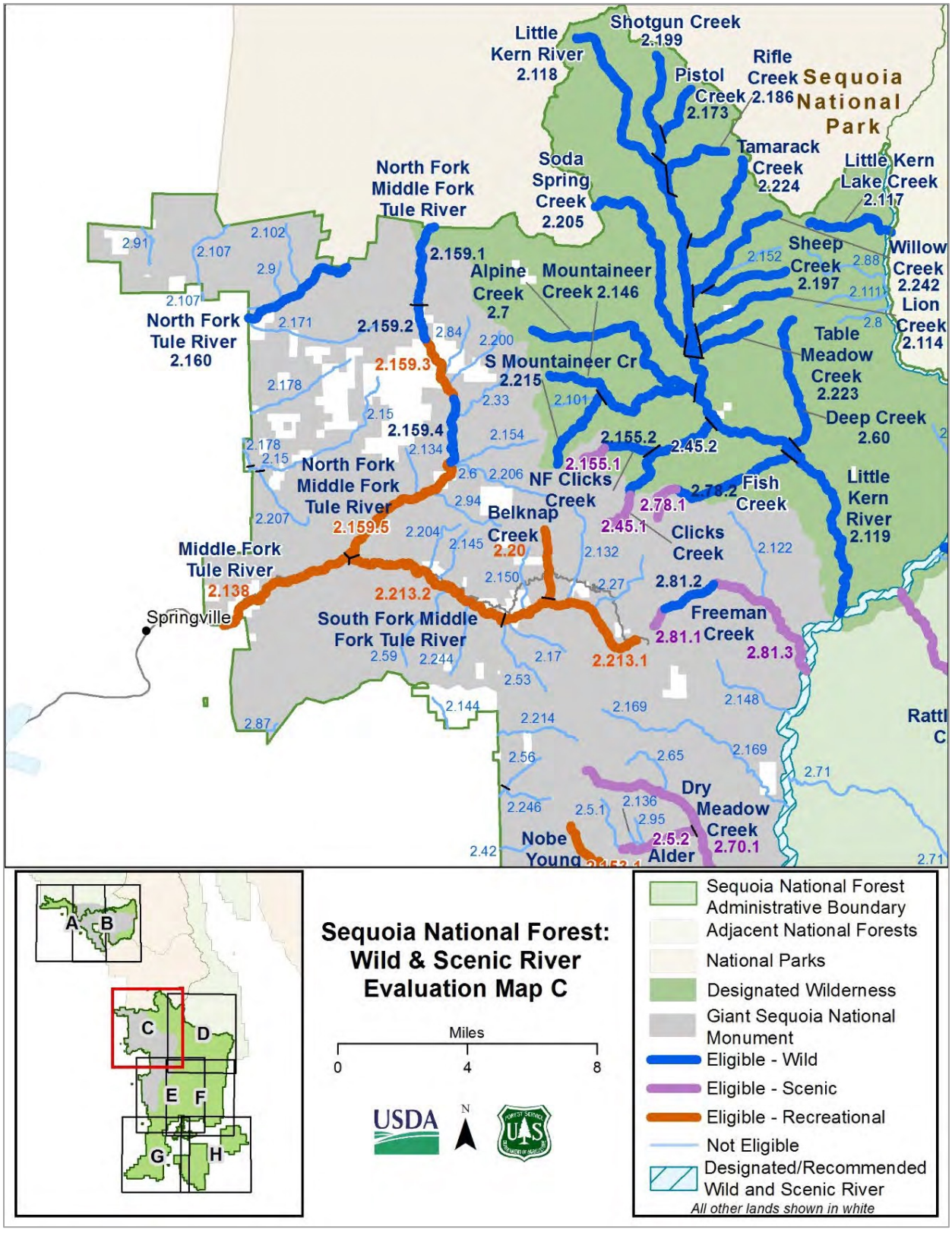
[2] Excludes three river segments (approximately 12.7 miles) of the Lower Kings River (from elevation 1,595 feet to the high-water line of Pine Flat Reservoir) that were included in the 1991 Sequoia National Forest eligibility study; for the purposes of the current study, they are included in the Sierra National Forest section and Sierra National Forest tables and totals.



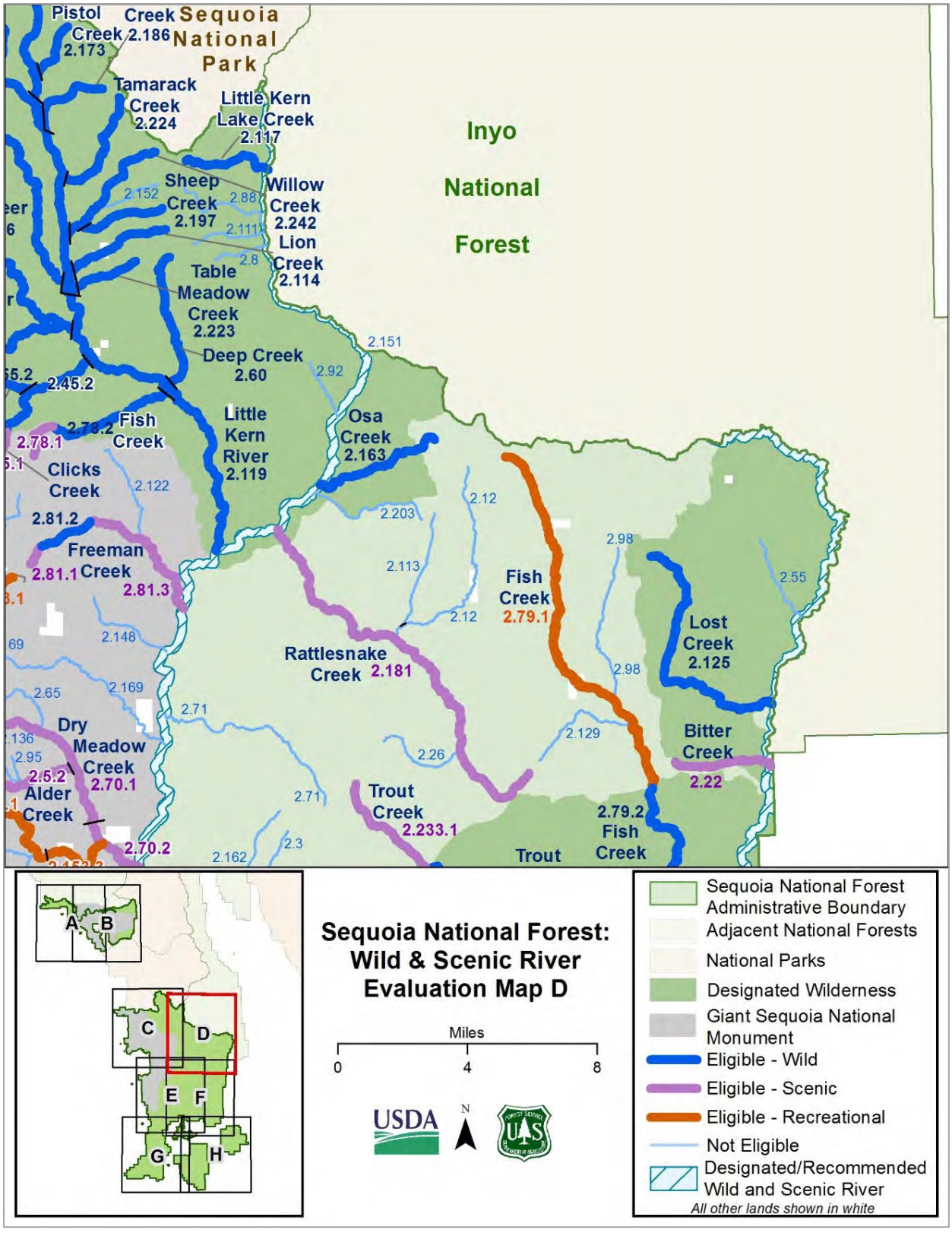
Map C-3. Sequoia National Forest wild and scenic river evaluation map A



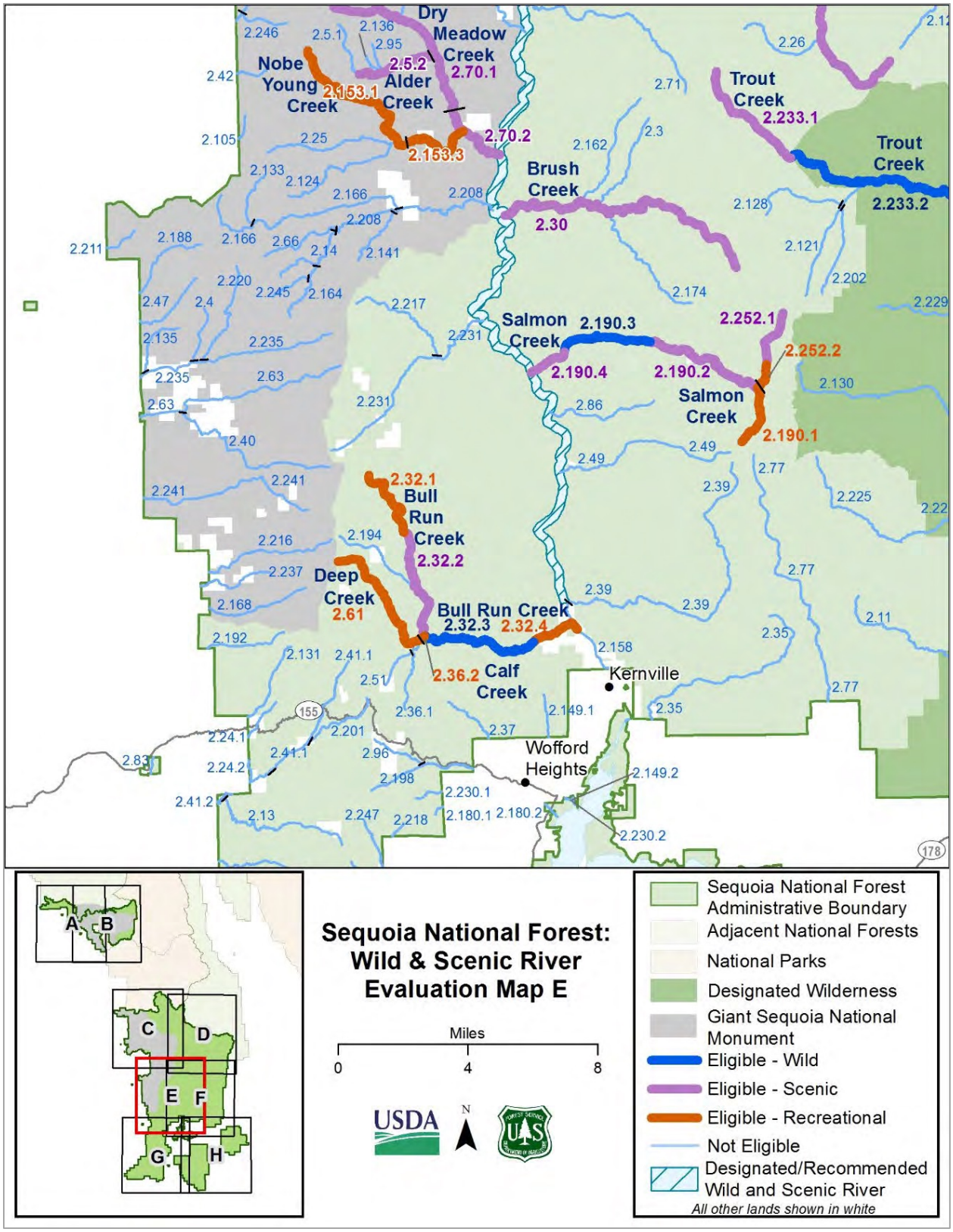
Map C-4. Sequoia National Forest wild and scenic river evaluation map B



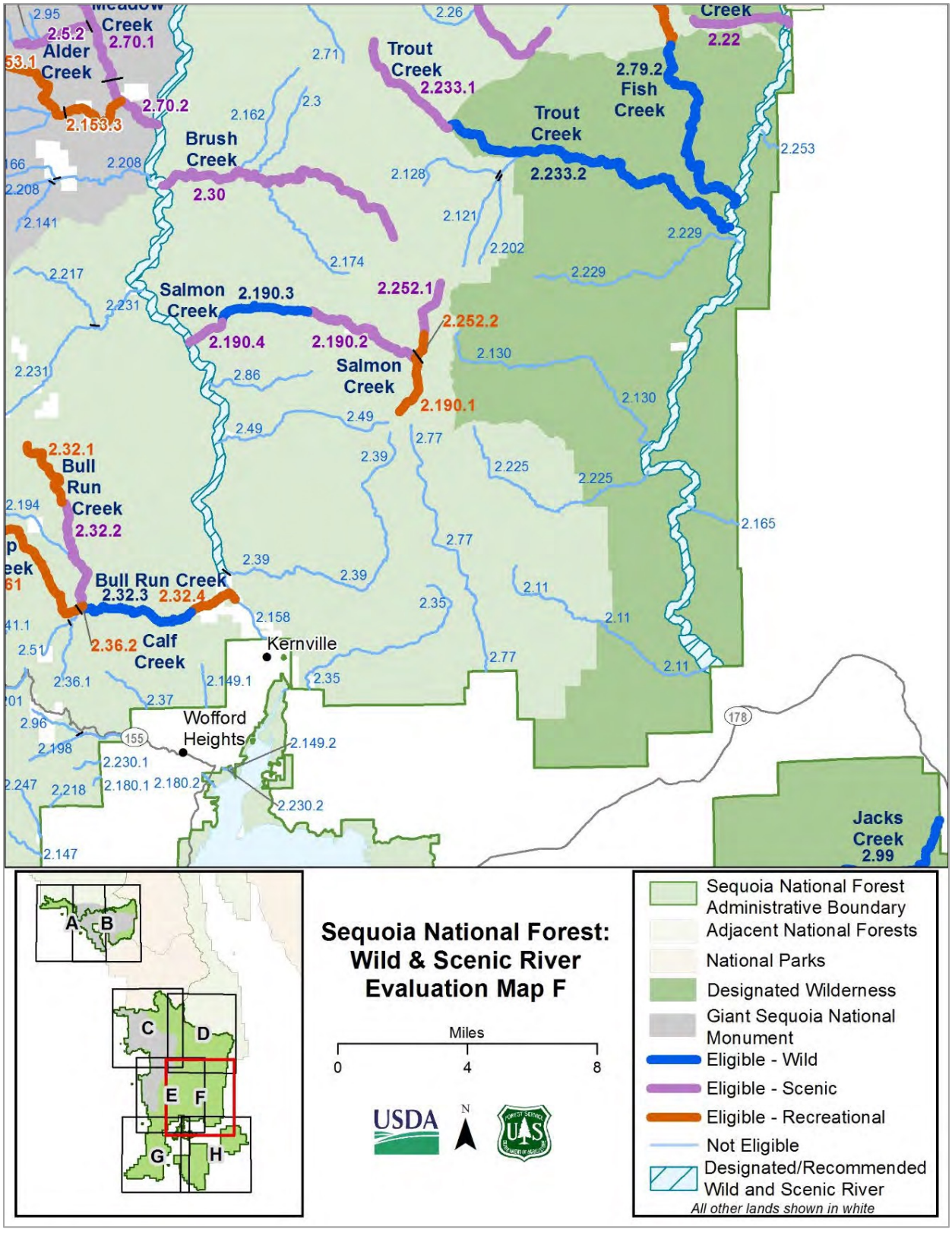
Map C-5. Sequoia National Forest wild and scenic river evaluation map C



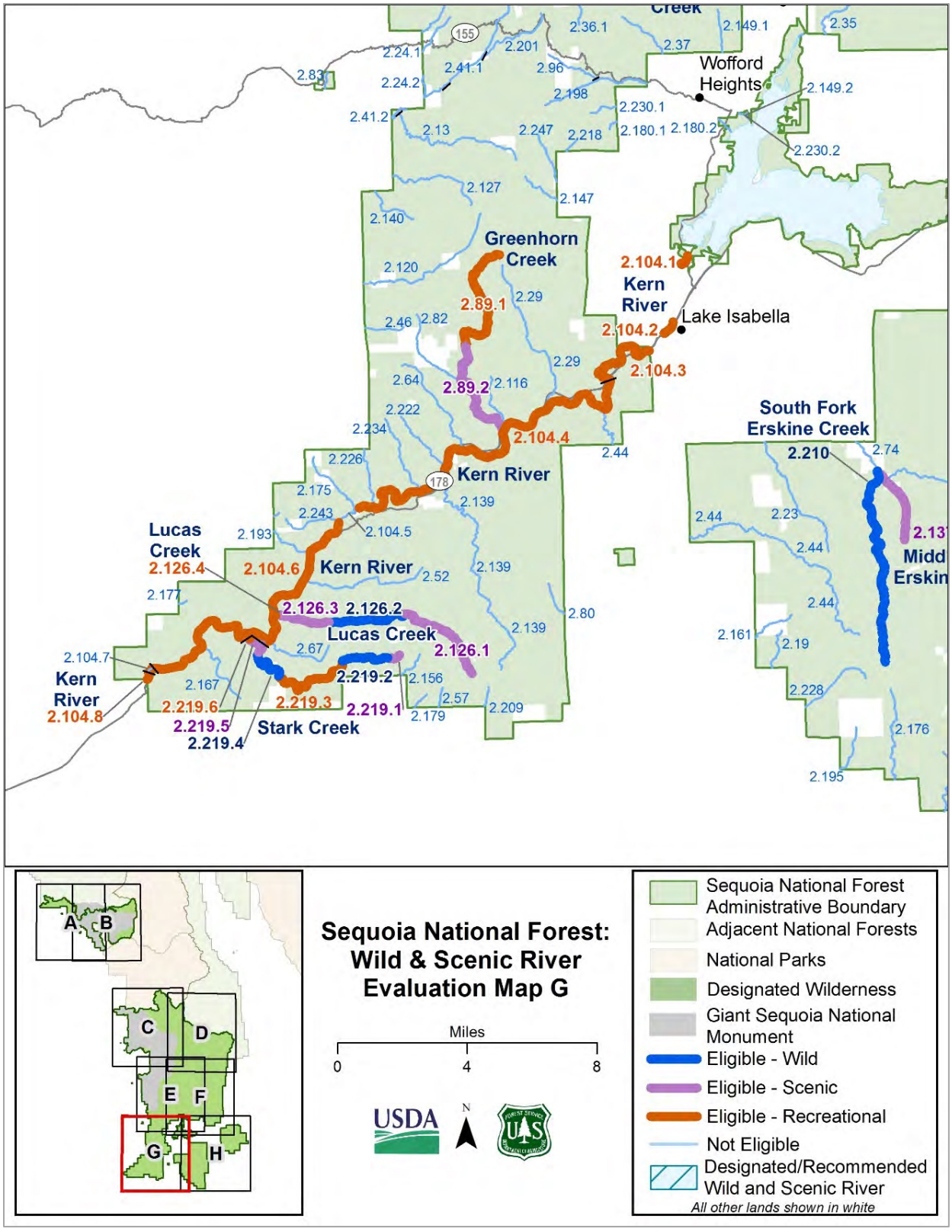
Map C-6. Sequoia National Forest wild and scenic river evaluation map D



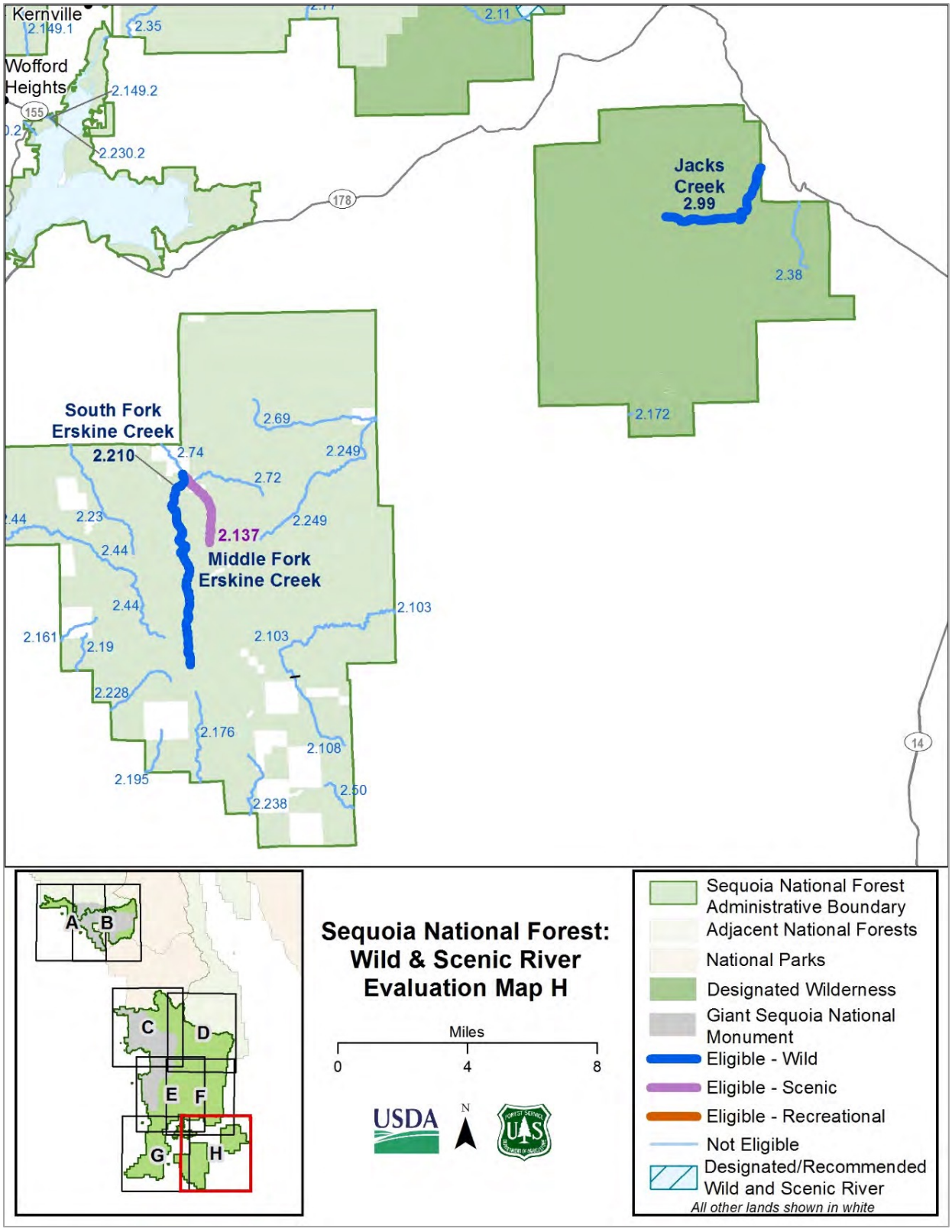
Map C-7. Sequoia National Forest wild and scenic river evaluation map E



Map C-8. Sequoia National Forest wild and scenic river evaluation map F



Map C-9. Sequoia National Forest wild and scenic river evaluation map G



Map C-10. Sequoia National Forest wild and scenic river evaluation map H

River Segments Previously Studied

In 1987, Congress designated the North Fork Kern River and South Fork Kern River and the South Fork of the Kings River as wild and scenic rivers. In addition, in 1991, the Sequoia National Forest determined that segments of the Little Kern River, Kern River, North Fork Tule River, North Fork Middle Fork Tule River, and Kings River were eligible for inclusion in the National Wild and Scenic Rivers System. Including the segments previously determined eligible, one segment on the lower South Fork Kern was found suitable and was recommended but not designated in 1987. In 1991, 304[3] river segments (approximately 1,055.2[4] miles) were studied. These river segments are included in the current study. Approximately 1,035.1[5] miles are free flowing, and approximately 20.1[6] miles are not free flowing. Table C-1, Table C-5, the evaluation maps above, Map C-19, and the "River Segment Details" section provide more information about these river segments.

In 2014, the Bureau of Land Management (BLM) completed a study that determined that two segments (total 3.2 miles) of the lower Kern River between the Lake Isabella Dam and the Forest Service boundary are suitable for inclusion in the National Wild and Scenic Rivers System, as shown on Map C-1, with a recreational preliminary classification and recreation, wildlife, and history outstandingly remarkable values. The BLM and the Forest Service have managed whitewater boating below the Lake Isabella Dam (including these two segments) in partnership under an interagency agreement.

Table C-5. Sequoia National Forest river segments previously studied and not free flowing

Segment Name	GIS Number	Mileage	Free Flow
Kern River	2.104.5	0.9	No, under Democrat Hot Springs Reservoir
Kern River	2.104.7	0.2	No, SCE Kern River 1 Project impedes natural flow
Tenmile Creek	2.227.2	0.6	No, under Hume Lake (Reservoir)
Rattlesnake Creek	2.180.2	0.5	No, Lake Isabella (Reservoir) impedes natural flow
Nellie Dent Creek	2.149.2	0.2	No, Lake Isabella (Reservoir) impedes natural flow
Nobe Young Creek	2.153.2	0.2	No, Ida Lake (Reservoir) impedes natural flow
Total	—	2.6	—

[3]Includes four river segments (approximately 30.2 miles) of the Lower Kings River (from elevation 1,595 feet to the national forest boundary). However, for the purposes of the current study, the Kings River and all rivers in the inventory north of the Kings River and Monarch Divide are included in the Sierra National Forest section and Sierra National Forest tables and totals. For further information about these four segments, see "Sierra National Forest River Segment Details, River Segments Previously Studies." All rivers in the eligibility study inventory south of the Kings River and Monarch Divide are included in the Sequoia National Forest section of the current study and the Sequoia National Forest tables and totals. The administrative boundary between the two forests is actually south of the Kings River, as shown on the maps. For rivers south of the Kings River that are included in the Sequoia National Forest section of the current study that are actually within the administrative boundary of the Sierra National Forest, footnotes in the "River Segment Details" section indicate the number of miles within the Sierra National Forest; however, none of these segments were found eligible.

[4] Includes approximately 30.2 miles of the Lower Kings River that are included in the Sierra National Forest section of the current study.

[5] Includes approximately 12.7 miles of the Lower Kings River that are included in the Sierra National Forest section of the current study.

[6] Includes approximately 17.5 miles of the Lower Kings River that are included in the Sierra National Forest section of the current study.

Region of Comparison

- **Scenery** – Sequoia National Forest. The southern location at the edge of the Sierra Nevada range and other distinctive physical and natural characteristics distinguishes the Sequoia National Forest from neighboring national forests. Although the geologic composition may be similar to the rest of the range, the exceptionally steep slopes were carved by swift white-water rivers and creeks. The rivers and creeks draining the western slope of the forest have some of the steepest elevation drops of any rivers in the Sierra Nevada. The western slopes of the Greenhorn Mountains and the Kern Plateau are wet and have many springs, seeps, stringer meadows and perennial creeks, in sharp contrast to eastern slopes that are dry and arid. High elevation forests quickly transition into dry, eastside deserts in the east and south, and into the granitic foothills of the Central Valley covered with oak woodlands on the west side. Due to the unique conditions influencing the unusually high diversity within the forest, the region of comparison for scenery is the Sequoia National Forest.
- **Recreation** – Southern California: Kern, San Diego, Tulare, Ventura, and Los Angeles Counties. The majority of visitors to Sequoia National Forest are from very dry and urban counties in Southern California. Since recreation values are tied to visitors, the region of comparison for recreation is the Southern California counties where the majority of visitors are from.
- **Geology** – Sequoia National Forest and the southern half of Sequoia and Kings Canyon National Parks. The Sequoia National Forest has several mountain ranges divided by steep canyons. Further north, within the Sierra National Forest and the northern half of Sequoia and King Canyon National Parks, more extensive glaciation occurred, resulting in large, rounded valleys (such as Kings Canyon) and alpine lakes. The Sequoia National Forest is somewhat different, geomorphologically, because the landscape has been less affected by glaciers. The Kings and Tule Rivers both drop down from high elevation and have extremely deep and highly dissected canyons. The watercourse of the Tule River is shorter and less gradual than the Kings River. However, Kings Canyon is one of the deepest canyons in the country. The Sequoia National Forest transitions from the highest elevations of the Sierra Nevada range into the lower Kern Valley, and also rising into the Breckinridge, Scodie, Piute, and Tehachapi Mountains. The substantial volcanic flows prevalent on the Inyo National Forest are not present on the Sequoia National Forest. While the Sequoia National Forest is part of the Southern Sierra Nevada Mountain Range, since the geologic processes that shaped the landscape are very different, the region of comparison for geology is the Sequoia National Forest and the southern half of Sequoia and Kings Canyon National Parks.
- **Fish** – State of California. Native trout on the Sequoia National Forest are unique heritage fish. The State of California has 11 native heritage trout, three of which are golden trout species and present on the Sequoia National Forest. Golden trout are the State Fish of California. Golden trout are only found in the Kern River watershed. Due to the high interest in California for conservation and angling for heritage trout, the region of comparison for fish populations and habitat is the State of California.
- **Wildlife** – Southern Sierra Nevada Mountain Range and nearby areas (Sequoia National Forest, Sierra National Forest, Inyo National Forest, and Sequoia and Kings Canyon National Parks). The Sequoia National Forest is in a Mediterranean ecosystem and has many months with no rain. In addition, the areas of the forest in the rain shadow of the Greenhorn Mountains are very dry. This elevates the importance of water sources for most wildlife. Several species are associated with creeks all the time. Several endemic species of salamander are present in and along creeks or rivers year-round. Most birds and mammals move around and use these areas as corridors and for food and water. Just as an oasis in the desert attracts many wildlife, many perennial creeks and rivers on the Sequoia National Forest attract and are essential to wildlife. Since some species are endemic to the Sequoia National Forest, and some are found throughout the Southern Sierra Nevada Mountain Range, the region of comparison for wildlife populations and habitat is the Southern Sierra Nevada

Mountain Range and nearby areas (Sequoia National Forest, Sierra National Forest, Inyo National Forest, and Sequoia and Kings Canyon National Parks).

- **Prehistory/Cultural** – Sequoia National Forest. The Sequoia National Forest is the region of comparison for prehistory because it encompasses the geographic extent of cultural resource property data known to and maintained by the Sequoia National Forest.
- **History** – Sequoia National Forest. The Sequoia National Forest is the region of comparison for history because it encompasses the geographic extent of cultural resource property data known to and maintained by the Sequoia National Forest.
- **Botany** – Nationwide for giant sequoia groves. Southern Sierra Nevada Mountain Range for Botanic Areas and Piute cypress groves. The region of comparison is nationwide for giant sequoia groves because Sequoia National Forest is nationally known for its giant sequoia groves. The Southern Sierra Nevada Mountain Range is the region of comparison for Botanic Areas because Botanic Areas were first defined for the unique, endemic, and rare plants present in the areas by comparing across the Sequoia National Forest and the Southern Sierra Nevada Mountain Range to determine which plant species are unique.

Outstandingly Remarkable Values

The Interagency Wild and Scenic Rivers Coordinating Council technical paper "The Wild and Scenic River Study Process," describes the baseline criteria for outstandingly remarkable scenery, recreation, geology, fish and wildlife populations and habitat, prehistory/cultural, and history values. Outstandingly remarkable botanical values are based upon unique and rare plants and vegetation types. The Sequoia National Forest interdisciplinary team identified the following additional criteria for determining if any river-related values are outstandingly remarkable values:

Scenery – Scenic attributes of the Sequoia National Forest are particularly rich in visual diversity and visual contrast tied to the multiple "transition zones" associated with the unique physical and biological characteristics described in the Region of Comparison. When analyzing scenic values, additional factors were considered such as scale of cultural modifications, and the length of time negative intrusions are viewed. Additional criteria for outstandingly remarkable scenery are:

- Riparian areas with exceptionally high contrast in high desert and dry forest environments with tumbling creeks, waterfalls, cascades, and stringer meadows.
- Rivers segments that exhibit unique or exemplary visual diversity traveling through multiple transition zones.
- Rivers segments with unique assemblages of vegetation.
- Rivers segments with granite basins, slides, waterfalls, and drops creating unique or exemplary visual features or attractions.
- Views of exemplary or unique geologic features such as exemplary features formed by glaciation, granitic domes, spires, and steep and diverse topography.

Recreation – Recreation opportunities are, or have the potential to be, popular enough to attract visitors from throughout and beyond the region of comparison, or are unique or rare within the region. Visitors are willing to travel long distances to use river resources for recreation purposes. Recreation opportunities tied to water bodies are highly valued experiences on the Sequoia National Forest. The Sequoia National Forest is well known for exceptional whitewater rivers and creeks in natural settings with high natural diversity. River-related recreation opportunities may include, but are not limited to, sightseeing, wildlife observation, camping, photography, hiking, fishing, hunting, and boating. The Sequoia National Forest provides exceptional opportunities to participate in the activities of whitewater kayaking and rafting as well as fishing for native heritage trout. Additional criteria for outstandingly remarkable recreation are:

- River segments that provide visitors exemplary opportunities to enjoy giant sequoias alongside rivers and creeks.
- River segments that provide high quality whitewater kayaking and rafting opportunities.
- River segments that provide opportunities to fish Heritage Trout Waters as determined by the State of California.
- River segments that attract national or regional events dependent on the river-related values.
- River segments that provide recreation settings that provide exemplary diverse recreation opportunities.

Geology – Criteria for outstandingly remarkable geology include bedrock, landforms, and relief or elevation change, and scientific value:

- Unique Bedrock Features: Bedrock with unusual or outstanding geologic or geomorphic features and river corridors with an abundance of unusual, unique, and distinctive geologic or geomorphic features may have high value or be outstandingly remarkable. The types of features identified as having high value included highly unusual channels, marble outcrops, stratigraphy, volcanic evidence, historic floods, and steep, narrow canyons with series of stringer meadows, or waterfalls and pools.
- Unique Landforms: Landforms with unusual or outstanding geologic features may have high value or be outstandingly remarkable.
- Relief or Elevation Change: River segments that drop over 4,000 feet through steep canyons or over waterfalls be outstandingly remarkable. Consideration of several segments of the river may be necessary to evaluate this criterion.
- Scientific: Windy Gulch Geologic Area and Packsaddle Cave Geologic Area were set aside for to preserve examples of unique geologic features for scientific study. Slate Mountain Botanic Area is a band of metamorphic rock at 9,000 feet that creates edaphic endemic plant habitats. Bodfish Piute Botanic Area is defined by a pluton of Bodfish olivine gabbro that supports the largest grove of the highly endemic Piute cypress tree.

Fish – Criteria for outstandingly remarkable fish may be judged on the relative merits of either fish populations, habitat, or a combination of these river-related conditions. Criteria for outstandingly remarkable fish populations and habitat are:

- Population: Criteria vary by species, status of native populations, and whether recovery of a native trout species will occur in these creeks. The presence of unique endemic heritage native trout which are only found in the Kern River indicates an outstandingly remarkable value, including any river segment that contains a healthy or remnant population of golden trout, Kern River rainbow trout, or Little Kern golden trout.
- Habitat: Criteria vary by watersheds and is strongly related to fish historic distributions and presence of healthy or remnant populations. River segments where native heritage trout are present in a stable population are outstandingly remarkable. River segments that support populations that best exemplify indigenous strains of native trout within their historic drainages may be outstandingly remarkable.

Wildlife – Criteria for outstandingly remarkable wildlife may be judged on the relative merits of either terrestrial or aquatic wildlife populations, habitat, or a combination of these river-related conditions. Criteria for outstandingly remarkable wildlife populations and habitat are:

- Population: The river segment, or area within the corridor, contains important populations of unique, endemic species and/or populations of federal or state-listed (or candidate) threatened, endangered, or sensitive species. Diversity of species is an important consideration and may, in itself, be outstandingly remarkable.
- Habitat: The river segment, or area within the corridor, provides exceptionally high-quality habitat for wildlife of regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state-listed (or candidate) threatened, endangered, or sensitive species. The presence of suitable habitat for listed species may, in itself, be outstandingly remarkable. Diversity or connectivity of habitats is an important consideration for riparian areas and is river-related. Connectivity of habitat in a xeric environment may, in itself, be outstandingly remarkable.

Prehistory and History – An important interrelationship must exist between documented cultural sites and the river segment. Criteria for outstandingly remarkable prehistory and history are:

- Prehistory: The river segment, or area within the corridor, contains a site or multiple sites where there is evidence of occupation or use by Native Americans. Sites must have unique or rare characteristics or exceptional human-interest value or values. Sites may have national or regional importance for interpreting prehistory, may be rare and represent an area where a culture or cultural period was first identified and described, may have been used concurrently by two or more cultural groups, and/or may have been used by cultural groups for rare sacred purposes. Many such sites are listed on the National Register of Historic Places, which is administered by the National Park Service.
- History: The river segment, or area within the corridor, contains a site, multiple sites, a feature, or multiple features associated with a significant event, an important person, or a cultural activity of the past that was rare or one of a kind in the region. Many such sites are listed on the National Register of Historic Places. In most cases, historic sites or features are 50 years old or older.

Botany – The Sequoia National Forest is known for its giant sequoia groves (*Sequioadendron giganteum*), which are rare ecological treasures. The presence of a Botanic Area on a river segment, or within the corridor, is indicative of a unique plant association. Criteria for outstandingly remarkable botany are:

- Giant sequoia groves: Giant sequoia groves are heavily dependent on moisture and deep soils to grow. The presence of giant sequoia groves is associated with wetter creeks and rivers. Giant sequoia groves within the corridor that are free of roads and motorized trails are outstandingly remarkable.
- Botanic Areas: The unique, endemic, and rare plants found within the botanic areas are heavily dependent on moisture and associated with creeks. Botanic Areas within the corridor are outstandingly remarkable.
- Piute cypress groves: The unique, endemic, and rare species of Piute cypress are heavily dependent on moisture, including creeks. Piute cypress groves within the corridor are outstandingly remarkable.

River Segment Details

Alder Creek (GIS Number 2.5.2)

Location

- County: Tulare
- Beginning Point: M107 Western Divide Highway
- End Point: Confluence with Dry Meadow Creek
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.7
- Eligible: 2.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Alder Slabs, a series of granite slabs forming slides, falls, and basins, form a natural water park of tubs and slides on Alder Creek. They provide unique water play opportunities.
  - Determination: Recreation is an outstandingly remarkable value. The Alder Slabs attract visitors for summer water play from inside and outside the region of comparison. These tubs and slides are perhaps the most outstanding "natural water park" in the forest, with relatively easy access for visitors. Therefore, recreation is considered outstandingly remarkable.

Summary: Alder Creek (GIS Number 2.5.2) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trails

Water Quality: High

Classification: Scenic

Alpine Creek (GIS Number 2.7)

Location

- County: Tulare
- Beginning Point: About 1 mile east of Maggie Mountain at 8,800 feet, a half-mile north of the Golden Trout Wilderness boundary at 31E14
- End Point: Confluence with Little Kern River at 32E08 T.19S. R.32E. Sec.33
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 7.2

- Eligible: 7.2

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Alpine Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: High

Classification: Wild

Angora Creek (GIS Number 2.8)

Location
- County: Tulare
- Beginning Point: East slope of Angora Mountain at 8,800 feet
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage
- Studied: 1.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Two National Forest System trails cross Angora Creek close to its confluence with the North Fork Kern River, providing access for hiking and horse riding in a primitive setting. Near the confluence with the North Fork Kern River, a wide, fairly flat area provides an attractive and primitive setting to camp.
  - Determination: Recreation is not an outstandingly remarkable value. Similar hiking, horse riding, and camping opportunities are available along many other tributaries of the Kern River in the Golden Trout Wilderness. These opportunities are not unique or rare and visitors do not specifically seek out this location for hiking, horse riding, or camping and visitors have

alternate routes and locations to enjoy the same activities within a primitive setting. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: The headwaters of Angora Creek start below Angora Mountain (10,198 feet) in glacial cirques and meadows on the east side of Coyote Ridge. It tumbles down 4,400 feet to its confluence with the North Fork Kern River. This confluence is also the southern extent of Tahoe age glaciation. This filled the Kern canyon with 1,000 feet of ice and carved the characteristic U shape of this portion of the Kern Canyon. Also, in this area is the massive Kern Canyon landslide of 1860, which formed the unusual Little Kern Lake, along the Kern River.
  - Determination: Geology is not an outstandingly remarkable value. Similar geologic features also exist elsewhere within the region of comparison and the features within the Angora Creek corridor do not represent a unique or rare combination of geologic features. Therefore, geology is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Angora Creek is ineligible because it has no outstandingly remarkable values.

Bear Creek (GIS Number 2.17)

Location

- County: Tulare County
- Beginning Point: South of Belknap Complex Grove at 6,800 feet T.21S. R.35E. Sec.3
- End Point: Confluence with South Fork Middle Fork Tule River near Coy Flat
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**

- Description: Bear Creek is a small perennial creek and its tributaries provide water within the Belknap Giant Sequoia Grove.
- Determination: Botany is not an outstandingly remarkable value. Bear Creek is similar to many other small creeks that provide water within other giant sequoia groves. There are other creeks that meander within groves that have a better direct interaction with the understory and ecology of the grove. Therefore, botany is not considered outstandingly remarkable.

Summary: Bear Creek is ineligible because it has no outstandingly remarkable values.

Belknap Creek (GIS Number 2.20)

Location

- County: Tulare
- Beginning Point: Below 31E24 at 7,800 feet T.20S. R.31E. Sec.22
- End Point: Confluence with South Fork Middle Fork Tule River at Belknap Campground in Belknap Grove
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.3
- Eligible: 2.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Belknap Creek begins below Jordon Peak and flows to the South Fork Middle Fork Tule River. Belknap Campground is located near the confluence. Several roads cross the creek.
  - Determination: Recreation is not an outstandingly remarkable value. The campground and roads are not river-related. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Belknap Creek begins at over 9,000 feet and drops 4,000 feet to confluence with the South Fork Middle Fork Tule River. It begins in the high elevations in the Wishon Tule roof pendant, passes through a massive granite pluton and rejoins the roof pendent near its confluence with the South Fork Middle Fork Tule River. The metasedimentary rocks found in the Wishon Tule roof pendent include schist, slate, and marble. Halfway down along Belknap Creek is the flat-topped perch of McIntyre Rock, a 350-foot-tall granite face coming out of the slope and forest, along the Hossack Trail.
  - Determination: Geology is an outstandingly remarkable value.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Belknap Creek is eligible because of geology, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Some use of springs in the watershed by recreation and residence homes but these uses do not influence flow in this perennial creek

Shoreline Development: Roads, very small residential tract, campground

Accessibility: Roads

Water Quality: Good

Classification: Recreational

Bitter Creek (GIS Number 2.22)

Location

- County: Tulare
- Beginning Point: Springs at Tussock Bench 7,200 feet T.22S. R.35E. Sec.3
- End Point: Confluence with South Fork Kern River
- Special Area: Along the southern boundary of the South Sierra Wilderness

Mileage

- Studied: 3.3
- Eligible: 3.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: This creek provides a high-quality opportunity to fish for golden trout and is designated by the State of California as a Heritage Trout Water. Visitors easily access this creek from Sherman Pass Road (22S05) and fish this creek for the State Heritage Trout Challenge.
  - Determination: Recreation is an outstandingly remarkable value. Visitors from outside the region of comparison are drawn to this creek to fish for golden trout and participate in the State Heritage Trout Challenge. Easy access by vehicle makes this creek especially attractive. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Bitter Creek is designated by the State of California as a Heritage Trout Water because it is an outstanding example of native population and habitat for golden trout.
  - Determination: Fish population and habitat are outstandingly remarkable values.

- **Wildlife (Population and Habitat)**
  - Description: Forest service sensitive species found in this area include fisher, marten, and great gray owls.
  - Determination: Wildlife Population and Habitat are not outstandingly remarkable values. Fisher, marten, and great grey owls are not associated specifically with the creek. Connectivity of habitat for fisher is more important in other areas. Marten may use the area, but there are many other similar creek corridors in the area. While great grey owls have been found in this area, no meadows exist along this creek, so they may only use the area occasionally and it is unlikely to be a focus area for great gray owls. Therefore, wildlife population and habitat are not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Bitter Creek is eligible because recreation, prehistory, and fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Roads and camping

Accessibility: Road and motorized trails

Water Quality: Good

Classification: Scenic

Bone Creek (GIS Number 2.25)

Location

- County: Tulare
- Beginning Point: T.22S. R.31E. Section 27 at 7,000 feet near Table Mountain
- End Point: Confluence with Nobe Young Creek
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 4.5
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Bone Creek is a perennial creek that supports sterile rainbow trout.
  - Determination: Fish population and habitat are not outstandingly remarkable values.

Summary: Bone Creek is ineligible because it has no outstandingly remarkable values.

Boulder Creek (GIS Number 2.28.1)

Location
- County: Fresno
- Beginning Point: Jennie Lake in Jennie Lakes Wilderness at 9,000 feet
- End Point: Forest Road 14S11
- Special Areas: Giant Sequoia National Monument, Jennie Lakes Wilderness

Mileage
- Studied: 4.0
- Eligible: 4.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Kanawyers Trail intersects Boulder Creek and visitors camp near the creek in this area. Boulder Creek cascades down the narrow canyon, forming numerous deep pools and a rockslide that visitors hike to. Boulder Creek flows under the remnants of an old bridge and a trail to Boyden caverns is within the corridor.
  - Determination: Recreation is not an outstandingly remarkable value
- **Geology**
  - Description: Boulder Creek headwaters start at 10,300 feet on Mitchell Peak, Buck Rock, and the Jennie Lakes Wilderness. Boulder Creek drops down 7,000 feet to the South Fork Kings River. Most of the drainage is Cenozoic plutonic granite but lower third of Boulder Creek passes through the meta-volcanic dacite and metasedimentary slate/phyllite/quartzite/marble of the Boyden Cave roof pendent.
  - Determination: Geology is an outstandingly remarkable value. Due to the elevation drop from the headwaters to the South Fork Kings River, geology is considered outstandingly remarkable.

Summary: Boulder Creek is eligible because geology is an outstandingly remarkable value. Boulder Creek flows into a designated segment of the South Fork Kings Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Boulder Creek contributes to maintaining the biotic integrity of the South Fork/Middle Fork Kings River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas and designated wilderness.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails access two areas of the creek within wilderness.

Water Quality: Good

Classification: Wild

Boulder Creek (GIS Number 2.28.2)

Location

- County: Fresno
- Beginning Point: Forest Road 14S11
- End Point: Recommended Monarch Wilderness Addition boundary/Agnew Inventoried Roadless Area boundary
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.9
- Eligible: 2.9

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Kanawyers Trail intersects Boulder Creek and visitors camp near the creek in this area. Boulder Creek cascades down the narrow canyon, forming numerous deep pools and a rockslide that visitors hike to. Boulder Creek flows under the remnants of an old bridge and a trail to Boyden caverns is within the corridor.
  - Determination: Recreation is not an outstandingly remarkable value

- **Geology**
  - Description: Boulder Creek headwaters start at 10,300 feet on Mitchell Peak, Buck Rock, and the Jennie Lakes Wilderness. Boulder Creek drops down 7,000 feet to the South Fork Kings River. Most of the drainage is Cenozoic plutonic granite but lower third of Boulder Creek passes through the meta-volcanic dacite and metasedimentary slate/phyllite/quartzite/marble of the Boyden Cave roof pendent.
  - Determination: Geology is an outstandingly remarkable value. Due to the elevation drop from the headwaters to the South Fork Kings River, geology is considered outstandingly remarkable.

Summary: Boulder Creek is eligible because geology is an outstandingly remarkable value. Boulder Creek flows into a designated segment of the South Fork Kings Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Boulder Creek contributes to maintaining the biotic integrity of the South Fork/Middle Fork Kings River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas and designated wilderness.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trail

Water Quality: Good

Classification: Scenic

Boulder Creek (GIS Number 2.28.3)

Location

- County: Fresno
- Beginning Point: Recommended Monarch Wilderness Addition boundary/Agnew Inventoried Roadless Area boundary
- End Point: Confluence with the Kings River at 3,500 feet at Windy Cliffs Geologic Area
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 4.7
- Eligible: 4.7

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Kanawyers Trail intersects Boulder Creek and visitors camp near the creek in this area. Boulder Creek cascades down the narrow canyon, forming numerous deep pools and a rockslide that visitors hike to. Boulder Creek flows under the remnants of an old bridge and a trail to Boyden caverns is within the corridor.
  - Determination: Recreation is not an outstandingly remarkable value.

- **Geology**
  - Description: Boulder Creek headwaters start at 10,300 feet on Mitchell Peak, Buck Rock, and the Jennie Lakes Wilderness. Boulder Creek drops down 7,000 feet to the South Fork Kings River. Most of the drainage is Cenozoic plutonic granite, but the lower third of Boulder Creek passes through the meta-volcanic dacite and metasedimentary slate/phyllite/quartzite/marble of the Boyden Cave roof pendent.
  - Determination: Geology is an outstandingly remarkable value. Due to the elevation drop from the headwaters to the South Fork Kings River, geology is considered outstandingly remarkable.

Summary: Boulder Creek is eligible because geology is an outstandingly remarkable value. Boulder Creek flows into a designated segment of the South Fork Kings Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Boulder Creek contributes to maintaining the biotic integrity of the South Fork/Middle Fork Kings River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas and designated wilderness.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: A nonmotorized trail accesses one area of the creek within wilderness.

Water Quality: Good

Classification: Wild

Brush Creek (GIS Number 2.30)

Location

- County: Tulare
- Beginning Point: T.23S. R.34E. Sec.7 south of Mosquito Meadow at 9,500 feet
- End Point: Confluence with the North Fork Kern River
- Special Area: None

Mileage

- Studied: 10.0
- Eligible: 10.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Brush Creek drops 6,300 feet from the wet meadows and forests of the west Kern Plateau to the North Fork Kern River at Johnsondale Bridge. The last 1.5 miles before the North Fork Kern River is a spectacular series of whitewater falls, slides, and pools over slick granite bedrock. The rushing whitewater contrasts sharply with the arid landscape of the Kern River Canyon.
  - Determination: Scenery is an outstandingly remarkable value. The harsh environmental conditions and the striking contrast between whitewater and the arid environment, as well as the sheer power of the rushing water carves outstanding, unique, and exemplary visual features. The series of granitic slides, waterfalls, and basins are unequalled in the area. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: The Cannell Meadow Trail and the Rincon Trail provide hiking access. Dispersed camping opportunities are available at some locations. The State of California is proposing to restock Kern River rainbow trout to this creek's remnant population, which would provide a quality fishing opportunity. The series of falls, slides, and pools is popular for whitewater kayaking and each year the Kern River Festival holds the Brush Creek Extreme Race in April.
  - Determination: Recreation is an outstandingly remarkable value. The outstanding water features and scenery draw whitewater kayakers from outside the region of comparison. The creek provides a setting for competitive events and supports a regional festival. In the future, there will be a quality opportunity to fish for native heritage trout in their historic range. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: The headwaters of Brush Creek begin in the Durrwood Meadows area on the Kern Plateau at just below 10,000 feet. This steep creek drops 6,200 feet vertical in only 13 river miles, to its confluence with the North Fork Kern River. The upper watershed is underlain by older pre-Cretaceous granitic plutons and metamorphic sedimentary schists, slates, phyllite, and hornfels. The western lower portion of Brush Creek is a younger highly competent Mesozoic Granitic pluton which display an absence of major jointing. As such, the western lower reach of Brush Creek has continuous beautiful bedrock-controlled pools and riffles. Right before its confluence with the North Fork Kern River, Brush Creek crosses the Kern Canyon Fault, a right-lateral major fault within the Sierra Nevada Micro-plate. The western side of the fault is displaced 6 miles to the north, compared to the eastern side. In this area, the Fairview metamorphic block shows a spectacular un-eroded marble band ridge tilted almost vertically into the sky.
  - Determination: Geology is an outstandingly remarkable value. The combination of significant vertical relief, outstanding diversity of geologic bedrock/features, continuous granite pools, and the prominent marble band ridge are unique within the region of comparison. Therefore, geology is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: While Brush Creek has a series of barriers to fish passage on it, the lower-elevation sections contain rainbow trout and good quality habitat.
  - Determination: Rainbow trout in Brush Creek have mixed genetics and are not considered Kern River rainbow trout. Fish population and habitat are not outstandingly remarkable values.

- **Wildlife (Population and Habitat)**
  - Description: Above the falls on Brush Creek that are barriers to fish passage, mountain yellow-legged frogs have occurred and occupancy is unknown at this time. This area contains suitable habitat for this species. Kern Plateau slender salamanders, a Species of Concern associated with meadows riparian areas, seeps, and creeks, have been found in the area.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic species, wildlife population and habitat are considered outstandingly remarkable.

Summary: Brush Creek is eligible because scenery, recreation, geology, and wildlife population and habitat are outstandingly remarkable values. Brush Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Brush Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Campground in lowest part of creek

Accessibility: Roads in lower and upper areas, nonmotorized trails in some areas

Water Quality: High

Classification: Scenic

Bull Run Creek (GIS Number 2.32.1)

Location

- Counties: Tulare
- Beginning Point: Below the east slope of Tobias Peak at Fox Meadows 7,000 feet T.24S. R.32E. Sec.8
- End Point: Chico Inventoried Roadless Area boundary
- Special Area: None

Mileage

- Studied: 2.7
- Eligible: 2.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Bull Run Creek (GIS Number 2.32.1) is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads

Water Quality: Good

Classification: Recreational

Bull Run Creek (GIS Number 2.32.2)

Location

- Counties: Tulare, Kern
- Beginning Point: Chico Inventoried Roadless Area boundary
- End Point: Confluence with Calf Creek
- Special Area: None

Mileage

- Studied: 3.9
- Eligible: 3.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Bull Run Creek (GIS Number 2.32.2) is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Motorized trails

Water Quality: Good

Classification: Scenic

Bull Run Creek (GIS Number 2.32.3)

Location

- Counties: Kern
- Beginning Point: Confluence with Calf Creek
- End Point: Chico Inventoried Roadless Area boundary
- Special Area: None

Mileage

- Studied: 4.1
- Eligible: 4.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Bull Run Creek (GIS Number 2.32.3) is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: None

Water Quality: Good

Classification: Wild

Bull Run Creek (GIS Number 2.32.4)

Location

- Counties: Kern
- Beginning Point: Chico Inventoried Roadless Area boundary
- End Point: Confluence with North Fork Kern River
- Special Area: None

Mileage

- Studied: 1.7
- Eligible: 1.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Right before its confluence with the North Fork Kern River, Bull Run Creek crosses the Kern Canyon Fault, a right-lateral major fault within the Sierra Nevada Micro-plate. The western side of the fault is displaced 6 miles to the north, compared to the eastern side. In this area, the Fairview metamorphic block shows a spectacular un-eroded marble band ridge tilted almost vertically into the sky.
  - Determination: Geology is an outstandingly remarkable value. The combination of geologic features is rare and unusual. Therefore, geology is considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Bull Run Creek (GIS Number 2.32.4) is eligible because geology, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trail

Water Quality: Good

Classification: Recreational

Cabin Creek (GIS Number 2.34)

Location

- County: Fresno
- Beginning Point: Northwest Converse Grove area at 6,100 feet T.13S. R.28E. Sec.5
- End Point: Confluence with mainstem Kings River
- Special Areas: Giant Sequoia National Monument, Kings River Special Management Area

Mileage

- Studied: 2.6[7]
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Cabin Creek drops steeply from the Cabin Creek Giant Sequoia Grove with views of the Kings River gorge.
  - Determination: Scenery is not an outstandingly remarkable value. All of the creeks flowing off of this north facing slope of the Kings River gorge have views of this spectacular canyon and

[7] Actually, within Sierra National Forest administrative boundary and Giant Sequoia National Monument.

they are not unique or exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Botany**
  - Description: Cabin Creek drains Cabin Creek Giant Sequoia Grove.
  - Determination: Botany is not an outstandingly remarkable value. The creek is similar to several others along the Kings River and Tule River that also drain giant sequoia groves and it is not unique or exemplary. Therefore, botany is not considered outstandingly remarkable.

Summary: Cabin Creek is ineligible because it has no outstandingly remarkable values.

Calf Creek (GIS Number 2.36.2)

Location

- Counties: Kern
- Beginning Point: Confluence with Deep Creek
- End Point: Confluence with Bull Run Creek
- Special Area: None

Mileage

- Studied: 0.3
- Eligible: 0.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Calf Creek (GIS Number 2.36.2) is eligible because prehistory is an outstandingly remarkable value. Deep Creek, an eligible segment, flows into Calf Creek just upstream of its confluence with Bull Run Creek, which is also eligible.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Motorized trail

Water Quality: Good

Classification: Recreational

Cane Creek (GIS Number 2.37)

Location

- County: Kern

- Beginning Point: Below Cane Spring at 5,800 feet T.25S. R.32E. Sec.14
- End Point: Forest Boundary north of Cane Peak (connects to private section that goes to Tillie Creek)
- Special Area: None

Mileage

- Studied: 1.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Cane Creek begins below Black Mountain and falls steeply through a dry landscape to Wofford Heights with sweeping views of the Kern River Valley.
  - Determination: Scenery is not an outstandingly remarkable value. Sweeping views of the Kern River Valley are not unique and the views from Cane Creek are not exemplary. Therefore, scenery is not considered outstandingly remarkable.
- **Geology**
  - Description: Metamorphic roof pendant, large marble outcrop occurs in this area.
  - Determination: Geology is not an outstandingly remarkable value. Metamorphic roof pendant exposure and large marble outcrops occur in several locations in the southern end of the Sequoia National Forest. The geology in the Cane Creek watershed is not unique or exemplary. Therefore, geology is not considered outstandingly remarkable.
- **Botany**
  - Description: The dry open landscape supports endemic Piute cypress in the higher elevation areas.
  - Determination: Botany is not an outstandingly remarkable value. Piute cypress occur in several locations in the southern end of the Sequoia National Forest. The groves near Cane Creek are not exemplary. Therefore, botany is not considered outstandingly remarkable.

Summary: Cane Creek is ineligible because it has no outstandingly remarkable values.

Cedar Creek (GIS Number 2.41.1)

Location

- County: Tulare
- Beginning Point: At 6,000 feet off the southern side of Sunday Peak T25S R 32E
- End Point: Forest Boundary near Poso T25S R31E
- Special Area: None

Mileage

- Studied: 5.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Cedar Creek drains the South Peyrone giant sequoia grove beginning at Onion Meadow. It flows through the forest through a wide, incised canyon with granite outcrops where it enters the Tule River Reservation. Although the creek is very beautiful as it flows through the forest the scenic character is not unlike many other creeks that drain giant sequoia groves within the region of comparison.
  - Determination: Scenery is not an outstandingly remarkable value. Although the creek is very beautiful as it flows through the forest the scenic character is not unlike many other creeks that drain giant sequoia groves within the region of comparison. Because the river related value is not unique, or exemplary within the region of comparison the scenery river related value is not determined to be outstandingly remarkable. Because the river related value is not unique, or exemplary within the region of comparison the scenery river related value is not determined to be outstandingly remarkable.

- **Wildlife**
  - Description: All rivers and creeks and springs in the dry environment are very valuable to wildlife. The river related value is not unique, or exemplary within the region of comparison.
  - Determination: Wildlife is not an outstandingly remarkable value. It is our determination that this is not an ORV for wildlife.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Cedar Creek is ineligible because it has no outstandingly remarkable values.

Clear Creek (GIS Number 2.44)

Location
- County: Kern
- First
- Beginning Point: Around 7,000 feet near Brown Meadow T.28S. R.33E.
- End Point: Forest boundary at 3,800 feet T.28S. R.33E. Sec.6
- Second

- Beginning Point: Forest boundary at 2,500 feet T.27S. R.32E. Sec.22
- End Point: Confluence with Kern River at Miracle Hot Springs.
- Special Area: None

Mileage
- Studied: 10.2
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Clear Creek begins below Piute Peak and flows to the Kern River through a steep, dry landscape. The riparian area contrasts sharply with the dry brush lands. Panoramic views of the Kern River Valley can be enjoyed from many locations.
  - Determination: Scenery is not an outstandingly remarkable value. Other, similar riparian areas exist in the Piute Mountains and it does not have unique or exemplary panoramic views or level of visual contrast. Therefore, scenery is not considered outstandingly remarkable.
- **Recreation**
  - Description: An OHV trail follows the creek through the Piute Mountains providing an expert challenge for motorcycle and ATV enthusiasts.
  - Determination: Recreation is not an outstandingly remarkable value. The opportunity for expert OHV use is not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

Summary: Clear Creek is ineligible because it has no outstandingly remarkable values.

Clicks Creek (GIS Number 2.45.1)

Location
- County: Tulare
- Beginning Point: T.20S. R.31E. Sec.24 at 7,800 feet north of Log Cabin Meadow
- End Point: Golden Trout Wilderness boundary
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 1.3
- Eligible: 1.3

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.

- Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Clicks Creek (GIS Number 2.45.1) is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Roads give access to trailhead on Wilderness boundary and nonmotorized trails

Water Quality: Excellent

Classification: Scenic

Clicks Creek (GIS Number 2.45.2)

Location
- County: Tulare
- Beginning Point: Golden Trout Wilderness boundary
- End Point: Confluence with Little Kern River at 6,000 feet T.20S. R.32E. Sec.4
- Special Area: Golden Trout Wilderness

Mileage
- Studied: 4.5
- Eligible: 4.5

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Clicks Creek (GIS Number 2.45.2) is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Deadman Creek (GIS Number 2.59)

Location
- County: Tulare

- Beginning Point: T.21S. R31E. Sec.7 north of Solo Peak in Giant Sequoia National Monument Black Mountain Grove
- End Point: Confluence South Fork Middle Fork Tule River
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 3.3
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Deadman Creek drains part of the Black Mountain Giant Sequoia Grove.
  - Determination: Botany is not an outstandingly remarkable value. While the creek is beautiful, it is not exemplary or unique. Therefore, botany is not considered outstandingly remarkable.

Summary: Deadman Creek is ineligible because it has no outstandingly remarkable values.

Deep Creek (GIS Number 2.60)

Location
- County: Tulare
- Beginning Point: West of Angora Mountain at 9,000 feet in Golden Trout Wilderness
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage
- Studied: 4.8
- Eligible: 4.8

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Deep Creek (GIS Number 2.60) is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Deep Creek (GIS Number 2.61)

Location

- County: Tulare
- Beginning Point: North of Panorama Campground in T.24S. R.32E. Sec.30
- End Point: Confluence with Calf Creek
- Special Area: None

Mileage

- Studied: 4.2
- Eligible: 4.2

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Deep Creek has Deep Creek Cave nearby and exhibits Tehachapi Metasedimentary roof pendant with large marble bands. Headwaters are Tobias Creek and the roof pendant run up and down the creek. The deeply incised creek runs through the bands of marble and other metamorphic rocks.
  - Determination: Geology is an outstandingly remarkable value. Deep Creek Cave, the deep incision of the creek, and the bands of marble and metasedimentary rocks in the creek are exemplary of the marble and metasedimentary geology on the Sequoia National Forest. Therefore, geology is considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Deep Creek (GIS Number 2.61) is eligible because geology and prehistory are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads

Water Quality: Good

Classification: Recreational

Deer Creek (GIS Number 2.63)

Location

- County: Tulare
- Beginning Point: East of Pup Meadow in T.23S. R.32E. Sec 30
- End Point: Forest boundary near Leavis Flat Campground
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 7.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **Botany**
  - Description: Deer Creek Giant Sequoia Grove is within the watershed.
  - Determination: Botany is not an outstandingly remarkable value. While this is a lovely creek that flows near a giant sequoia grove, other creeks have a better direct interaction with the understory and ecology of the grove. Therefore, it is not unique or exemplary and botany is not considered outstandingly remarkable.

Summary: Deer Creek is ineligible because it has no outstandingly remarkable values.

Dry Meadow Creek (GIS Number 2.69)

Location

- County: Kern
- Beginning Point: T.27S. R.34E. Sec.16 at 6,500 feet
- End Point: Forest boundary past Bob Rabbitt Place in the Piute Mountains
- Special Area: None

Mileage

- Studied: 4.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: OHV trails cross this creek at the top of the watershed before the creek tumbles down the Bob Rabbit Canyon.
  - Determination: Recreation is not an outstandingly remarkable value. There are no unique or exemplary recreation opportunities available along this creek. Therefore, recreation is not considered outstandingly remarkable.
- **Wildlife (Population and Habitat)**
  - Description: Migratory birds, butterflies, slender salamanders are found in this area.
  - Determination: Wildlife population and habitat are not outstandingly remarkable values. This creek is not unique or exemplary. Therefore, wildlife population and habitat are not considered outstandingly remarkable.
- **Botany**
  - Description: Many rare plant communities are present in this area.
  - Determination: Botany is not an outstandingly remarkable value. Other, similar creeks that have rare plants associated with them also exist elsewhere in the area. This creek is not unique or exemplary. Therefore, botany is not considered outstandingly remarkable.

Summary: Dry Meadow Creek (GIS Number 2.69) is ineligible because it has no outstandingly remarkable values.

Dry Meadow Creek (GIS Number 2.70.1)

Location

- County: Tulare
- Beginning Point: At 8,400 feet on Slate Mountain at Freezeout Meadow
- End Point: Center of Sec.15 T.22S. R.32E
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 6.7
- Eligible: 6.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment falls steeply from Freeze Out Meadow on Slate Mountain through Horse Canyon, then more gently flowing across the Western Divide Highway, to Lloyd Meadow Road. This beautiful, bedrock-controlled creek flows through a variety of forest environments with varying topography. Scenic features include the Alder Slabs, a series of granite slabs forming slides, falls, and basins.
  - Determination: Scenery is not an outstandingly remarkable value. Although the views are beautiful, bedrock-controlled creeks flowing from high elevations over a variety of forest

environments with varying topography, and features such as basins and slides exist elsewhere in the area and are not unique or exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: There are opportunities for hiking, summer water play, and fishing. The Summit National Recreation Trail provides access to Freeze Out Meadow at the headwaters, 32E29 is located at the end of this segment, and multiple National Forest System roads access portions of this segment; however, there is no National Forest System trail along the creek. The Alder Slabs form a natural water park of tubs and slides on Alder Creek, and water play extends along Dry Meadow Creek in this area as well. The area can be easily accessed from the Lloyd Meadow Road, which makes it attractive for summer water play. There is easy road access for fishing. Social media has increased the popularity of this attraction.
  - Determination: Recreation is an outstandingly remarkable value. The Alder Slabs attract visitors to Dry Meadow Creek for summer water play from inside and outside the region of comparison. These tubs and slides are perhaps the most outstanding "natural water park" on the forest, with relatively easy access for visitors. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: The headwaters are underlain by metamorphic slate and metasedimentary ocean deposits, which were uplifted to their present altitude by plate tectonics. This area receives 25 feet of snow in an average winter, which creates Freeze Out and other alpine meadows. In contrast, the lower portion of Dry Meadow Creek has numerous long sections of granitic plutonic bedrock and bedrock control sections, with solid granite channels.
  - Determination: Geology is an outstandingly remarkable value. Bedrock control sections, with solid granite channels, are exemplary of this feature. Therefore, geology is considered outstandingly remarkable.

Summary: Dry Meadow Creek (GIS Number 2.70.1) is eligible because recreation and geology are outstandingly remarkable values. Dry Meadow Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Dry Meadow Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Very little, only access trails

Accessibility: Roads and nonmotorized trails

Water Quality: Very good

Classification: Scenic

Dry Meadow Creek (GIS Number 2.70.2)

Location

- County: Tulare
- Beginning Point: Center of Sec.15 T.22S. R.32E

- End Point: Confluence with North Fork Kern River
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.6
- Eligible: 2.6

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment flows through a dry and open forest environment over granite bedrock. The most noteworthy feature is located just before the creek enters the North Fork Kern River is a series of waterfalls and deep basins scoured out of a granite monolith, known as the 7 Teacups.
  - Determination: Scenery is an outstandingly remarkable value. The exceptionally high contrast between the whitewater and the desert-like landscape, the steep topography and changing relief, and the exemplary granitic features of the 7 Teacups create a dynamic and highly scenic landscape. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: This creek provides opportunities for Class C canyoneering, rock climbing, and Class V whitewater kayaking through the 7 Teacups falls and basins. It is accessed from Lloyd Meadow Road or National Forest System trail 32E43. This has been a popular destination for visitors since the 1980s and social media has increased the popularity of the area.
  - Determination: Recreation is an outstandingly remarkable value. The 7 Teacups are unique and along with other waterfalls attract visitors from outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: The lower portion of Dry Meadow Creek has numerous long sections of granitic plutonic bedrock and bedrock control sections, with solid granite channels, such as the 7 Teacups.
  - Determination: Geology is an outstandingly remarkable value. Bedrock control sections, with solid granite channels, such as the 7 Teacups, are exemplary of this feature. Therefore, geology is considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.

- Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, the history is not considered outstandingly remarkable.

Summary: Dry Meadow Creek (GIS Number 2.70.2) is eligible because scenery, recreation, geology, and prehistory are outstandingly remarkable values. Dry Meadow Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Dry Meadow Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trails

Water Quality: Good

Classification: Scenic

Durrwood Creek (GIS Number 2.71)

Location

- County: Tulare
- Beginning Point: T.22S. R.33E. Sec.11 northeast of Sherman Peak at 8,700 feet
- End Point: Confluence with North Fork Kern River
- Special Area: None

Mileage

- Studied: 7.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Durrwood Creek falls from the Kern Plateau to the North Fork Kern River, passing through multiple transition zones from red fir lodgepole forests and meadows high on the Kern Plateau down the steep, west-facing slopes of the North Fork Kern River Canyon which transition to dry brushlands. Scenic attributes include sheer cliffs, rock outcrops, waterfalls, and big, panoramic views of the Kern River Canyon and the visual diversity created from multiple transition zones.
  - Determination: Scenery is not outstandingly remarkable. Although the views are beautiful, visual diversity is not rare or unique. Therefore, scenery is not considered outstandingly remarkable.

- **Fish (Habitat)**

- Description: This creek will be stocked with Kern River rainbow trout.
- Determination: Fish habitat is not an outstandingly remarkable value. This creek is not one of the best examples of Kern River rainbow trout habitat, and therefore, fish habitat is not considered outstandingly remarkable.

Summary: Durrwood Creek is ineligible because it has no outstandingly remarkable values.

East Fork Erskine Creek (GIS Number 2.72)

Location

- County: Kern
- Beginning Point: T.27S. R.34E. Sec.33 at 6,200 feet in the Piute Mountains
- End Point: Confluence with Middle Fork Erskine Creek
- Special Area: None

Mileage

- Studied: 3.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The creek is located in a steep and an exceptional dry landscape in the Piute Mountains, with views of the Southern Sierra Nevada mountains. The riparian area contrasts with the high desert landscape.
  - Determination: Scenery is not an outstandingly remarkable value. Mountain views are not exemplary. Although the presence of riparian vegetation contrasts with the high desert landscape, similar creeks exist in the Piute Mountains and this creek is not exceptional or unique. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: National Forest System trail 34E34, which is open to motorcycles, follows the creek for about 0.5 mile. This trail is not well maintained. There are no other trails or roads along the creek. However, the terrain upstream from the trail is relatively gentle and offers visitors opportunities to walk cross country to view butterflies and bird watch.
  - Determination: Recreation is not an outstandingly remarkable value. Butterfly viewing and bird watching opportunities are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: This area attracts butterflies and is on a boundary for butterflies from the Tehachapi Mountains and the desert to the east.
  - Determination: Wildlife Population is not an outstandingly remarkable value. While this is a great area for butterfly watching, other, similar opportunities also exist elsewhere in the area. Therefore, wildlife population is not considered outstandingly remarkable.

Summary: East Fork Erskine Creek is ineligible because it has no outstandingly remarkable values.

Fish Creek (GIS Number 2.78.1)

Location

- County: Tulare
- Beginning Point: T.20S. R.32E. Sec.19 near Junction Meadow at 7,800 feet
- End Point: Golden Trout Wilderness boundary
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 1.5
- Eligible: 1.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Fish Creek flows through mixed conifer forests and meadows.
  - Determination: Scenery is not an outstandingly remarkable value. Other, similar scenic characteristics also exist elsewhere in the area and it is not unique. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: This creek is popular for fishing and is designated by the State of California as a Heritage and Wild Trout Water for fishing opportunities for Little Kern golden trout. Little Kern golden trout are present is a stable population, so the opportunity to fish for these heritage trout in their native range is outstanding.
  - Determination: Recreation is an outstandingly remarkable value because the State of California designated the creek as a Heritage and Wild Trout Water.

- **Fish (Population and Habitat)**
  - Description: Stable populations of Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Fish Creek (GIS Number 2.78.1) is eligible because recreation, prehistory, and fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads

Water Quality: High

Classification: Scenic

Fish Creek (GIS Number 2.78.2)

Location

- County: Tulare
- Beginning Point: Golden Trout Wilderness boundary
- End Point: Confluence with Kern River
- Special Areas: Giant Sequoia National Monument, Golden Trout Wilderness

Mileage

- Studied: 4.4
- Eligible: 4.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Fish Creek flows through mixed conifer forests and meadows.
  - Determination: Scenery is not an outstandingly remarkable value. Other, similar scenic characteristics also exist elsewhere in the area, so it is not unique. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: This creek is popular for fishing and is designated by the State of California as a Heritage and Wild Trout Water for fishing opportunities for Little Kern golden trout. Little Kern golden trout are present in a stable population, so the opportunity to fish for these heritage trout in their native range is outstanding.
  - Determination: Recreation is an outstandingly remarkable value because the State of California designated the creek as a Heritage and Wild Trout Water.

- **Fish (Population and Habitat)**
  - Description: Stable populations of Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Fish Creek (GIS Number 2.78.2) is eligible because recreation, prehistory, fish population, and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: High

Classification: Wild

Fish Creek (GIS Number 2.79.1)

Location

- County: Tulare
- Beginning Point: T.20S. R.34E. Sec.22 east of Blackrock Mountain at 9,300 feet
- End Point: Domeland Wilderness boundary
- Special Area: None

Mileage

- Studied: 15.3
- Eligible: 15.3

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The areas around fish creek are popular for hunting and fishing. The upper reaches are accessible by vehicles. Remnant populations of golden trout inhabit these waters. Other popular activities include camping, motorcycle trail riding, mountain biking, backcountry travel, and hiking.
  - Determination: Recreation is not an outstandingly remarkable value. This creek is not identified by the State of California as a Heritage Trout Water. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Fish Creek contains habitat for golden trout and is within the historic range for the species. A remnant population exists in the creek. This creek will be included in future golden trout restoration projects when the recovery effort starts.
  - Determination: Fish population and habitat are outstandingly remarkable values. Due to the presence of golden trout and good habitat for this species, fish population and habitat are considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Great gray owls are found in the area of Fish Creek. This is a Forest Service Sensitive Species and rare on the Sequoia National Forest. Great gray owls and goshawks hunt along the Fish Creek Meadows and nearby forests.

- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of great gray owls and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Fish Creek (GIS Number 2.79.1) is eligible because prehistory, fish population and habitat, and wildlife population and habitat are outstandingly remarkable values. Fish Creek flows into a designated segment of the South Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Fish Creek contributes to maintaining the biotic integrity of the South Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing, flows through designated wilderness and inventoried roadless area, and native fish are present.

Preliminary Classification

Water Resources Development: One or two ground water wells that do not appear to alter flows

Shoreline Development: Two road crossings

Accessibility: Roads, including Sherman Pass Road, and nonmotorized trails

Water Quality: Very high

Classification: Recreational

Fish Creek (GIS Number 2.79.2)

Location

- County: Tulare
- Beginning Point: Domeland Wilderness boundary
- End Point: Confluence with the South Fork Kern River
- Special Area: Domeland Wilderness

Mileage

- Studied: 8.1
- Eligible: 8.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The areas around Fish Creek are popular for hunting and fishing. Remnant populations of golden trout inhabit these waters. Other popular activities include camping, backcountry travel, and hiking.
  - Determination: Recreation is not an outstandingly remarkable value. This creek is not identified by the State of California as a Heritage Trout Water. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Fish Creek contains habitat for golden trout and is within the historic range of the species. A remnant population exists in the creek. This creek will be included in future golden trout restoration projects when the recovery effort starts.
  - Determination: Fish population and habitat are outstandingly remarkable values. Due to the presence of golden trout and good habitat for this species, fish population and habitat are considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Great gray owls are found in the area of Fish Creek. This is a Forest Service Sensitive Species and rare on the Sequoia National Forest. Great gray owls and goshawks hunt along the Fish Creek Meadows and nearby forests.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of great gray owls and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Fish Creek (GIS Number 2.79.2) is eligible because prehistory, fish population and habitat, and wildlife population and habitat are outstandingly remarkable values. Fish Creek flows into a designated segment of the South Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Fish Creek contributes to maintaining the biotic integrity of the South Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing, flows through designated wilderness and inventoried roadless area, and native fish are present.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Very high

Classification: Wild

Freeman Creek (GIS Number 2.81.1)

Location

- County: Tulare
- Beginning Point: T.21S. R.32E. Sec.5 northeast of Quaking Aspen Campground at 7,100 feet
- End Point: Confluence with an unnamed tributary 1,000 feet north of Forest Road 21S99
- Special Areas: Giant Sequoia National Monument, Freeman Creek Grove Botanical Area

Mileage

- Studied: 0.7
- Eligible: 0.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Freeman Creek Trail (32E20) is a well-developed and popular trail for mountain bikers, hikers, and equestrians. The trail wanders along Freeman Creek, traveling through the beautiful and pristine Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area.
  - Determination: Recreation is an outstandingly remarkable value. The Freeman Creek Trails provides exceptional opportunities for visitors to experience the grandeur of specimen giant sequoias in an environment that is untouched by past logging and human intervention. Freeman Creek has the potential to attract visitors from outside the region of comparison. Therefore, recreation is considered to be outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **Botany**
  - Description: This creek flows through Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area.
  - Determination: Botany is an outstandingly remarkable value. Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area are unique and exemplary of the ecology of giant sequoia groves. Therefore, botany is considered outstandingly remarkable.

Summary: Freeman Creek (GIS Number 2.81.1) is eligible because recreation, prehistory, and botany are outstandingly remarkable values. Freeman Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Freeman Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trails

Water Quality: Good

Classification: Scenic

Freeman Creek (GIS Number 2.81.2)

Location

- County: Tulare
- Beginning Point: Confluence with unnamed tributary 1,000 feet north of Forest Road 21S99
- End Point: Confluence with unnamed tributary 300 feet east of Forest Trail 32E20

- Special Areas: Giant Sequoia National Monument, Freeman Creek Grove Botanical Area

Mileage

- Studied: 1.8
- Eligible: 1.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Freeman Creek Trail (32E20) is a well-developed and popular trail for mountain bikers, hikers, and equestrians. The trail wanders along Freeman Creek, traveling through the beautiful and pristine Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area.
  - Determination: Recreation is an outstandingly remarkable value. The Freeman Creek Trails provides exceptional opportunities for visitors to experience the grandeur of specimen giant sequoias in an environment that is untouched by past logging and human intervention. Freeman Creek has the potential to attract visitors from outside the region of comparison. Therefore, recreation is considered to be outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **Botany**
  - Description: This creek flows through Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area.
  - Determination: Botany is an outstandingly remarkable value. Freeman Creek Giant Sequoia Grove and Freeman Creek Grove Botanical Area are unique and exemplary of the ecology of giant sequoia groves. Therefore, botany is considered outstandingly remarkable.

Summary: Freeman Creek (GIS Number 2.81.2) is eligible because recreation, prehistory, and botany are outstandingly remarkable values. Freeman Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Freeman Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Good

Classification: Wild

Freeman Creek (GIS Number 2.81.3)

Location

- County: Tulare
- Beginning Point: Confluence with unnamed tributary 300 feet east of Forest Trail 32E20
- End Point: Confluence with the North Fork Kern River
- Special Areas: Giant Sequoia National Monument, Freeman Creek Grove Botanical Area

Mileage

- Studied: 4.9
- Eligible: 4.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Freeman Creek Trail (32E20) is a well-developed and popular trail for mountain bikers, hikers, and equestrians. The trail wanders along Freeman Creek, traveling through the beautiful and pristine Freeman Creek Giant Sequoia Grove and the Freeman Creek Grove Botanical Area. An accessible trail with a parking area has been developed at the President George H.W. Bush Tree, one of the grandest monarchs named for the presidential proclamation that protected all giant sequoia trees for future generations. Future plans for this site include interpretive development and expanded amenities to accommodate visitors to the accessible trail.
  - Determination: Recreation is an outstandingly remarkable value. The Freeman Creek Trails provides exceptional opportunities for visitors to experience the grandeur of specimen giant sequoias in an environment that is untouched by past logging and human intervention. In the future, when interpretive development and expanded amenities are complete, Freeman Creek will attract visitors from outside the region of comparison. Therefore, recreation is considered to be outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **Botany**
  - Description: This creek flows through Freeman Creek Giant Sequoia Grove and Freeman Creek Grove Botanical Area.
  - Determination: Botany is an outstandingly remarkable value. Freeman Creek Giant Sequoia Grove and Freeman Creek Grove Botanical Area are unique and exemplary of the ecology of giant sequoia groves. Therefore, botany is considered outstandingly remarkable.

Summary: Freeman Creek (GIS Number 2.81.3) is eligible because recreation, prehistory, and botany are outstandingly remarkable values. Freeman Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of

its tributaries. Freeman Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trails

Water Quality: Good

Classification: Scenic

Galena Creek (GIS Number 2.84)

Location

- County: Tulare
- Beginning Point: T.19S. R.31E. Sec.17 at 8,400 feet west of Maggie Mountain Grove
- End Point: Confluence with North Fork Middle Fork Tule River
- Special Areas: Giant Sequoia National Monument, Golden Trout Wilderness

Mileage

- Studied: 2.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Galena Creek drains Maggie Mountain Giant Sequoia Grove.
  - Determination: Botany is not an outstandingly remarkable value. Galena Creek is similar to many other creeks that provide water within other giant sequoia groves and is not unique or exemplary. Therefore, botany is not considered outstandingly remarkable.

Summary: Galena Creek is ineligible because it has no outstandingly remarkable values.

Grasshopper Creek (GIS Number 2.88)

Location

- County: Tulare
- Beginning Point: T.19S. R.32E. Sec.1 at 10,100 feet south of Coyote Lakes in Golden Trout Wilderness
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 3.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Grasshopper Creek flows from the Western Divide down to the North Fork Kern River, offering views of the Kern Slide, the Sierra Crest, and the Kern Canyon.
  - Determination: Scenery is not an outstandingly remarkable value. Although views are beautiful, other, similar views also exist elsewhere in the area and it is not unique or exemplary. Therefore, scenery is not considered to be outstandingly remarkable.

- **Recreation**
  - Grasshopper Creek can be enjoyed by back country travelers and has opportunities for fishing for Kern River rainbow trout. The creek lacks any trail along its length and backcountry travelers must scramble cross country to visit.
  - Determination: Grasshopper Creek offers cross-country opportunities for back country travelers, which is common to most creeks in the area. The fishing opportunities are limited due to the steep terrain and are not unique or exemplary when compared to North Fork Kern River or other streams in the area. For this reason, the recreation river related value is not determined to be outstandingly remarkable.

- **Geology**
  - Description: Grasshopper Creek drops down to the Kern River and is very similar to other creeks in the area and is not unique or exemplary. For this reason, the geology river related value is not determined to be outstandingly remarkable.
  - Determination: Geology is not an outstandingly remarkable value. Other, similar creeks also exist elsewhere in the area and it is not unique or exemplary. Therefore, geology is not considered outstandingly remarkable.

Summary: Grasshopper Creek is ineligible because it has no outstandingly remarkable values.

Greenhorn Creek (GIS Number 2.89.1)

Location
- County: Tulare
- Beginning Point: T.26S. R.32E. Sec.30 on the west slope of Woodward Peak near Evans Flat Campground
- End Point: Greenhorn Creek Inventoried Roadless Area boundary
- Special Area: None

Mileage
- Studied: 4.4
- Eligible: 4.4

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Greenhorn Creek Cave is well known to spelunkers locally and regionally.
  - Determination: Recreation is not an outstandingly remarkable value. While interesting to spelunkers, Greenhorn Creek Cave is not a unique or exemplary recreation experience. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Greenhorn Creek Cave is well known to spelunkers locally and regionally. The entire creek disappears and flows underground before reemerging downstream. This deep cave system is developed in granite bedrock, which is highly unusual (almost all caves in the Sierra Nevada are formed in marble), and Greenhorn Cave is potentially the deepest granite cave in the United States.
  - Determination: Geology is an outstandingly remarkable value.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Greenhorn Creek (GIS Number 2.89.1) is eligible because geology, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Road and trail crossings

Accessibility: Many roads and nonmotorized trails near this creek

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Recreational

Greenhorn Creek (GIS Number 2.89.2)

Location

- County: Tulare
- Beginning Point: Greenhorn Creek Inventoried Roadless Area boundary
- End Point: Confluence with Kern River
- Special Area: None

Mileage

- Studied: 4.0
- Eligible: 4.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Greenhorn Creek Cave is well known to spelunkers locally and regionally.
  - Determination: Recreation is not an outstandingly remarkable value. While interesting to spelunkers, Greenhorn Creek Cave is not a unique or exemplary recreation experience. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Greenhorn Creek Cave is well known to spelunkers locally and regionally. The entire creek disappears and flows underground before reemerging downstream, this deep cave system is developed in granite bedrock, which is highly unusual (almost all caves in the Sierra Nevada are formed in marble), and Greenhorn Cave is potentially the deepest granite cave in the United States.
  - Determination: Geology is an outstandingly remarkable value.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Greenhorn Creek (GIS Number 2.89.2) is eligible because geology, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Road and trail crossings

Accessibility: Many roads and nonmotorized trails near this creek

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Scenic

Grizzly Creek (GIS Number 2.90)

Location

- County: Fresno
- Beginning Point: T.12S. R.30E. Sec.29 in Monarch Wilderness near Grizzly Lake
- End Point: Confluence with South Fork Kings River
- Special Area: Monarch Wilderness

Mileage

- Studied: 5.5
- Eligible: 5.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Grizzly Creek tumbles down a steep canyon in the Kings River Gorge, one of the deepest canyons in the world, with views of outstanding geological features. Grizzly Falls is an outstanding waterfall close to the creek's terminus at the South Fork Kings River Wild and Scenic River and it is easily viewed and accessed from the Kings Canyon Scenic Byway and a developed day use site. Thousands of visitors from all over the world enjoy this feature each year.
  - Determination: Scenery is an outstandingly remarkable value. Grizzly Falls is an outstanding waterfall that draws visitors from outside the region of comparison. Therefore, scenery is considered outstandingly remarkable.

- **Geology**
  - Description: Grizzly Creek originates in the Monarch Wilderness near Grizzly Lake tumbles down a steep canyon in the Kings River Gorge, one of the deepest canyons in the world. Grizzly Falls is a scenic waterfall close to the creek's terminus at the South Fork Kings River.
  - Determination: Geology is an outstandingly remarkable value. Grizzly falls is an outstanding waterfall and the elevation drop into the South Fork Kings River is significant. Therefore, geology is considered outstandingly remarkable.

Summary: Grizzly Creek is eligible because scenery and geology are outstandingly remarkable values. Grizzly Creek flows into a designated segment of the South Fork Kings Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Grizzly Creek contributes to maintaining the biotic integrity of the South Fork Kings River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Very little

Water Quality: Good

Classification: Wild

Hossack Creek (GIS Number 2.94)

Location

- County: Tulare
- Beginning Point: T.20S. R.31E. Sec.21 near Hossack Meadow
- End Point: Confluence with North Fork Middle Fork Tule River
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: This creek flows through meadows and near Alder Giant Sequoia Grove.
  - Determination: Botany is not an outstandingly remarkable value. This creek is not unique. Therefore, botany is not considered outstandingly remarkable.

Summary: Hossack Creek is ineligible because it has no outstandingly remarkable values.

Jackass Creek (GIS Number 2.98)

Location

- County: Tulare
- Beginning Point: T.21S. R.35E. Sec.5 northeast of Smith Mountain
- End Point: Confluence with Fish Creek
- Special Area: None

Mileage

- Studied: 5.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Jackass Creek is in the lodgepole-red fir belt meadows, and mountain chaparral alternating with forests. The abundant meadows and aspen give the area picturesque qualities.
  - Determination: Scenery is not an outstandingly remarkable value. Although picturesque, other, similar creek environments also exist elsewhere on the Kern Plateau and it is not unique or exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Jackass National Recreation Trail (35E13) is a popular OHV, mountain biking, and hiking trail that draws visitors seeking challenging recreation activities. In the summer, temperatures are cooler than the valleys and this area provides respite from summer heat.
  - Determination: Recreation is not an outstandingly remarkable value. Although Jackass National Recreation Trail draws many visitors from within the region of comparison, many other, similar trails also exist on the Kern Plateau the creek side trail experience is not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs.
  - Determination: Fish habitat is not an outstandingly remarkable value. There is not robust evidence that golden trout currently occur or that habitat quality is high. Therefore, fish habitat is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Jackass Creek is ineligible because it has no outstandingly remarkable values.

Jacks Creek (GIS Number 2.99)

Location

- County: Kern
- Beginning Point: T.26S. R.36E. Sec.22 at 6,000 feet in Scodie Mountains
- End Point: Confluence with Canebrake Creek, north of Walker Pass
- Special Area: Kiavah Wilderness

Mileage

- Studied: 4.4
- Eligible: 4.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Jacks Creek is an important water source for wildlife in a very dry area and for the willows. It is one of the major tributaries that supplies water to the willows that form the basis for habitat for southwestern willow flycatcher, a federally listed species. It is within foraging distance of southwestern willow flycatcher critical habitat along Canebrake Creek.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of southwestern willow flycatchers and their habitat, wildlife population and habitat are considered outstandingly remarkable.

Summary: Jacks Creek is eligible because wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: None

Water Quality: Good

Classification: Wild

Kern River (GIS Number 2.104.1)

Location

- County: Kern
- Beginning Point: Confluence of the river and Lake Isabella spillway
- End Point: Bureau of Land Management boundary north of Keysville SRMA Campground
- Special Area: None

Mileage

- Studied: 0.4
- Eligible: 0.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment of the Kern River travels a granite bedrock channel through a dry landscape of boulders and scattered oaks and grey pine, starting gently, followed by steeper gradients. The river corridor is buffered by the steep topography, which makes the scenery appear rugged and remote despite its proximity to urban areas and a highway. Inventoried roadless areas are visible and contain some of the features described.
  - Determination: Scenery is an outstandingly remarkable value. The river corridor and large volume of water sharply contrast with the surrounding dry hillsides. Swiftly changing river conditions produce variable and attractive series of rapids and pools. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: Whitewater boating occurs on this segment when water conditions permit. Four outfitter/guide special-use permittees market and provide high-quality opportunities to visitors to experience this world-class setting. There is one developed campground at the base of the dam and river access sites managed by the Bureau of Land Management.
  - Determination: Recreation is an outstandingly remarkable value. This segment of the Kern River attracts many visitors from outside the region of comparison to experience whitewater rafting and kayaking. Therefore, recreation is considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Southwestern willow flycatcher, yellow billed cuckoo, and other migratory birds are in the area. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including a species that is under review by the U.S. Fish and Wildlife Service for federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of southwestern willow flycatchers and their habitat, as well as California condors and slender salamanders, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind because of the high occurrence of resources associated with the occupation of the river area by the Tubatulabal Tribe, ranging from food processing to rock art sites. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind because the area was the site of the Kern River Gold Rush, started by Richard M. Keyes' discovery of gold in 1853. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.1) is eligible because scenery, recreation, wildlife population and habitat, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Lake Isabella spillway

Shoreline Development: Campsites and roads

Accessibility: Roads and access points

Water Quality: If Lake Isabella (Reservoir) water level is low, water temperature may be warmer.

Classification: Recreational

Kern River (GIS Number 2.104.2)

Location

- County: Kern

- Beginning Point: Bureau of Land Management boundary north of Keysville SRMA Campground
- End Point: Bureau of Land Management boundary where river flows under State Route 178
- Special Area: None

Mileage

- Studied: 0.5
- Eligible: 0.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment of the Kern River travels a granite bedrock channel through a dry landscape of boulders and scattered oaks and grey pine. It starts gently and is followed by steeper gradients. The river corridor is buffered by the steep topography, which makes the scenery appear rugged and remote despite its proximity to urban areas and a highway. Inventoried roadless areas are visible and contain some of the features described.
  - Determination: Scenery is an outstandingly remarkable value. The river corridor and large volume of water sharply contrasts with the surrounding dry hillsides. Swiftly changing river conditions produce variable and attractive series of rapids and pools. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: Whitewater boating occurs on this segment when water conditions permit. Four outfitter/guide special use permittees market and provide high quality opportunities to visitors to experience this world class setting. There is one developed campground at the base of the dam and river access sites managed by the Bureau of Land Management.
  - Determination: Recreation is an outstandingly remarkable value. This segment of the Kern River attracts many visitors from outside the region of comparison to experience whitewater rafting and kayaking. Therefore, recreation is considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Southwestern willow flycatcher, yellow-billed cuckoo, and other migratory birds are in the area. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including a species is under review by U.S. Fish and Wildlife Service for federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of southwestern willow flycatchers and their habitat, as well as California condors and slender salamanders, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind because of the high occurrence of resources associated with the occupation of the river area by the Tubatulabal Tribe, ranging from food

processing to rock art sites. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - ♦ Includes identified and documented historic sites.
  - ♦ Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind because the area was the site of the Kern River Gold Rush, started by Richard M. Keyes' discovery of gold in 1853. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.2) is eligible because scenery, recreation, wildlife population and habitat, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Highway, private land, and roads

Accessibility: Highway, private land, and roads

Water Quality: If Lake Isabella (Reservoir) water level is low, water temperature may be warmer.

Classification: Recreational

Kern River (GIS Number 2.104.3)

Location

- County: Kern
- Beginning Point: Bureau of Land Management and Forest boundary
- End Point: Borel Powerhouse
- Special Area: None

Mileage

- Studied: 3.0
- Eligible: 3.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - ♦ Description: This segment of the Kern River drops approximately 350 feet (approximately 27 feet per mile). The river character is variable as it falls through this exceptionally steep canyon, contrasting sharply with the dry and flat landscape of the Central Valley. The series of rapids in a wide range of classes are intermixed with stretches of quiet river flowing past sycamore and willows, and dry, steep canyon walls with grey pine and oaks. Inventoried roadless areas are visible and contain some of the features described.
  - ♦ Determination: Scenery is an outstandingly remarkable value. The quality and variety of rapids and visual contrast is exceptional. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**

- Description: A wide variety of recreation opportunities exist. There are two developed campgrounds Hobo Campground and Sandy Flat, a developed day use site (Miracle Hot Springs) and developed river access sites (Democrat and Delonega). The Borel Powerhouse tailrace normally provides sufficient flows during May through September for the whitewater boating season. Outfitter guides for river rafting trips operate campsites under special use permits. The private and commercial white-water boating opportunities attract visitors from outside of the region of comparison and are exceptional quality.
- Determination: Recreation is an outstandingly remarkable value. This segment of the Kern River attracts many visitors from outside the region of comparison to experience whitewater rafting and kayaking. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Sensitive mussels have been rediscovered in this segment. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including species under review by U.S. Fish and Wildlife Service for Federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of mussels, salamanders, and California condors and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind because of the high occurrence of resources associated with the occupation of the river area by the Tubatulabal Tribe, ranging from food processing to rock art sites. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind because the area was the site of the Kern River Gold Rush, started by Richard M. Keyes' discovery of gold in 1853. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.3) is eligible because scenery, recreation, wildlife population and habitat, prehistory, and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Hydropower infrastructure

Shoreline Development: Highway, roads, and access points

Accessibility: Highway, roads, and access points

Water Quality: Good, if Lake Isabella (Reservoir) water level is low, water temperature may be warmer.

Classification: Recreational

Kern River (GIS Number 2.104.4)

Location

- County: Kern
- Beginning Point: Borel Powerhouse
- End Point: Democrat Hot Springs Reservoir
- Special Area: None

Mileage

- Studied: 12.5
- Eligible: 12.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This is the steepest, most rugged stretch of the lower Kern River Canyon located entirely on National Forest land. Under normal water flow conditions, the river is a series of impressive rapids interspersed with stretches of seemingly quiet waters. California State Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment and the river is easily viewed from the highway. The white-water river conditions and steep canyon walls contrast sharply with the flat central valley and the dry landscape of southern California. Inventoried roadless areas are visible and contain some of the features described.
  - Determination: Scenery is an outstandingly remarkable value. The quality and variety of rapids and visual contrast are exceptional. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: California State Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment. There are innumerable turnouts and three developed day use sites where visitors stop to picnic, fish, and enjoy the water. This segment of river is located close to the Bakersfield area, which draws crowds during the hot summer season. A few highly experienced whitewater enthusiasts enjoy the challenge of kayaking this segment.
  - Determination: Recreation is not an outstandingly remarkable value. This river segment draws many visitors from local communities in the Central Valley, and the challenging white water draws a few expert kayakers from outside the region of comparison. Visitors are not encouraged to enter the dangerous waters. The fishing opportunity is for nonnative species. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur.

- Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Sensitive mussels have been rediscovered in this segment. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including species under review by U.S. Fish and Wildlife Service for federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of mussels, salamanders, and California condors and their habitat, wildlife population and habitat are considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.4) is eligible because scenery and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Hydropower infrastructure

Shoreline Development: Highway, roads, and access points

Accessibility: Highway, roads, and access points with parking for day use

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Recreational

Kern River (GIS Number 2.104.6)

Location

- County: Kern
- Beginning Point: Dam at Democrat Springs
- End Point: Rapid 500 feet upstream from SCE Kern River 1 Project
- Special Area: None

Mileage

- Studied: 10.4
- Eligible: 10.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This is the steepest, most rugged stretch of the lower Kern River Canyon located entirely on National Forest land. Under normal flow conditions, the river is a series of impressive rapids interspersed with stretches of seemingly quiet waters. California State Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment, and the river is easily viewed from the highway. The white-water river conditions and steep canyon walls contrast sharply with the flat central valley and the dry landscape of

southern California. Inventoried roadless areas are visible and contain some of the features described.

- Determination: Scenery is an outstandingly remarkable value. The quality and variety of rapids and visual contrast is exceptional. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment. There are innumerable turnouts and three developed day use sites where visitors stop to picnic, fish, and enjoy the water. This segment of river is located close to the Bakersfield area which draws crowds during the hot, summer season. A few highly experienced whitewater enthusiasts enjoy the challenge of kayaking this segment.
  - Determination: Recreation is not an outstandingly remarkable value. This river segment draws many visitors from local communities in the Central Valley and the challenging white water draws a few expert kayakers from outside the region of comparison. Visitors are not encouraged to enter the dangerous waters. The fishing opportunity is for nonnative species. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Sensitive mussels have been rediscovered in this segment. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including species under review by U.S. Fish and Wildlife Service for federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of mussels, salamanders, and California condors and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.6) is eligible because scenery, prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Democrat Dam and SCE Kern River 1 Project

Shoreline Development: Highway, roads, and access points

Accessibility: Highway, roads, and access points with parking for day use

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Recreational

Kern River (GIS Number 2.104.8)

Location

- County: Kern
- Beginning Point: Rapid 500 feet upstream from SCE Kern River 1 Project
- End Point: Forest boundary just below the Powerhouse
- Special Area: None

Mileage

- Studied: 0.2
- Eligible: 0.2

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This is the steepest, most rugged stretch of the lower Kern River Canyon located entirely on National Forest land. Under normal flow conditions, the river is a series of impressive rapids interspersed with stretches of seemingly quiet waters. California State Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment, and the river is easily viewed from the highway. The white-water river conditions and steep canyon walls contrast sharply with the flat central valley and the dry landscape of southern California. Inventoried roadless areas are visible and contain some of the features described.
  - Determination: Scenery is an outstandingly remarkable value. The quality and variety of rapids and visual contrast are exceptional. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: California State Highway 178 is located immediately adjacent to all but the upper one-half mile of this river segment. There are innumerable turnouts and three developed day use sites where visitors stop to picnic, fish, and enjoy the water. This segment of river is located close to the Bakersfield area, which draws crowds during the hot summer season. A few highly experienced whitewater enthusiasts enjoy the challenge of kayaking this segment.
  - Determination: Recreation is not an outstandingly remarkable value. This river segment draws many visitors from local communities in the Central Valley, and the challenging white water draws a few expert kayakers from outside the region of comparison. Visitors are not encouraged to enter the dangerous waters. The fishing opportunity is for nonnative species. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Sensitive mussels have been rediscovered in this segment. California condor occurs in this area and is an endangered species. Two species of slender salamanders occur in this segment, including species under review by U.S. Fish and Wildlife Service for federal listing.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of mussels, salamanders, and California condors and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kern River (GIS Number 2.104.8) is eligible because scenery, prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: SCE Kern River 1 Project

Shoreline Development: Highway, roads, and access points

Accessibility: Highway, roads, and access points with parking for day use

Water Quality: Good

Classification: Recreational

Landers Creek (2.108)

Location

- County: Kern
- Beginning Point: T.29S. R.34E. Sec.11 northwest of Sorrell Peak in the Piute Mountains at 7,200 feet
- End Point: Confluence with Kelso Creek
- Special Area: None

Mileage

- Studied: 3.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Pacific Crest Trail follows a portion of Landers Creek and provides a drinking water source for long-distance trail users.
  - Determination: Recreation is not an outstandingly remarkable value. Although the area has multiple trail opportunities and provide drinking water for trail users, other, similar recreation opportunities also exist elsewhere in the area and are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **History**
  - Description: The area was used for cattle and is similar to other areas of the forest that had cattle and sheep driven through and cattle camps.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Landers Creek is ineligible because it has no outstandingly remarkable values.

Leggett Creek (GIS Number 2.111)

Location

- County: Tulare
- Beginning Point: T.19S. R.33E. Sec.18 north of Angora Mountain in Golden Trout Wilderness at 9,300 feet
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 2.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Leggett Creek tumbles down from 9,000 feet to the Kern River at 6,000 feet. Glaciation in the upper valleys of the Kern River and some views of an 1880s landslide provide geologic interest.

- Determination: Geology is not an outstandingly remarkable value. While the 1880s landslide is interesting, other, similar views also exist elsewhere in the area and it is not unique or exemplary. Therefore, geology is not considered outstandingly remarkable.

Summary: Leggett Creek is ineligible because it has no outstandingly remarkable values.

Lion Creek (GIS Number 2.114)

Location

- County: Tulare
- Beginning Point: T.19S. R.32E. Sec.13 northwest of Angora Mountain in Golden Trout Wilderness at 9,200 feet
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 3.5
- Eligible: 3.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Lion Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Little Kern Lake Creek (GIS Number 2.117)

Location

- County: Tulare
- Beginning Point: Coyote Lakes in the Golden Trout Wilderness
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 3.1
- Eligible: 3.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: The headwaters of Little Kern Lake Creek start at nearly 11,000 feet at Coyote Peaks in glacial cirques, alpine lakes, and meadows on the east side of Coyote ridge. It tumbles down 4,800 feet to its confluence with the North Fork Kern River. This confluence is also the southern extent of Tahoe age glaciation in the Kern Canyon. This filled the Kern Canyon with 1,000 feet of ice and carved the characteristic U shape of this portion of the Kern Canyon. At the confluence of Little Kern Lake Creek and the Kern River is the highly unusual Little Kern Lake. It was formed, not by glaciation, but by a massive landslide from the opposite side of the canyon in the 1800s that blocked the entire Kern River for a time.
  - Determination: Geology is an outstandingly remarkable value.
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Little Kern Lake Creek is eligible because geology and prehistory are outstandingly remarkable values. Little Kern Lake Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Little Kern Lake Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing and flows through inventoried roadless areas.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Little Kern River (GIS Number 2.118)

Location

- County: Tulare
- Beginning Point: Headwaters south of Farewell Gap
- End Point: Confluence with Table Meadow Creek
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 12.4
- Eligible: 12.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The headwaters of the Little Kern River features a view of Farewell Gap and the surrounding peaks, shaped by the southernmost extent of glaciers during the last glacial period, combined with the diverse vegetation types from alpine fell-fields at higher elevations to meadows and conifer forest at the lower reaches.
  - Determination: Scenery is an outstandingly remarkable value. This is one of the few areas with impressive views formed by glaciation in the Sequoia National Forest. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: This creek is designated by the State of California as a Heritage and Wild Trout Water for fishing opportunities for Little Kern golden trout.
  - Determination: Recreation is an outstandingly remarkable value. The State of California designated the creek as a Heritage and Wild Trout Water. There are exceptional opportunities for solitude. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: From the headwaters of the Little Kern River to Rifle Creek is the southernmost extent of glaciers during the last glacial period.
  - Determination: Geology is an outstandingly remarkable value. The documented southern extent of glaciation and lateral moraines located in the vicinity of Shotgun Creek provide a unique geologic land feature. Therefore, geology is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

- **Wildlife (Population and Habitat)**
  - Description: Mountain yellow-legged frogs and their critical habitat exist. Sierra Nevada bighorn sheep critical habitat exists.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of mountain yellow-legged frogs and their habitat, as well as Sierra Nevada bighorn sheep habitat, wildlife population and habitat are considered outstandingly remarkable.

Summary: Little Kern River (GIS Number 2.118) is eligible because scenery, recreation, geology, fish population and habitat, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Little Kern River (GIS Number 2.119)

Location

- County: Tulare
- Beginning Point: Confluence with Table Meadow Creek
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 12.0
- Eligible: 12.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: This creek is designated by the State of California as a Heritage and Wild Trout Water for fishing opportunities for Little Kern golden trout.
  - Determination: Recreation is an outstandingly remarkable value. The State of California designated the creek as a Heritage and Wild Trout Water. There are exceptional opportunities for solitude. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

- **Wildlife (Population and Habitat)**
  - Description: Western pearlshell mussel, a species-at-risk, is present.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of western pearlshell mussel, wildlife population and habitat are considered outstandingly remarkable.

Summary: Little Kern River (GIS Number 2.119) is eligible because recreation, fish population and habitat, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Little Poso Creek (GIS Number 2.120)

Location

- County: Kern
- Beginning Point: T.26S. R.31E. Sec.13 in the Greenhorn Mountains at 6,000 feet
- End Point: Forest Boundary at Poso
- Special Area: None

Mileage

- Studied: 5.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: This creek is in the Greenhorn Mountains and there are many trails and roads.
  - Determination: Recreation is not an outstandingly remarkable value. Activities associated with trails and roads are not river-related. The recreation setting and opportunities are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: Little Poso Creek is ineligible because it has no outstandingly remarkable values.

Little Trout Creek (GIS Number 2.121)

Location

- County: Tulare
- Beginning Point: T.23S. R.34E. Sec.16 near Sirretta Pass at 9,000 feet
- End Point: Confluence with Trout Creek
- Special Area: Headwaters within Twisselmann Botanical Area

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Little Trout Creek is in the lodgepole-red fir belt and drains north from Sirretta Pass through a steep canyon and into Trout Creek, high on the Kern Plateau.
  - Determination: Scenery is not an outstandingly remarkable value. The creek is beautiful but typical of creeks in this area and is not unique or exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Little Trout Creek has recreation opportunities for backcountry travel in a semi-primitive area and fishing.
  - Determination: Recreation is not an outstandingly remarkable value. Recreation opportunities are not unique or exemplary, therefore recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs.
  - Determination: Fish habitat is not an outstandingly remarkable value. There is no robust evidence that golden trout currently occur or that habitat quality is high. Therefore, fish habitat is not considered outstandingly remarkable.

Summary: Little Trout Creek is ineligible because it has no outstandingly remarkable values.

Lost Creek (GIS Number 2.125)

Location
- County: Tulare
- Beginning Point: Aqua Benita Spring in the South Sierra Wilderness
- End Point: Confluence with South Fork Kern River
- Special Area: South Sierra Wilderness

Mileage
- Studied: 9.4
- Eligible: 9.4

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Lost Creek flows through the South Sierra Wilderness to the South Fork Kern River Wild and Scenic River, offering visitors backcountry travel opportunities. Lost Creek is designated by the State of California as a South Fork Kern River Wild Trout River. The backcountry travel opportunities are not unlike other opportunities available in wildernesses of the Southern Sierra Nevada and are not exemplary. However Lost Creek is designated by the State of California as a South Fork Kern River Wild Trout River.
  - Determination: Recreation is an outstandingly remarkable value. Although other, similar backcountry travel opportunities also exist in wilderness areas in the Southern Sierra and these

are not exemplary, Lost Creek is designated as a South Fork Kern River Wild Trout River. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Springs and meadows are highly valued as water supplies to creeks in this dry area. Golden trout, a Forest Service sensitive species, are present in this creek and it is designated as a South Fork Kern River Wild Trout River.
  - Determination: Fish population and habitat are outstandingly remarkable values. Lost Creek is designated as a South Fork Kern River Wild Trout River. Therefore, fish population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Lost Creek is eligible because recreation, prehistory, and fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Good

Classification: Wild

Lucas Creek (GIS Number 2.126.1)

Location

- County: Tulare
- Beginning Point: T.28S. R.31E. Sec.25 in the Breckenridge area at 6,500 feet
- End Point: Mill Creek Inventoried Roadless Area boundary
- Special Area: None

Mileage

- Studied: 3.2
- Eligible: 3.2

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Mountain yellow-legged frog Suitable Habitat is present on this creek. California condors use this area for foraging. Kern Canyon slender salamanders and habitat are present. This species is under review by U.S. Fish and Wildlife Service for Federal listing.

- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic species, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Lucas Creek (GIS Number 2.126.1) is eligible because prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Some in the headwaters, but the creek is still flowing in this area

Shoreline Development: Some in the headwaters, but riparian areas are mostly intact

Accessibility: Roads

Water Quality: Good

Classification: Scenic

Lucas Creek (GIS Number 2.126.2)

Location

- County: Tulare
- Beginning Point: Mill Creek Inventoried Roadless Area boundary
- End Point: Cow Flat Road
- Special Area: None

Mileage

- Studied: 2.6
- Eligible: 2.6

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Mountain yellow-legged frog suitable habitat is present on this creek. California condors use this area for foraging. Kern Canyon slender salamanders and habitat are present. This species is under review by U.S. Fish and Wildlife Service for federal listing.

- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic species, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Lucas Creek (GIS Number 2.126.2) is eligible because prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Some in the headwaters, but the creek is still flowing in this area

Shoreline Development: Some in the headwaters, but the riparian areas are mostly intact

Accessibility: None

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Wild

Lucas Creek (GIS Number 2.126.3)

Location

- County: Tulare
- Beginning Point: Cow Flat Road
- End Point: Mill Creek Inventoried Roadless Area boundary near the Kern River
- Special Area: None

Mileage

- Studied: 1.7
- Eligible: 1.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Mountain yellow-legged frog suitable habitat is present on this creek. California condors use this area for foraging. Kern Canyon slender salamanders and habitat are present. This species is under review by U.S. Fish and Wildlife Service for federal listing.

- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic species, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Lucas Creek (GIS Number 2.126.3) is eligible because prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Some in the headwaters, but the creek is still flowing in this area

Shoreline Development: Some in the headwaters, but the riparian areas are mostly intact

Accessibility: Roads

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Scenic

Lucas Creek (GIS Number 2.126.4)

Location

- County: Tulare
- Beginning Point: Mill Creek Inventoried Roadless Area boundary near the Kern River
- End Point: Confluence with lower Kern River
- Special Area: None

Mileage

- Studied: 0.1
- Eligible: 0.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Mountain yellow-legged frog suitable habitat is present on this creek. California condors use this area for foraging. Kern Canyon slender salamanders and habitat are present. This species is under review by U.S. Fish and Wildlife Service for federal listing.

- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic species, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes sites where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Lucas Creek (GIS Number 2.126.4) is eligible because prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Some in the headwaters, but the creek is still flowing in this area

Shoreline Development: Some in the headwaters, but the riparian areas are mostly intact

Accessibility: Roads

Water Quality: Good.

Classification: Recreational

Machine Creek (GIS Number 2.128)

Location

- County: Tulare
- Beginning Point: T.22S. R.34E. Sec.32 east of Round Meadow at 9,100 feet
- End Point: Confluence with Little Trout Creek
- Special Area: None

Mileage

- Studied: 3.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Machine Creek is a beautiful, high elevation creek that flows through meadows and alpine forests with views of the Sierra Crest.

- Determination: Scenery is not an outstandingly remarkable value. Although the views are beautiful, other, similar scenery also exists in the area and it is not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: National Forest System trail 33E28 follows the creek, providing access for fishermen and back country travelers.
  - Determination: Recreation is not an outstandingly remarkable value. Although visitors enjoy recreation opportunities along Machine Creek, other, similar recreation opportunities also exist elsewhere on the Kern Plateau and these are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs.
  - Determination: Fish habitat is not an outstandingly remarkable value. There is not robust evidence that golden trout currently occur or that habitat quality is high. Therefore, fish habitat is not considered outstandingly remarkable.

Summary: Machine Creek is ineligible because it has no outstandingly remarkable values.

Mahogany Creek (GIS Number 2.129)

Location
- County: Tulare
- Beginning Point: T.22S. R.34E. Sec.1 north of Bald Mountain at 8,400 feet
- End Point: Confluence with Fish Creek
- Special Area: None

Mileage
- Studied: 4.1
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Mahogany Creek is a beautiful, high-elevation creek that flows through meadows and alpine forests on the Kern Plateau.
  - Determination: Scenery is not an outstandingly remarkable value. Although the views are beautiful, other, similar scenery also exists elsewhere in the area and it is not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Mahogany Creek is located close to roads and National Forest System trail 34E25 travels along the upper portion of the creek. This area is popular for OHV use, hunting, and fishing.

- Determination: Recreation is not an outstandingly remarkable value. Although visitors enjoy recreation opportunities along Mahogany Creek, other, similar recreation opportunities exist elsewhere in the area and these are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs.
  - Determination: Fish habitat is not an outstandingly remarkable value. There is not robust evidence that golden trout currently occur or that habitat quality is high. Therefore, fish habitat is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: Mahogany Creek is ineligible because it has no outstandingly remarkable values.

Meadow Creek (GIS Number 2.134)

Location
- County: Tulare
- Beginning Point: T.20S. R.30E. Sec.1 east of Mountain Home at 6,100 feet
- End Point: Confluence with North Fork Middle Fork Tule River
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 1.6
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The headwaters are just below the Mountain Home State Forest and the creek flows down a steep canyon where it enters the North Fork Middle Fork Tule River. Hiking and camping were identified as river-related recreation for this creek, however there are no National Forest System trails associated with this creek. Wishon Campground is located on the North Fork Middle Fork Tule River just upstream from the confluence with this creek.
  - Determination: Recreation is not an outstandingly remarkable value. Hiking and camping opportunities are not located on this creek. Therefore, recreation is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.

- Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Meadow Creek is ineligible because it has no outstandingly remarkable values.

Middle Fork Erskine Creek (GIS Number 2.137)

Location

- County: Kern
- Beginning Point: Piute Mountains near Inspiration Point at 6,800 feet
- End Point: Confluence with East Fork Erskine Creek
- Special Area: None

Mileage

- Studied: 2.4
- Eligible: 2.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Middle Fork Erskine Creek begins below the base of Inspiration Point, a granite marble outcrop. The creek flows through the dry landscape of the Piute Mountains. The riparian vegetation contrasts with the high desert vegetation that covers the slopes of the river canyon.
  - Determination: Scenery is not an outstandingly remarkable value. Although the presence of riparian vegetation contrasts with the vegetation on the slopes, similar creeks exist in the Piute Mountains and this creek is not unique or exemplary. The marble outcrop on Inspiration Point is scenic, however it is not river-related and other outstanding views of Inspiration Point exist elsewhere. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Middle Fork Erskine Creek begins below the base of Inspiration Point, a granite marble outcrop. It flows through a tilted roof pendent with schists, marble, and hornfels.
  - Determination: Geology is an outstandingly remarkable value. This creek flows through a unique geologic feature. Therefore, geology is considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: This area has many species of butterfly and migratory birds. Slender salamanders and endemic land snails are found in this area and are dependent on the rock outcrops and water associated with this creek. The creek and its tributaries in combination with the lower Erskine Creek, are corridors for movements of all wildlife in the area because water is rare in the Piute Mountains, a very dry area.
  - Determination: Wildlife Population and Habitat are outstandingly remarkable values. Only two perennial creeks occur in the Piute Mountains and they are important for wildlife as corridors. Dwindling water supplies in the area and the perennial nature of South Fork Erskine Creek make it unique. Therefore, wildlife population and habitat are considered outstandingly remarkable.

- **Botany**
  - Description: The creek and its tributaries are integral to the Inspiration Point Botanical Area, which is unique ecosystem.
  - Determination: Botany is an outstandingly remarkable value. Inspiration Point Botanical Area is a unique ecosystem. The integral contribution of Middle Fork Erskine Creek and its tributaries to the Botanical Area make it exemplary. Therefore, botany is considered outstandingly remarkable.

Summary: Middle Fork Erskine Creek is eligible because botany, geology, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Motorized trail

Water Quality: Good

Classification: Scenic

Middle Fork Tule River (GIS Number 2.138)

Location

- County: Tulare
- Beginning Point: Confluence with South Fork Middle Fork Tule and North Fork Middle Fork
- End Point: Forest boundary near Deep Canyon River
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 5.1
- Eligible: 5.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: There are two concessionaire-run developed day use sites and one river access point. California State Highway 190 and National Forest System trail 30E29 travel along the creek. Waterplay, fishing for nonnative species, and picnicking are popular activities, especially in the summer. During high water flows in the spring, some whitewater kayakers paddle this creek.
  - Determination: Recreation is not an outstandingly remarkable value. Fishing, waterplay, and picnicking are popular activities along many rivers and creeks within the Sequoia National Forest and these recreation opportunities are not unique or exemplary. Only a small number of whitewater kayakers are capable of safely navigating this creek and use is very low. Therefore, recreation is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Middle Fork Tule River is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Two picnic areas

Accessibility: Very little access in the canyon

Water Quality: Good

Classification: Recreational

Mill Flat Creek (GIS Number 2.143)

Location

- County: Fresno
- Beginning Point: Below Sequoia Lake dam
- End Point: Confluence with Kings River
- Special Areas: Giant Sequoia National Monument, Kings River Special Management Area

Mileage

- Studied: 14.0[8]
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Mill Flat Creek provides opportunities for water play and fishing for nonnative species. In the lower portion of the creek, some experienced kayakers enjoy the challenge of whitewater conditions produced from the steep, remote terrain during spring runoff. Access is limited to high clearance vehicles or OHV motorcycles. The upper portion of the creek in the higher elevations is a popular OHV area with a staging area. There is no access to the middle portion of the creek.
  - Determination: Recreation is not an outstandingly remarkable value. There is limited access to a major portion of the creek. Recreation opportunities are not unique or exemplary, and the majority of the use in the area is OHV use that is not river-related. Therefore, recreation is not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Western pond turtle have a Critical Aquatic Refuge on Mill Flat Creek. The species is a Forest Service sensitive species but has not qualified for a Species of Conservation Concern.
  - Determination: Wildlife population and habitat are not outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

- **History**
  - Description: Historic logging at Millwood and other areas around Hume Lake make this area interesting and important.
  - Determination: History is not an outstandingly remarkable value. Identified and documented historic sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, history is not considered outstandingly remarkable.

Summary: Mill Flat Creek is ineligible because it has no outstandingly remarkable values.

[8] 7.2 miles actually within the Sierra National Forest administrative boundary and Giant Sequoia National Monument; 6.8 miles within the Sequoia National Forest, 6.2 miles of which are within Giant Sequoia National Monument.

Mountaineer Creek (GIS Number 2.146)

Location

- County: Tulare
- Beginning Point: Mowery Meadow in Golden Trout Wilderness
- End Point: Confluence with Alpine Creek
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 5.5
- Eligible: 5.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Mountaineer Creek is eligible because prehistory and fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Nobe Young Creek (GIS Number 2.153.1)

Location

- County: Tulare
- Beginning Point: Windy Gap area of Giant Sequoia National Monument
- End Point: Inlet into Ida Lake
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 5.2

- Eligible: 5.2

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Nobe Young Creek (GIS Number 2.153.1) is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: A small dam forms Lake Ida, at Camp Whitsett, toward the lower end of the creek. This is a flow through ponded area on the creek.

Shoreline Development: A small dam forms Lake Ida, at Camp Whitsett, toward the lower end of the creek. This is a flow through ponded area on the creek.

Accessibility: Roads and trails

Water Quality: Good

Classification: Recreational

Nobe Young Creek (GIS Number 2.153.1)

Location
- County: Tulare
- Beginning Point: Below dam at Ida Lake
- End Point: Confluence with Dry Meadow Creek
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 5.2
- Eligible: 5.2

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**

- Description: Includes a site where there is evidence of occupation or use by Native Americans.
- Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Nobe Young Creek (GIS Number 2.153.3) is eligible because prehistory and history are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: A small dam forms Lake Ida at Camp Whitsett. This is a flow-through, ponded area on the creek.

Shoreline Development: A small dam forms Lake Ida at Camp Whitsett. This is a flow-through, ponded area on the creek.

Accessibility: Roads and trails

Water Quality: Good

Classification: Recreational

North Alder Creek (GIS Number 2.154)

Location

- County: Tulare
- Beginning Point: T.20S. R.31E. Sec.3 west of Golden Trout Wilderness in Giant Sequoia National Monument at 7,000 feet
- End Point: Confluence with South Alder Creek
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Historically, mountain yellow-legged frogs and foothill yellow-legged frogs occurred within this area.
  - Determination: Wildlife population and habitat are not outstandingly remarkable values. Neither species has been detected in this area recently. Therefore, wildlife population and habitat are not considered outstandingly remarkable values.

Summary: North Alder Creek is ineligible because it has no outstandingly remarkable values.

North Fork Clicks Creek (GIS Number 2.155.1)

Location

- County: Tulare
- Beginning Point: T.20S. R.31E. Sec.12 in GSNM at 8,000 feet
- End Point: Golden Trout Wilderness boundary
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 0.8
- Eligible: 0.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description:Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: North Fork Clicks Creek (GIS Number 2.155.1) is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: A National Forest System road comes within 700 feet in the headwaters of the creek.

Water Quality: Good

Classification: Scenic

North Fork Clicks Creek (GIS Number 2.155.3)

Location

- County: Tulare
- Beginning Point: Golden Trout Wilderness boundary
- End Point: Confluence with Clicks Creek in Golden Trout Wilderness boundary
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 1.7
- Eligible: 1.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: North Fork Clicks Creek (GIS Number 2.155.2) is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: This segment is within wilderness and has no trail access.

Water Quality: Good

Classification: Wild

North Fork Middle Fork Tule River (GIS Number 2.159.1)

Location

- County: Tulare
- Beginning Point: National Forest boundary with Sequoia National Park
- End Point: Golden Trout Wilderness Boundary near boundary with Mountain Home State Forest
- Special Area: Golden Trout Wilderness, Giant Sequoia National Monument

Mileage

- Studied: 2.7
- Eligible: 2.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Flows through Moses Mountain Giant Sequoia Grove and Research Natural Area. Montane meadows are part of this headwater river.
  - Determination: Botany is an outstandingly remarkable value. This river segment is an integral part of the Moses Mountain Research Natural Area and Grove. Therefore, botany is considered outstandingly remarkable.

Summary: North Fork Middle Fork Tule River (GIS Number 2.159.1) is eligible because botany is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Very good

Classification: Wild

North Fork Middle Fork Tule River (GIS Number 2.159.2)

Location

- County: Tulare
- Beginning Point: Long Meadow at the Golden Trout Wilderness boundary north of Mountain Home State Forest
- End Point: Hidden Falls Campground road
- Special Area: Giant Sequoia National Monument, Mountain Home State Forest

Mileage

- Studied: 1.1
- Eligible: 1.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The hiking trail (34E14) to the marble reach of the river is popular and frequented by visitors during summer weekends and holidays. Hiking, water play, and camping occur in the area.
  - Determination: Recreation is an outstandingly remarkable value. Hiking, water play, and camping opportunities attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Botany**
  - Description: Flows through Moses Mountain Giant Sequoia Grove.
  - Determination: Botany is an outstandingly remarkable value.

- **Prehistory**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: Prehistory is not an outstandingly remarkable value.

- **History**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: History is not an outstandingly remarkable value.

Summary: North Fork Middle Fork Tule River (GIS Number 2.159.2) is eligible because botany and recreation are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Very good

Classification: Wild

North Fork Middle Fork Tule River (GIS Number 2.159.3)

Location

- County: Tulare
- Beginning Point: Hidden Falls Campground road
- End Point: Moses Mountain Recommended Wilderness boundary
- Special Area: Mountain Home State Forest

Mileage

- Studied: 2.3
- Eligible: 2.3

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Flows through Moses Mountain Giant Sequoia Grove.
  - Determination: Botany is an outstandingly remarkable value.
- **Recreation**
  - Description: Hiking, water play, and camping occur in the area within Mountain Home State Forest.
  - Determination: Recreation is an outstandingly remarkable value. Hiking, water play, and camping opportunities attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Prehistory**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: Prehistory is not an outstandingly remarkable value.
- **History**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: History is not an outstandingly remarkable value.

Summary: North Fork Middle Fork Tule River (GIS Number 2.159.3) is eligible because botany and recreation are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Roads and nonmotorized trails

Water Quality: Very good

Classification: Recreational

North Fork Middle Fork Tule River (GIS Number 2.159.4)

Location

- County: Tulare
- Beginning Point: Moses Mountain Recommended Wilderness boundary
- End Point: Confluence with Alder Creek north of Moses Inventoried Roadless Area boundary
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.3
- Eligible: 2.3

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Popular hiking trails parallel the river and are frequented by visitors during summer weekends and holidays. Hiking, water play, and camping occur in the area.
  - Determination: Recreation is an outstandingly remarkable value. Hiking, water play, and camping opportunities attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Botany**
  - Description: Flows through Moses Mountain Giant Sequoia Grove.
  - Determination: Botany is an outstandingly remarkable value.
- **Prehistory**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: Prehistory is not an outstandingly remarkable value.
- **History**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: History is not an outstandingly remarkable value.

Summary: North Fork Middle Fork Tule River (GIS Number 2.159.4) is eligible because botany and recreational values are outstandingly remarkable.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Very good

Classification: Wild

North Fork Middle Fork Tule River (GIS Number 2.159.5)

Location

- County: Tulare
- Beginning Point: Confluence with Alder Creek north of Moses Inventoried Roadless Area boundary
- End Point: Confluence with Middle Fork Tule River
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 5.1
- Eligible: 5.1

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Hiking, water play, and camping occur in the area. The Wishon Cabin and the popular year-round Wishon Campground provide overnight accommodations for those wishing to explore the river. Downstream of Wishon Campground there are no developed recreational facilities, but this section of the river is popular with day visitors seeking relief from the summer heat.
  - Determination: Recreation is an outstandingly remarkable value. Hiking, water play, and camping opportunities attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Prehistory**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: Prehistory is not an outstandingly remarkable value.
- **History**
  - Description: Resources may exist, but there is insufficient evidence to support their location or extent.
  - Determination: History is not an outstandingly remarkable value.

Summary: North Fork Middle Fork Tule River (GIS Number 2.159.5) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Doyle Springs

Shoreline Development: Doyle Springs and Wishon Campground

Accessibility: Roads

Water Quality: Very good

Classification: Recreational

North Fork Tule River (GIS Number 2.160)

Location

- County: Tulare
- Beginning Point: National Forest boundary with Sequoia National Park
- End Point: National Forest boundary near Tulare County Road 276 and National Forest System Road 19S09
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 3.9
- Eligible: 3.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The California Department of Fish and Wildlife regulates the North Fork Tule River as fly fishing only by designation of its Commission. This is the only fly fishing-only recreation opportunity in the southern Sierra Nevada Mountains. The designation is in effect from the North Fork confluence with Pine Creek east to its headwaters. Jack Flat is a dispersed occupancy spot located adjacent to National Forest System Road 19S09 just west of Jenny Creek. It is frequented by visitors during summer weekends and holidays. Hunting, hiking and horse riding also occur in the area.
  - Determination: Recreation is an outstandingly remarkable value. This river provides a unique fly-fishing opportunity. Therefore, recreation is considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.

- ♦ Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: North Fork Tule River is eligible because recreation, prehistory, and history are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Very good

Classification: Wild

Osa Creek (GIS Number 2.163)

Location
- County: Tulare
- Beginning Point: 500 feet downstream from Osa Meadows
- End Point: Confluence with North Fork Kern River
- Special Area: Golden Trout Wilderness

Mileage
- Studied: 4.5
- Eligible: 4.5

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - ♦ Description: Osa Creek is part of the Kern River rainbow trout historic range and Kern River rainbow trout are believed to be present.
  - ♦ Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Osa Creek is eligible because fish population and habitat are outstandingly remarkable values. Osa Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Osa Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing, its watershed contains few roads, and native fishes are present.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Motorized and nonmotorized trails

Water Quality: Good

Classification: Wild

Peppermint Creek (GIS Number 2.169)

Location
- County: Tulare
- Beginning Point: T.21S. R.32E. Sec.19 northeast of Slate Mountain at 8,300 feet
- End Point: Confluence with North Fork Kern River
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 8.1
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Headwaters originate at 9,300 feet in Slate Mountain Botanical Area and Wishon-Tule Roof pendant. In lower elevations, it flows through granitic bedrock into the North Fork Kern River.
  - Determination: Geology is not an outstandingly remarkable value. While this is a beautiful area, it is not unique or exemplary, and therefore, geology is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: Peppermint Creek is ineligible because it has no outstandingly remarkable values.

Pistol Creek (GIS Number 2.173)

Location
- County: Tulare
- Beginning Point: T.18S. R.32E. Sec.9 in Golden Trout Wilderness at 10,600 feet
- End Point: Confluence with Shotgun Creek

- Special Area: Golden Trout Wilderness

Mileage
- Studied: 2.0
- Eligible: 2.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Pistol Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Rattlesnake Creek (GIS Number 2.181)

Location
- County: Tulare
- Beginning Point: T.22S. R.34. Sec.12 northeast of Bald Mountain at 8,600 feet
- End Point: Confluence with North Fork Kern River
- Special Area: Small portion within Golden Trout Wilderness

Mileage
- Studied: 14.7
- Eligible: 14.7

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Rattlesnake Creek is part of the Kern River rainbow trout historic range, and Kern River rainbow trout are believed to be present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Rattlesnake Creek (GIS 2.181) is eligible because fish population and habitat are outstandingly remarkable value. Rattlesnake Creek flows into a designated segment of the North Fork Kern Wild and Scenic River and provides connectivity between a designated wild and scenic river and one of its tributaries. Rattlesnake Creek contributes to maintaining the biotic integrity of the North Fork Kern River watershed ("good condition," Moyle and Randall 1996) because it is free flowing, flows through an inventoried roadless area, and native fishes are present.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Motorized and nonmotorized trails

Water Quality: Good

Classification: Scenic

Rattlesnake Creek (GIS Number 2.182)

Location

- County: Fresno
- Beginning Point: Spring at 6,000 feet in the Monarch Grove in the Monarch Wilderness
- End Point: Confluence with Boulder Creek
- Special Areas: Giant Sequoia National Monument, Monarch Wilderness

Mileage

- Studied: 0.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of the Kings River Gorge.
  - Determination: Scenery is not an outstandingly remarkable value. Spectacular views of the Kings River Gorge exist from many creeks and trails in the area, including Kanawyer Trail and Windy Cliffs. Views are not unique or exemplary and therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking and backcountry travel opportunities.
  - Determination: Recreation is not an outstandingly remarkable value. Hiking and backcountry travel opportunities are not unique or exemplary and therefore, recreation is not considered outstandingly remarkable.

- **Botany**
  - Description: The Monarch Giant Sequoia Grove is within the Monarch Wilderness and near the Deer Meadow Giant Sequoia Grove. This area is rich with springs and wet ephemeral draws.

- Determination: Botany is not an outstandingly remarkable value. While this segment comes from the Monarch Giant Sequoia Grove, it is not unique or exemplary of the ecology of giant sequoia groves. Therefore, botany is not considered outstandingly remarkable.

Summary: Rattlesnake Creek (GIS Number 2.182) is ineligible because it has no outstandingly remarkable values.

Rifle Creek (GIS Number 2.186)

Location

- County: Tulare
- Beginning Point: West of Coyote Pass in the Golden Trout Wilderness at 10,100 feet
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 2.9
- Eligible: 2.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: The creek has an upper band of glaciated granite, and a lower band of Mineral King metamorphic roof pendant along its length.
  - Determination: Geology is not an outstandingly remarkable value. While the geology is interesting, it is not exemplary or unique. Therefore, geology is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Rifle Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Russian Charley Creek (GIS Number 2.189)

Location

- County: Fresno

- Beginning Point: T.12S. R.35E. Sec.32 at the Forest boundary at 1,700 feet
- End Point: Pine Flat Reservoir
- Special Area: None

Mileage
- Studied: 1.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of the foothills and oak savannas around Pine Flat Reservoir.
  - Determination: Scenery is not an outstandingly remarkable value. Views are not exceptional and similar views exist from many vantage points around Pine Flat Reservoir. Therefore, scenery is not considered outstandingly remarkable.

Summary: Russian Charley Creek is ineligible because it has no outstandingly remarkable values.

Salmon Creek (GIS Number 2.190.1)

Location
- County: Tulare
- Beginning Point: East of Cannell Peak at 8,300 feet
- End Point: Forest Road 22S12 where Salmon Creek exits Big Meadow
- Special Area: None

Mileage
- Studied: 2.0
- Eligible: 2.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment begins on the east side of Cannell Peak and flows into the expansive Big Meadow on the Kern Plateau in the lodgepole red fir belt. Big Meadow is one of the largest wet meadows in the southern Sierra Nevada surrounded by granite ridges, high steep rock outcrops and lush forests. Salmon Creek exhibits exceptional visual diversity as it travels through multiple transition zones from sub-alpine forests and meadows through steep canyons making its way to the North Fork Kern River Wild and Scenic River.
  - Determination: Scenery is an outstandingly remarkable value.

- **Recreation**
  - Description: This segment offers a diverse range of recreation opportunities including hiking, mountain biking, fishing, rock scrambling, and swimming. Roads provide passenger vehicle access to Big Meadow on the Kern Plateau, which includes a developed recreation facility, Horse Meadow Campground, dispersed camping.
  - Determination: Recreation is an outstandingly remarkable value. Diverse settings, with multiple recreation options draw visitors from inside and outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Salmon Creek was home to Kern River rainbow trout. Nonnative trout occur below Salmon Creek Falls.
  - Determination: Fish habitat is not an outstandingly remarkable value.

- **Wildlife (Population and Habitat)**
  - Description: Rare slender salamanders are present. Mountain yellow-legged frog suitable and historic habitat exists above Salmon Creek Falls.
  - Determination: Wildlife population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.190.1) is eligible because scenery, recreation, prehistory, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Very little, road and nonmotorized trail crossings

Accessibility: Roads and nonmotorized trails

Water Quality: Good

Classification: Recreational

Salmon Creek (GIS Number 2.190.2)

Location

- County: Tulare
- Beginning Point: Forest Road 22S12 where Salmon Creek exits Big Meadow
- End Point: Cannell Inventoried Roadless Area boundary
- Special Area: None

Mileage

- Studied: 4.4
- Eligible: 4.4

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The creek leaves Big Meadow and flows through diverse, sub-alpine forests interspersed with lovely meadows, some highlighted with aspen with lively fall color. Salmon Creek exhibits exceptional visual diversity as it travels through multiple transition zones from sub-alpine forests and meadows through steep canyons making its way to the North Fork Kern River Wild and Scenic River.
  - Determination: Scenery is an outstandingly remarkable value.

- **Recreation**
  - Description: This segment offers a diverse range of recreation opportunities including hiking, mountain biking, fishing, rock scrambling, and swimming. Trails parallel or are close to much of the segment.
  - Determination: Recreation is an outstandingly remarkable value. Diverse settings, with multiple recreation options draw visitors from inside and outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Salmon Creek was home to Kern River rainbow trout. Nonnative trout occur below Salmon Creek Falls.
  - Determination: Fish habitat is not an outstandingly remarkable value.

- **Wildlife (Population and Habitat)**
  - Description: Rare slender salamanders are present. Mountain yellow-legged frog suitable and historic habitat exists above Salmon Creek Falls.
  - Determination: Wildlife population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.190.2) is eligible because scenery, recreation, prehistory, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: Very little, road and nonmotorized trail crossings

Accessibility: Roads and nonmotorized trails

Water Quality: Good

Classification: Scenic

Salmon Creek (GIS Number 2.190.3)

Location
- County: Tulare
- Beginning Point: Cannell Inventoried Roadless Area boundary
- End Point: Rincon Trail
- Special Area: None

Mileage
- Studied: 3.1
- Eligible: 3.1

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The creek changes dramatically as it falls from the plateau through a steep bedrock gorge with jagged rock outcrops and peaks framing a series of cascades and pools. The creek flows through a beautiful series of short falls and polished bedrock basins resembling "teacups" and eventually falls over 450-foot-high Salmon Creek Falls, the highest waterfall in the southern Sierra Nevada, south of Sequoia National Park. Salmon Creek exhibits exceptional visual diversity as it travels through multiple transition zones from sub-alpine forests and meadows through steep canyons making its way to the North Fork Kern River Wild and Scenic River.
  - Determination: Scenery is an outstandingly remarkable value. The series of granite basins and falls, as well as the 450-foot Salmon Creek Falls, are exemplary visual features and attractions. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: This segment offers a diverse range of recreation opportunities including a variety of Recreation Opportunity Spectrum classes and available activities such as hiking, mountain biking, fishing, rock scrambling, and swimming. Trails parallel or are close to much of the segment and provide access for primitive recreational opportunities.
  - Determination: Recreation is an outstandingly remarkable value. Diverse settings, with multiple recreation options and outstanding water features including waterfalls and granite tubs and slides, draw visitors from inside and outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Habitat)**

- Description: Salmon Creek was home to Kern River rainbow trout. Nonnative trout occur below Salmon Creek Falls.
- Determination: Fish habitat is not an outstandingly remarkable value.

- **Wildlife (Population and Habitat)**
  - Description: Rare slender salamanders are present. Mountain yellow-legged frog suitable and historic habitat exists above Salmon Creek Falls.
  - Determination: Wildlife population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.190.3) is eligible because scenery, recreation, prehistory, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Very little, road and nonmotorized trails

Accessibility: Motorized and nonmotorized trails

Water Quality: Good

Classification: Wild

Salmon Creek (GIS Number 2.190.4)

Location

- County: Tulare
- Beginning Point: Rincon Trail
- End Point: Confluence with North Fork Kern River
- Special Area: None

Mileage

- Studied: 1.3
- Eligible: 1.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Salmon Creek exhibits exceptional visual diversity as it travels through multiple transition zones from sub-alpine forests and meadows through steep canyons making its way to the North Fork Kern River Wild and Scenic River.
  - Determination: Scenery is an outstandingly remarkable value.

- **Recreation**
  - Description: This segment offers a diverse range of recreation opportunities including a variety of Recreation Opportunity Spectrum classes and available activities such as hiking, mountain biking, fishing, rock scrambling, and swimming. Trails parallel or are close to much of the segment and provide access for primitive recreation opportunities found in two inventoried roadless areas.
  - Determination: Recreation is an outstandingly remarkable value. Diverse settings with multiple recreation options draw visitors from inside and outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Salmon Creek was home to Kern River rainbow trout. Nonnative trout occur below Salmon Creek Falls.
  - Determination: Fish habitat is not an outstandingly remarkable value.

- **Wildlife (Population and Habitat)**
  - Description: Rare slender salamanders are present. Mountain yellow-legged frog suitable and historic habitat exists above Salmon Creek Falls.
  - Determination: Wildlife population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.190.4) is eligible because scenery, recreation, prehistory, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Motorized trail crossing

Accessibility: Road and motorized trail

Water Quality: Good

Classification: Scenic

Salmon Creek (GIS Number 2.252.1)

Location

- County: Tulare
- Beginning Point: South slope of Sirretta Peak
- End Point: Forest Road 23S07
- Special Area: Headwaters within Twisselmann Botanical Area

Mileage

- Studied: 1.9
- Eligible: 1.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: This segment is partly within the Woodpecker Inventoried Roadless Area. The Sirretta Peak Trail follows the creek from 23S07 to the Twisselmann Botanical Area.
  - Determination: Recreation is not an outstandingly remarkable value. Recreation opportunities are very limited and the area receives little use. Therefore, recreation is not considered outstandingly remarkable.
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.
- **Botany**
  - Description: This segment originates within the unique Twisselmann Botanical area. The creek arises from springs within the area and is integral to the unique nature of the botanical area.
  - Determination: Botany is an outstandingly remarkable value. Botanical areas are unique and this segment is part of the unique ecosystem. Therefore, botany is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.252.1) is eligible because prehistory, history, and botany are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Very little

Accessibility: Road and motorized trail crossings

Water Quality: Good

Classification: Scenic

Salmon Creek (GIS Number 2.252.2)

Location

- County: Tulare
- Beginning Point: Forest Road 23S07
- End Point: Confluence with Salmon Creek at Big Meadow

- Special Area: None

Mileage

- Studied: 0.9
- Eligible: 0.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.
- **Botany**
  - Description: This segment originates within the unique Twisselmann Botanical Area. The creek arises from springs within the area and is integral to the unique nature of the botanical area.
  - Determination: Botany is an outstandingly remarkable value. Botanical areas are unique, and this segment is part of the unique ecosystem. Therefore, botany is considered outstandingly remarkable.

Summary: Salmon Creek (GIS Number 2.252.2) is eligible because prehistory, history, and botany are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Very little

Accessibility: Roads

Water Quality: Good

Classification: Recreational

Sandy Creek (GIS Number 2.192)

Location

- County: Tulare
- Beginning Point: T.25S. R.31E. Sec.1 at 7,300 feet in Giant Sequoia National Monument
- End Point: Forest Boundary at 4,500 feet
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Sandy Creek is a short creek that begins below Sunday Peak and flows west through a canyon until it reaches Poso Creek. Scenery was identified as a river-related value in the 1990 eligibility study.
  - Determination: Scenery is not an outstandingly remarkable value. No outstanding scenic features that meet the criteria for this evaluation were identified. Therefore, scenery is not considered outstandingly remarkable.

Summary: Sandy Creek is ineligible because it has no outstandingly remarkable values.

Sheep Creek (GIS Number 2.197)

Location

- County: Tulare
- Beginning Point: T.19S. R.32E. Sec.12 at 9,200 feet in the Golden Trout Wilderness
- End Point: Confluence with Willow Creek
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 2.8
- Eligible: 2.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Sheep Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Shotgun Creek (GIS Number 2.199)

Location

- County: Tulare
- Beginning Point: Silver Lake in Golden Trout Wilderness
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 3.8
- Eligible: 3.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This creek flows through a glaciated landscape with banded layers of glaciated granite, metamorphic roof pendants, and marble create colorful scenic vistas which flow into the Little Kern River. The banded geology and glaciated landscape create scenic vistas across the area.
  - Determination: Scenery is an outstandingly remarkable value. The scenic vistas created by the glaciated landscapes are unique, therefore scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: Multiple National Forest System trails cross this creek at various locations. Backcountry travel opportunities for recreation are available in the summer months and are similar to other creeks in the area. This creek is designated by the State of California as a Heritage and Wild Trout Water for fishing opportunities for Little Kern golden trout.
  - Determination: Recreation is an outstandingly remarkable value. The State of California designated the creek as a Heritage and Wild Trout Water. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: This creek flows through a glaciated landscape with banded layers of glaciated granite, metamorphic roof pendants, and marble.
  - Determination: Geology is not an outstandingly remarkable value. When compared to the headwaters of the Little Kern River at Farewell Gap, it is not exemplary. Therefore, geology is not considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Shotgun Creek is eligible because scenery, recreation, and fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Excellent

Classification: Wild

Silver Creek (GIS Number 2.200)

Location

- County: Tulare
- Beginning Point: T.19S. R.31E. Sec.12 in Golden Trout Wilderness at 9,300 feet
- End Point: Confluence with North Fork Middle Fork Tule River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 2.5
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - ♦ Description: Silver Creek originates from Maggie Mountain and flows through Silver Creek Giant Sequoia Grove.
  - ♦ Determination: Botany is not an outstandingly remarkable value. Silver Creek Grove is not unique and therefore, botany is not considered outstandingly remarkable.

Summary: Silver Creek is ineligible because it has no outstandingly remarkable values.

Snow Creek (GIS Number 2.202)

Location

- County: Tulare
- Beginning Point: East of Sirretta Pass at 8,800 feet
- End Point: Confluence with Little Trout Creek
- Special Area: None

Mileage

- Studied: 2.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Beautiful views of Sirretta Peak and the Domeland Wilderness can be enjoyed from the National Forest System trail 34E12 along the ridge overlooking Snow Creek.
  - Determination: Scenery is not an outstandingly remarkable value. Views of Sirretta Peak and the Domeland Wilderness are not unique to this watercourse and are visible across the area. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Snow Creek is in a remote location just outside of the Domeland Wilderness and offers backcountry travel opportunities for those seeking solitude and primitive recreational experiences. Motorcycles are allowed on National Forest System trail 34E12. Challenging trail conditions limit the number of visitors and the potential for user conflicts.
  - Determination: Recreation is not an outstandingly remarkable value. Hiking and backcountry motorcycle opportunities along the creek are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs.
  - Determination: Fish habitat is not an outstandingly remarkable value. There is not robust evidence that golden trout currently occur or that habitat quality is high. Therefore, fish habitat is not considered outstandingly remarkable.

Summary: Snow Creek is ineligible because it has no outstandingly remarkable values.

Soda Spring Creek (GIS Number 2.205)

Location

- County: Tulare
- Beginning Point: T.18S. R.31E. Sec.36 at the Forest Boundary in Golden Trout Wilderness
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 7.2
- Eligible: 7.2

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.

- Determination: Fish population and habitat are outstandingly remarkable values.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Soda Springs Creek is eligible because prehistory and fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

South Fork Erskine Creek (GIS Number 2.210)

Location

- County: Kern
- Beginning Point: Northeast of Piute Peak at 7,500 feet
- End Point: Confluence with Erskine Creek
- Special Area: Inspiration Point Botanic Area

Mileage

- Studied: 6.9
- Eligible: 6.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Inspiration Point is visible from some locations along the creek
  - Determination: Scenery is not an outstandingly remarkable value. Inspiration Point is not river related. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: The South Fork of Erskine Creek flows through a horizontally tilted rook pendant with schists, marble, and hornfels present in the creek. The South Fork of Erskine Creek also has a 40-foot-high geologic strata wall in one of its primary tributaries.
  - Determination: Geology is an outstandingly remarkable value. Exemplary geology is present along the creek. Therefore, geology is considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Butterflies, endemic land snails, and slender salamanders are found in this area and are dependent on the rock outcrops and water associated with this creek. In combination with the lower Erskine Creek, this creek provides corridors for movement of all wildlife in the area because water is rare in the Piute Mountains, a very dry area.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Only two perennial creeks occur in the Piute Mountains and they are important for wildlife as corridors. Dwindling water supplies in the area and the perennial nature of South Fork Erskine Creek make it unique. Therefore, wildlife population and habitat are considered outstandingly remarkable.

- **Botany**
  - Description: This creek and its tributaries are integral to the Inspiration Point Botanical Area, which is a unique ecosystem.
  - Determination: Botany is an outstandingly remarkable value. Inspiration Point Botanical Area is a unique ecosystem. The Inspiration Point Botanical Area and the integral contribution of South Fork Erskine Creek and its tributaries to the Botanical Area make it exemplary. Therefore, botany is considered outstandingly remarkable.

Summary: South Fork Erskine Creek is eligible because botany, geology, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Old mining road nearby

Water Quality: Very good

Classification: Wild

South Fork Middle Fork Tule River (GIS Number 2.213.1)

Location

- County: Tulare
- Beginning Point: Quaking Aspen Meadows in Giant Sequoia National Monument
- End Point: Confluence with Coy Creek
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 5.5
- Eligible: 5.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Beautiful bedrock granite creek with deep pools and falls. Features along the creek provide high visual diversity as the creek travels through multiple transition zones from high elevation meadows and old growth forests, including specimen giant sequoias in 3 groves, to lower elevation river canyon woodlands and brush lands.
  - Determination: Scenery is an outstandingly remarkable value. Due to the high visual diversity of the creek as it travels through multiple transition zones and the outstanding visual features, including specimen giant sequoias, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: Fishing, hiking, mountain biking, horseback riding, viewing giant sequoias, and camping are popular activities along the South Fork Middle Fork Tule River. During the winter, visitors seeking quiet winter recreation enjoy snowshoeing and cross-country skiing. Belknap Campground is the only developed recreation site and there are trailheads at Quaking Aspen, Cedar Slope, and Camp Nelson. National Forest System trail 31E30 travels along the river from Quaking Aspen to Camp Nelson, passing through 3 giant sequoia groves. One of the outstanding features along the trail is a hollowed out, living giant sequoia tree that visitors can walk, bike, or ride a horse through.
  - Determination: Recreation is an outstandingly remarkable value. The trail, developed facilities, and other access provide outstanding opportunities for visitors to experience 3 giant sequoia groves. Recreation opportunities attract visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Botany**
  - Description: Along the creek, high elevation meadows, old growth forests, and the Belknap, Wheel Meadow and McIntyre Groves form a unique ecosystem. Some of the outstanding botanical values include specimen giant sequoias in three groves.
  - Determination: Botany is an outstandingly remarkable value. South Fork Middle Fork Tule River ecosystem, including three giant sequoia groves, is unique. Therefore, botany is considered outstandingly remarkable.

Summary: South Fork Middle Fork Tule River (GIS Number 2.213.1) is eligible because scenery, recreation, and botany are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Springs in the watershed are used by homes but the river is perennial

Shoreline Development: Roads and some recreation and residential homes

Accessibility: Roads

Water Quality: Excellent

Classification: Recreational

South Fork Middle Fork Tule River (GIS Number 2.213.2)

Location

- County: Tulare
- Beginning Point: Confluence with Coy Creek
- End Point: Confluence with North Fork Middle Fork Tule River

- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 6.6
- Eligible: 6.6

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating "South Fork Middle Fork Tule - Camp Nelson to Springville/Globe (Lake Success)" run.
  - Determination: Recreation is an outstandingly remarkable value. The whitewater boating run South Fork Middle Fork Tule - Camp Nelson to Springville/Globe (Lake Success) is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites, and there are videos posted on social media. The South Fork Middle Fork Tule whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- Summary: South Fork Middle Fork Tule River (GIS Number 2.213.2) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Springs in the watershed are used by homes, but the river is perennial

Shoreline Development: Roads and some recreation and residential homes

Accessibility: Roads

Water Quality: Excellent

Classification: Recreational

South Mountaineer Creek (GIS Number 2.215)

Location

- County: Tulare
- Beginning Point: T.20S. R.31E. Sec.11 at 8,400 feet in the Golden Trout Wilderness
- End Point: Confluence with Mountaineer Creek
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 3.1
- Eligible: 3.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: South Mountaineer Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Speas Creek (GIS Number 2.217)

Location

- County: Tulare
- Beginning Point: Speas Meadow
- End Point: Confluence with Tobias Creek
- Special Area: None

Mileage

- Studied: 3.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: Speas Creek is ineligible because it has no outstandingly remarkable values.

Stark Creek (GIS Number 2.219.1)

Location

- County: Kern
- Beginning Point: T.28S. R.31E. Sec.25 in the Breckenridge area at 6,500 feet
- End Point: Mill Creek Inventoried Roadless Area boundary west of Forest Road 28S09

- Special Area: None

Mileage

- Studied: 0.4
- Eligible: 0.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.1) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Road

Water Quality: Good

Classification: Scenic

Stark Creek (GIS Number 2.219.2)

Location

- County: Kern
- Beginning Point: Mill Creek Inventoried Roadless Area boundary west of Forest Road 28S09
- End Point: Mill Creek Inventoried Roadless Area boundary northeast of Forest Road 28S14
- Special Area: None

Mileage

- Studied: 1.5
- Eligible: 1.5

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.2) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: None

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Wild

Stark Creek (GIS Number 2.219.3)

Location
- County: Kern
- Beginning Point: Mill Creek Inventoried Roadless Area boundary northeast of Forest Road 28S14
- End Point: Mill Creek Inventoried Roadless Area boundary west of Forest Road 28S09
- Special Area: None

Mileage
- Studied: 3.0
- Eligible: 3.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**

- Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
- Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.3) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Roads

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Recreational

Stark Creek (GIS Number 2.219.4)

Location

- County: Kern
- Beginning Point: Mill Creek Inventoried Roadless Area boundary west of Forest Road 28S09
- End Point: 200 feet upstream from access road
- Special Area: None

Mileage

- Studied: 1.5
- Eligible:1.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
  - Determination: Wildlife Population and Habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.4) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Wild

Stark Creek (GIS Number 2.219.5)

Location

- County: Kern
- Beginning Point: 200 feet upstream from access road
- End Point: Mill Creek Inventoried Roadless Area boundary
- Special Area: None

Mileage

- Studied: 0.7
- Eligible:0.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.

- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.5) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Road and nonmotorized trail

Water Quality: Good. Inventoried roadless areas generally contribute to good water quality.

Classification: Scenic

Stark Creek (GIS Number 2.219.6)

Location

- County: Kern
- Beginning Point: Mill Creek Inventoried Roadless Area boundary
- End Point: Confluence with Lower Kern River
- Special Area: None

Mileage

- Studied: 0.2
- Eligible: 0.2

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Very rare Kern Canyon slender salamander and California condor are present along this creek. The salamander is unusually found close to water and certainly within one-quarter mile of the creek.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare, exemplary species and habitat, wildlife population and habitat are considered outstandingly remarkable.
- **History**
  - Description: Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are rare, unusual, or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Stark Creek (GIS Number 2.219.6) is eligible because history and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: Highway

Accessibility: Highway and road

Water Quality: Good

Classification: Recreational

Starvation Creek (GIS Number 2.220)

Location

- County: Tulare
- Beginning Point: North of Starvation Grove at 5,600 feet
- End Point: Confluence with Tyler Creek
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 3.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population and Habitat)**
  - Description: Starvation Grove was the last known California condor nest on the forest prior to 2018. The creek and its tributaries are an integral part of the grove.
  - Determination: Wildlife population and habitat are not outstandingly remarkable values. California condors are not directly dependent on the creek and have not reoccupied this site. Due to the lack of occupancy by condors in the grove and the locations of possible nest trees being independent of the creek, wildlife population and habitat are not considered outstandingly remarkable.

- **Botany**
  - Description: Starvation Grove is the one of the southernmost groves of giant sequoias.
  - Determination: Botany is not an outstandingly remarkable value. Starvation Grove is not exemplary and therefore, it is not considered outstandingly remarkable.

Summary: Starvation Creek is ineligible because it has no outstandingly remarkable values.

Table Meadow Creek (GIS Number 2.223)

Location

- County: Tulare
- Beginning Point: Northwest of White Mountain at 7,900 feet
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 2.4
- Eligible: 2.4

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.
- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Table Meadow Creek is eligible because prehistory and fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Tamarack Creek (GIS Number 2.224)

Location
- County: Tulare
- Beginning Point: Near Coyote Pass at 10,200 feet in the Golden Trout Wilderness
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage
- Studied: 3.9
- Eligible: 3.9

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Tamarack Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Taylor Creek (GIS Number 2.225)

Location

- County: Tulare
- Beginning Point: T.24S. R.34E. Sec.9 south of Domeland Wilderness boundary
- End Point: Confluence with South Fork Kern River
- Special Area: Partly within Domeland Wilderness

Mileage

- Studied: 7.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Habitat)**
  - Description: Historically, golden trout habitat occurs below the falls.
  - Determination: Fish habitat is not an outstandingly remarkable value. The water quality in this creek is not always good, due to the cattle grazing and using the creek as a wallow in places. Therefore, fish habitat is not considered outstandingly remarkable.

- **Wildlife (Habitat)**
  - Description: Mountain yellow-legged frog suitable habitat occurs above the falls.
  - Determination: Wildlife habitat is not an outstandingly remarkable value. Clean water is not always available in the creek due to cattle. Springs have been tapped for years to irrigate meadows and are no longer suitable for mountain yellow-legged frogs as a result. Due to poor water quality and disruption of springs, wildlife habitat is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: Taylor Creek is ineligible because it has no outstandingly remarkable values.

Thompson Creek (GIS Number 2.228)

Location

- County: Kern
- Beginning Point: North Slope of Piute Peak at 8,000 feet
- End Point: Forest boundary
- Special Area: None

Mileage

- Studied: 2.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Thompson Creek flows through a steep canyon below Piute Peak with views across to Breckenridge.
  - Determination: Scenery is not outstandingly remarkable. Views to Breckenridge and Piute Peak are not unique or exemplary. Therefore, scenery is not considered outstandingly remarkable.

Summary: Thompson Creek is ineligible because it has no outstandingly remarkable values.

Trout Creek (GIS Number 2.233.1)

Location

- County: Tulare
- Beginning Point: South of Corral Meadow at 8,700 feet
- End Point: Domeland Wilderness boundary near Boone Meadow
- Special Area: None

Mileage

- Studied: 4.0
- Eligible: 4.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Trout Creek tumbles down from high elevation meadows through high elevation forests to dry brush lands to the Domeland Wilderness. There are spectacular views of the many granite monoliths after which the area is named. The riparian area contrasts with the high desert landscape as the creek flows through lower elevations.

- Determination: Scenery is not an outstandingly remarkable value. The views of monoliths are beautiful from many locations within and outside the Domeland Wilderness, however these views are not necessarily river-related. In addition, the contrast of the riparian area to the high desert as it flows through the lower elevations is not exceptional or unique. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking, backcountry travel, and fishing.
  - Determination: Recreation is not an outstandingly remarkable value. Hiking, backcountry travel, and fishing opportunities are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Trout Creek is a Critical Aquatic Refuge for golden trout. This is an area where we can place native trout because it does have access by road.
  - Determination: Fish habitat is an outstandingly remarkable value. Trout Creek has good habitat for golden trout and is an exemplary creek for future reintroductions of golden trout during recovery actions. Therefore, fish habitat is considered outstandingly remarkable.

- **Wildlife (Habitat)**
  - Description: Trout Creek and its tributaries form a complex of connected perennial riparian habitat that is valuable to wildlife.
  - Determination: Wildlife habitat is not an outstandingly remarkable value. Similar riparian corridors exist along every perennial creek in the area and it is not unique. Therefore, wildlife habitat not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Trout Creek is eligible because fish habitat and prehistory are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Little to none

Accessibility: Road, motorized trail

Water Quality: Good

Classification: Scenic

Trout Creek (GIS Number 2.233.2)

Location

- County: Tulare
- Beginning Point: Domeland Wilderness boundary near Boone Meadow
- End Point: Confluence with South Fork Kern River
- Special Area: Within Domeland Wilderness

Mileage

- Studied: 11.8
- Eligible: 11.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Trout Creek tumbles down through dry brush lands in the Domeland Wilderness and then enters the South Fork Kern River. There are spectacular views of the many granite monoliths after which the area is named. The riparian area contrasts with the high desert landscape as the creek flows through lower elevations.
  - Determination: Scenery is not an outstandingly remarkable value. The views of monoliths are beautiful from many locations within and outside the Domeland Wilderness, however these views are not necessarily river-related. In addition, the contrast of the riparian area to the high desert as it flows through the lower elevations is not exceptional or unique. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking and fishing.
  - Determination: Recreation is not an outstandingly remarkable value. Hiking and fishing opportunities are not unique or exemplary. Therefore, recreation is not considered outstandingly remarkable.

- **Fish (Habitat)**
  - Description: Trout Creek is a Critical Aquatic Refuge for golden trout.
  - Determination: Fish habitat is an outstandingly remarkable value. Trout Creek has good habitat for golden trout and is an exemplary creek for future reintroductions of golden trout during recovery actions. Therefore, fish habitat is considered outstandingly remarkable.

- **Wildlife (Habitat)**
  - Description: Trout Creek and its tributaries form a complex of connected perennial riparian habitat that is valuable to wildlife.
  - Determination: Wildlife habitat is not an outstandingly remarkable value. Similar riparian corridors exist along every perennial creek in the area and it is not unique. Therefore, wildlife habitat not considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.

- Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

Summary: Trout Creek is eligible because fish habitat and prehistory are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trails

Water Quality: Good

Classification: Wild

White River (GIS Number 2.241)

Location
- County: Tulare
- Beginning Point: East of Sugarloaf Mountain Park at 6,500 feet
- End Point: Forest boundary
- Special Area: Giant Sequoia National Monument

Mileage
- Studied: 5.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is not an outstandingly remarkable value. Identified and documented prehistoric sites are similar to others within the region of comparison and are not rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is not considered outstandingly remarkable.

Summary: White River is ineligible because it has no outstandingly remarkable values.

Willow Creek (GIS Number 2.242)

Location
- County: Tulare
- Beginning Point: Near Coyote Lakes and wilderness boundary at 9,000 feet in the Golden Trout Wilderness
- End Point: Confluence with Little Kern River
- Special Area: Golden Trout Wilderness

Mileage

- Studied: 4.3
- Eligible: 4.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population and Habitat)**
  - Description: Little Kern golden trout, a species of golden trout federally listed as threatened, and its habitat, are present.
  - Determination: Fish population and habitat are outstandingly remarkable values.

Summary: Willow Creek is eligible because fish population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: None

Accessibility: Nonmotorized trail

Water Quality: High

Classification: Wild

Wilson Creek (GIS Number 2.244)

Location

- County: Tulare
- Beginning Point: North of Tule River Indian Reservation in Black Mountain Grove at 5,900 feet
- End Point: Confluence with South Fork Middle Fork Tule River
- Special Area: Giant Sequoia National Monument

Mileage

- Studied: 2.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Wilson Creek drains from the Black Mountain Giant Sequoia Grove.
  - Determination: Botany is not an outstandingly remarkable value. Wilson Creek is similar to many other creeks that provide water within other giant sequoia groves and is not exemplary. There are other creeks that meander within groves that have a better direct interaction with the understory and ecology of the grove. Therefore, botany is not considered outstandingly remarkable.

Summary: Wilson Creek is ineligible because it has no outstandingly remarkable values.

Sierra National Forest

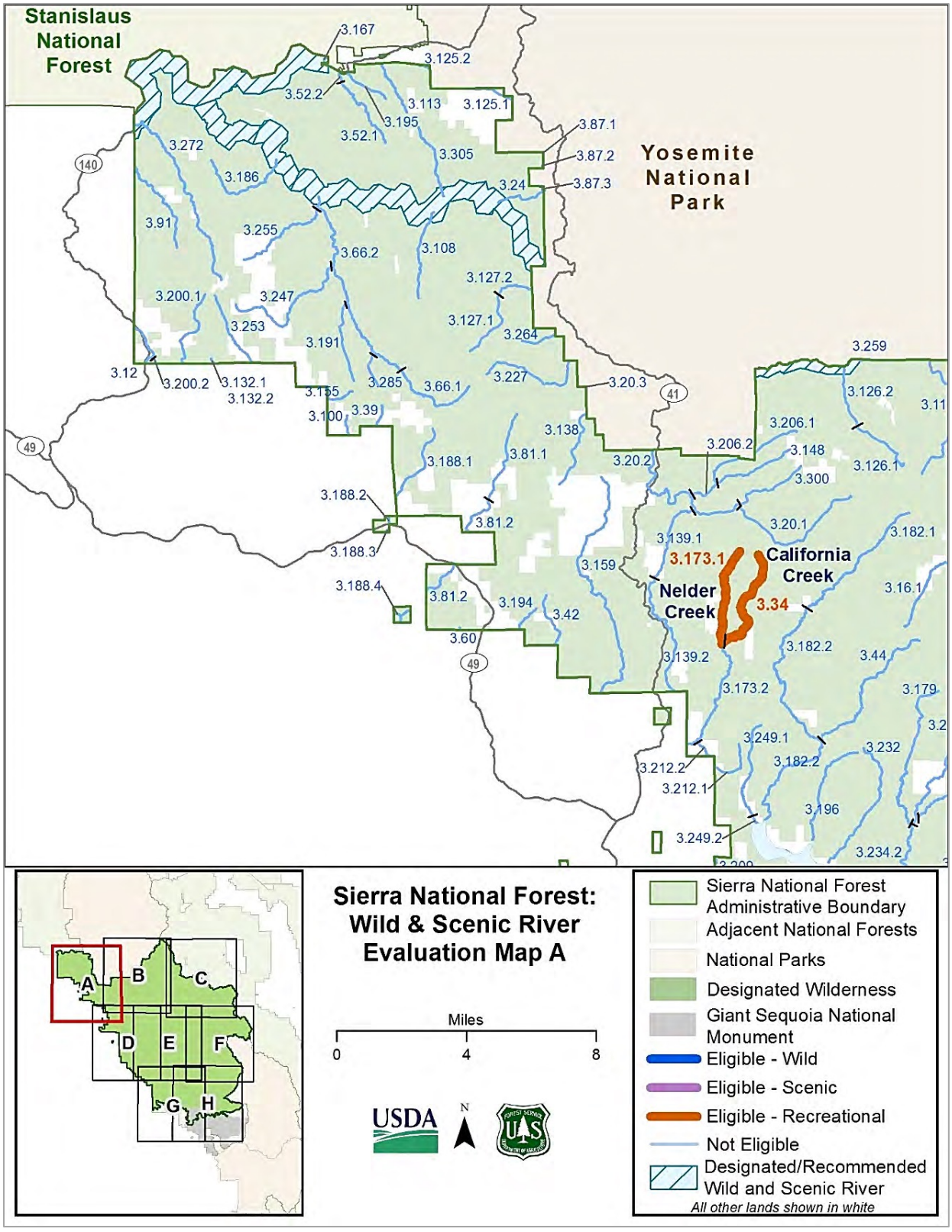
Eligibility Study Results Summary

Including river segments that were not previously studied and the three segments of the Lower Kings River that were previously studied, a total of 33 river segments (approximately 146.3 miles) are eligible because they have free flow and outstandingly remarkable values. Table C-6, the following evaluation maps, Map C-20, and the River Segment Details sections below provide more information about these river segments.

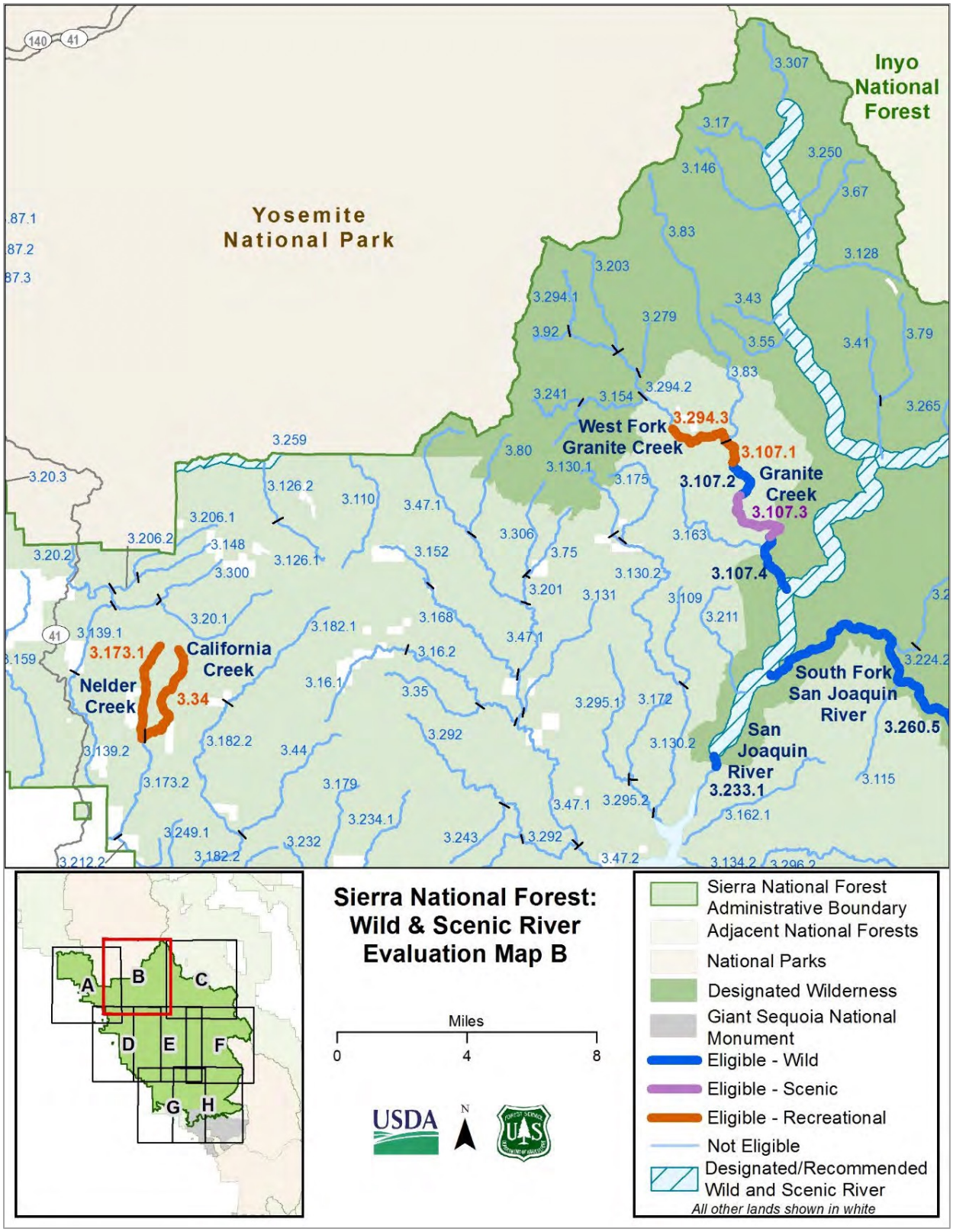
Table C-6. Sierra National Forest wild and scenic river eligibility study results summary

Study Results	Number of River Segments	Approximate Mileage
Total Eligible	33[9]	146.3
Preliminarily Classification: Wild	13	78.5
Preliminarily Classification: Scenic	7	33.0
Preliminarily Classification: Recreational	13	34.8

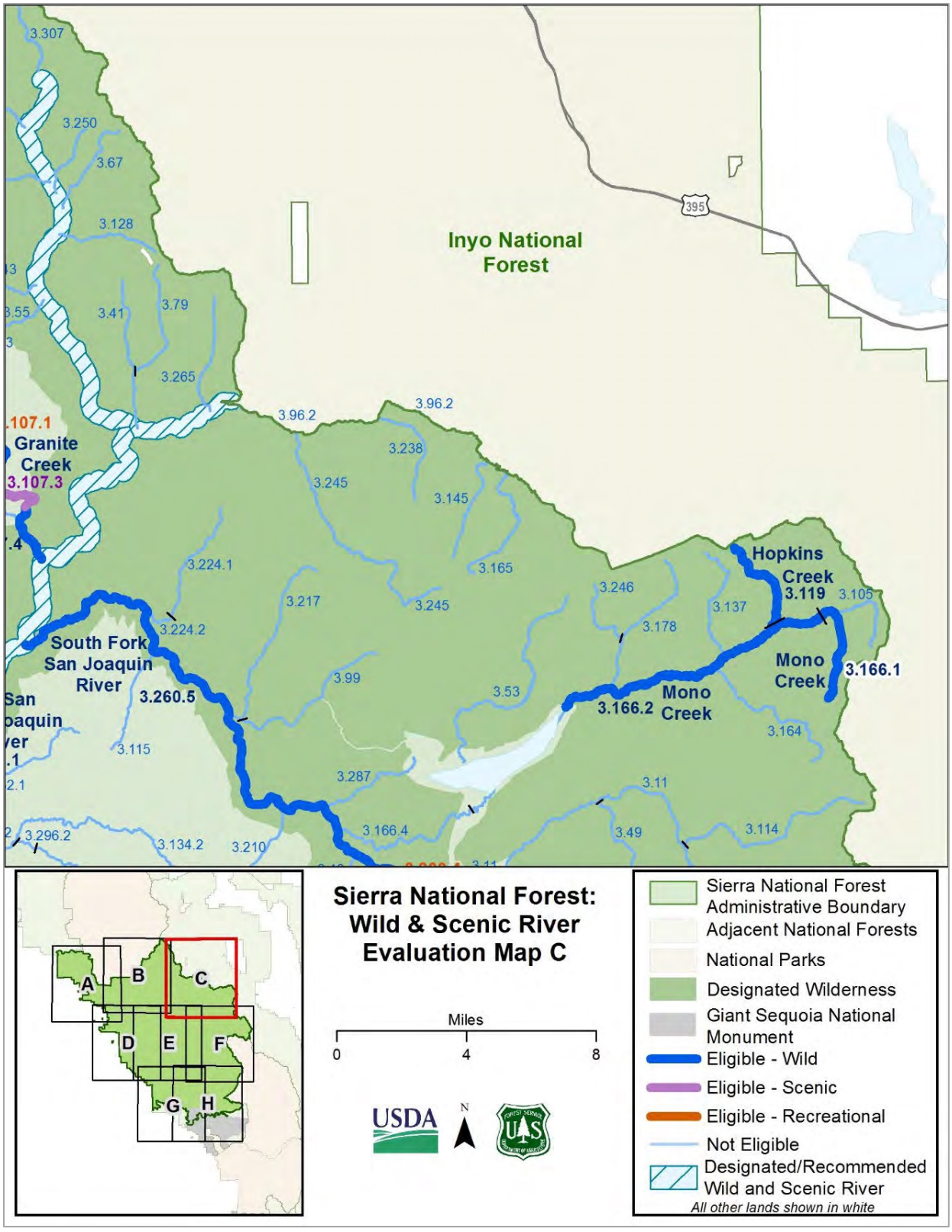
[9] Includes three river segments (approximately 12.7 miles) of the Lower Kings River (from elevation 1,595 to the high-water line of Pine Flat Reservoir) that were included in the 1991 Sequoia National Forest eligibility study, but for the purposes of the current study are included in the Sierra National Forest section and Sierra National Forest tables and totals.



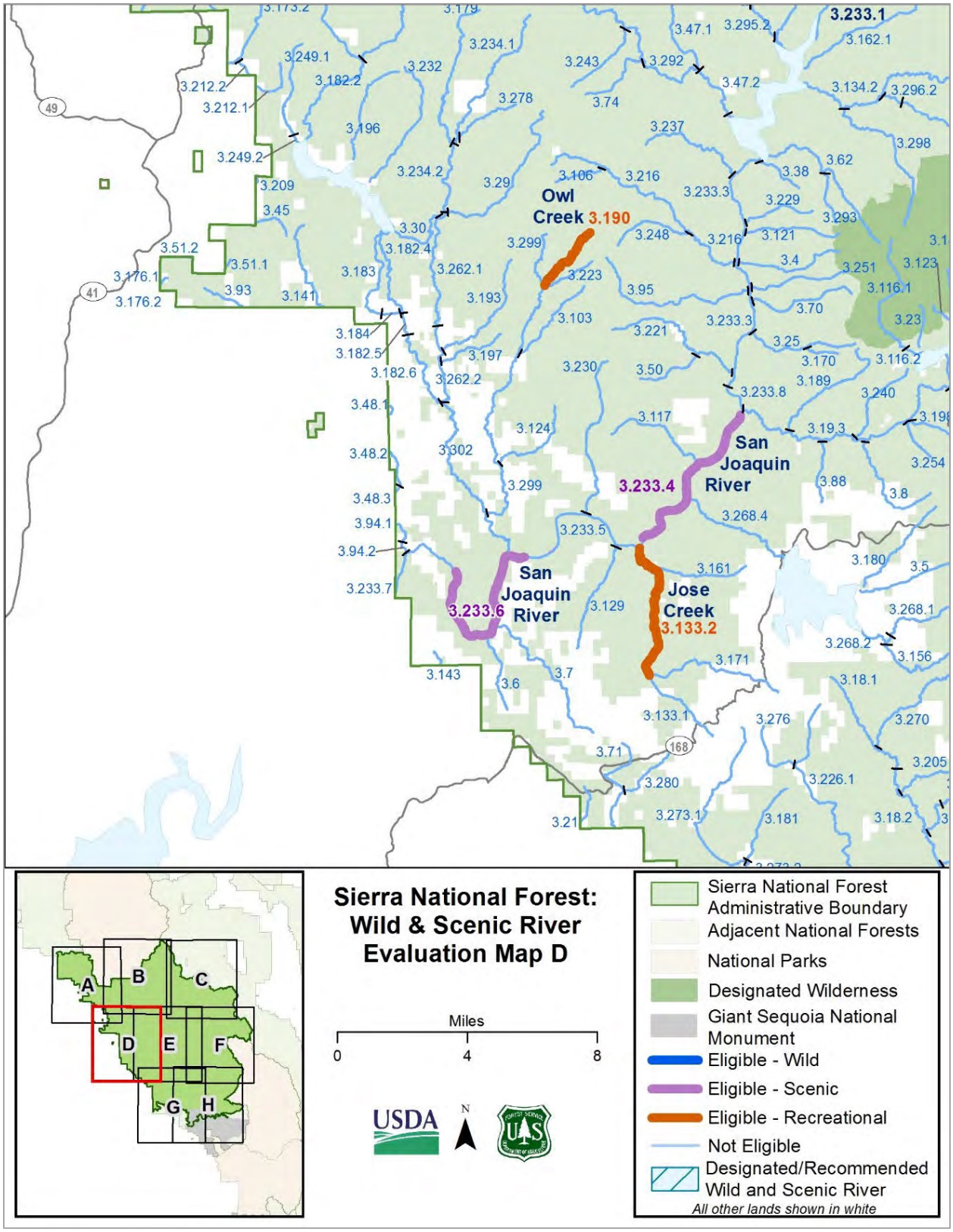
Map C-11. Sierra National Forest wild and scenic river evaluation map A



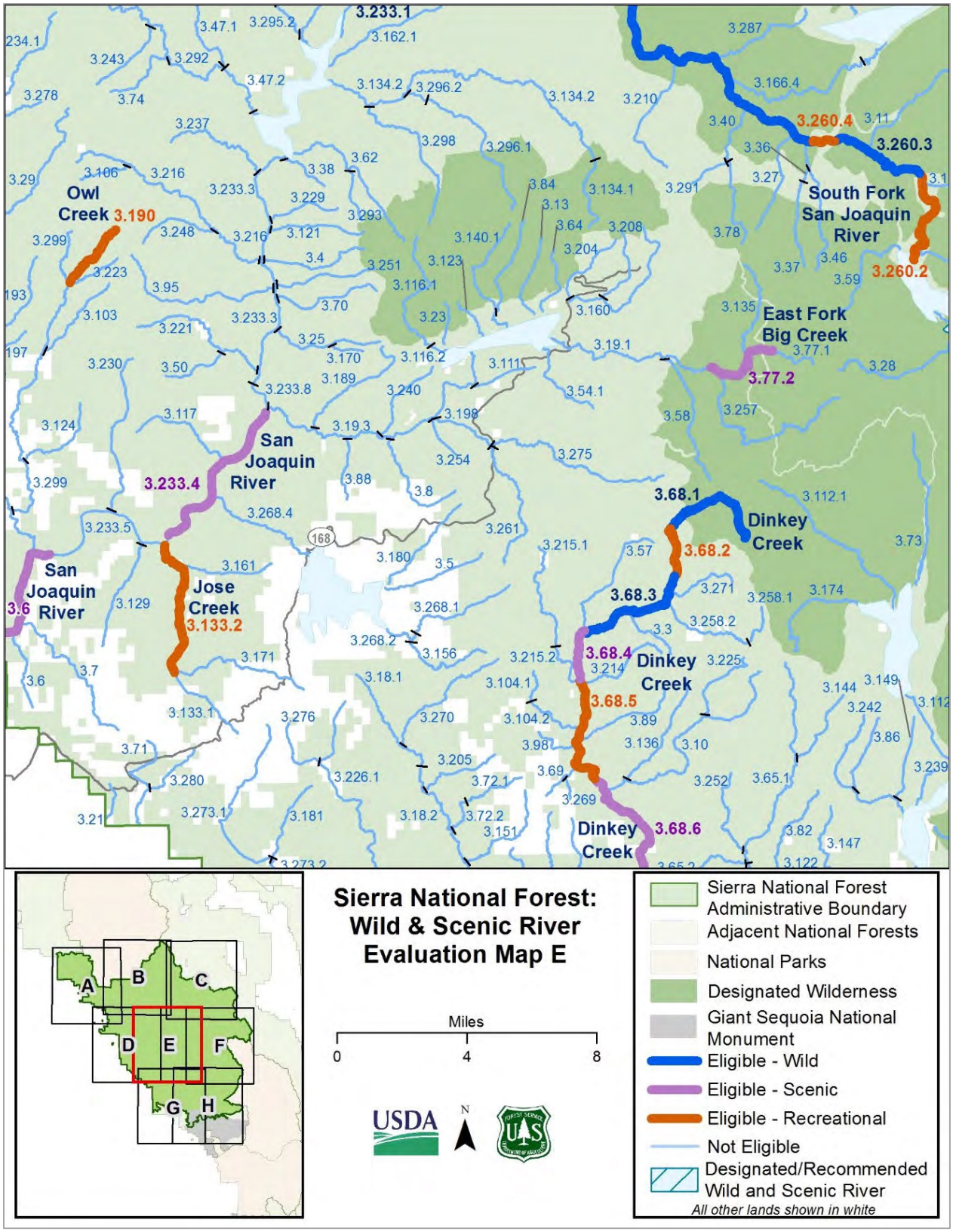
Map C-12. Sierra National Forest wild and scenic river evaluation map B



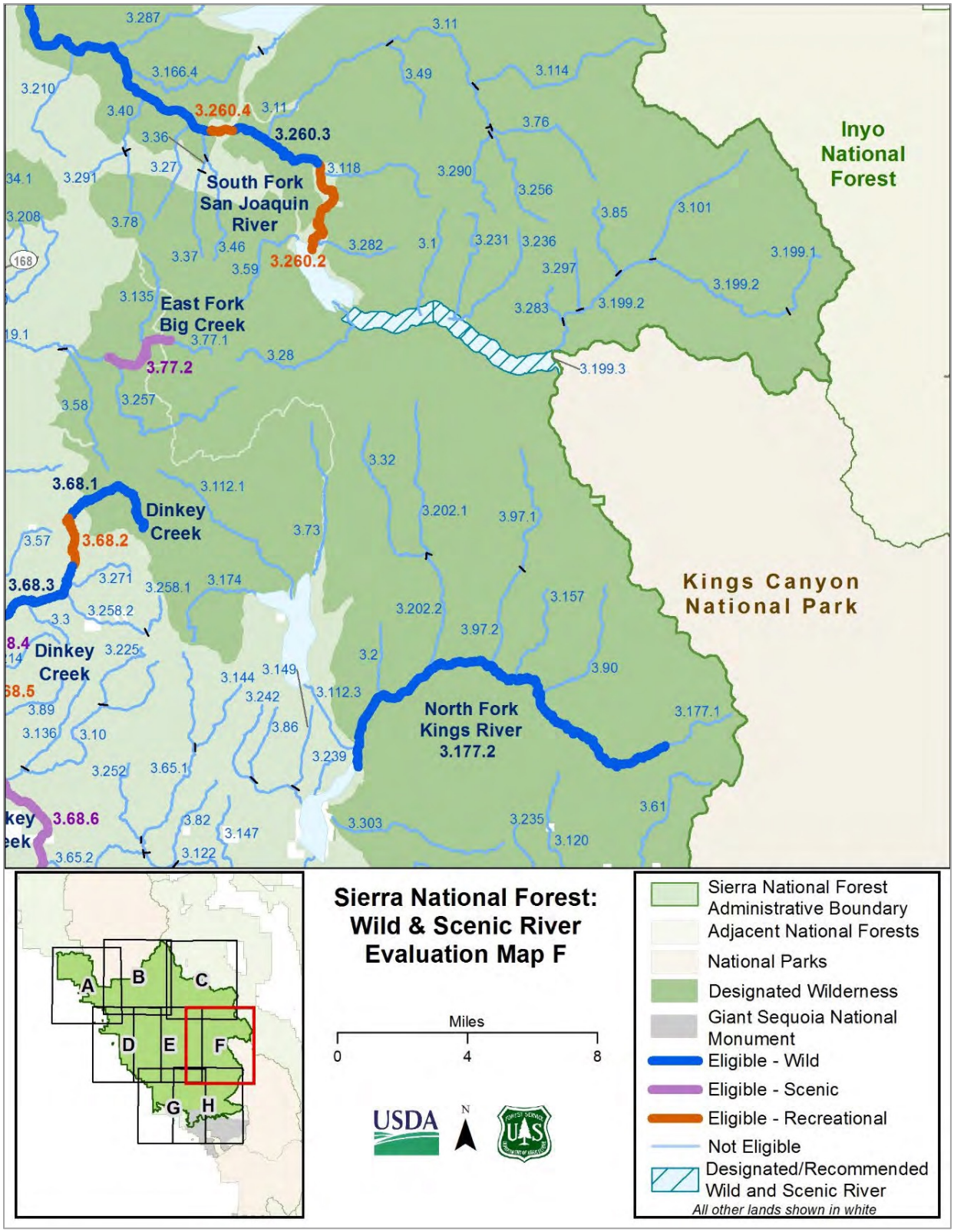
Map C-13. Sierra National Forest wild and scenic river evaluation map C



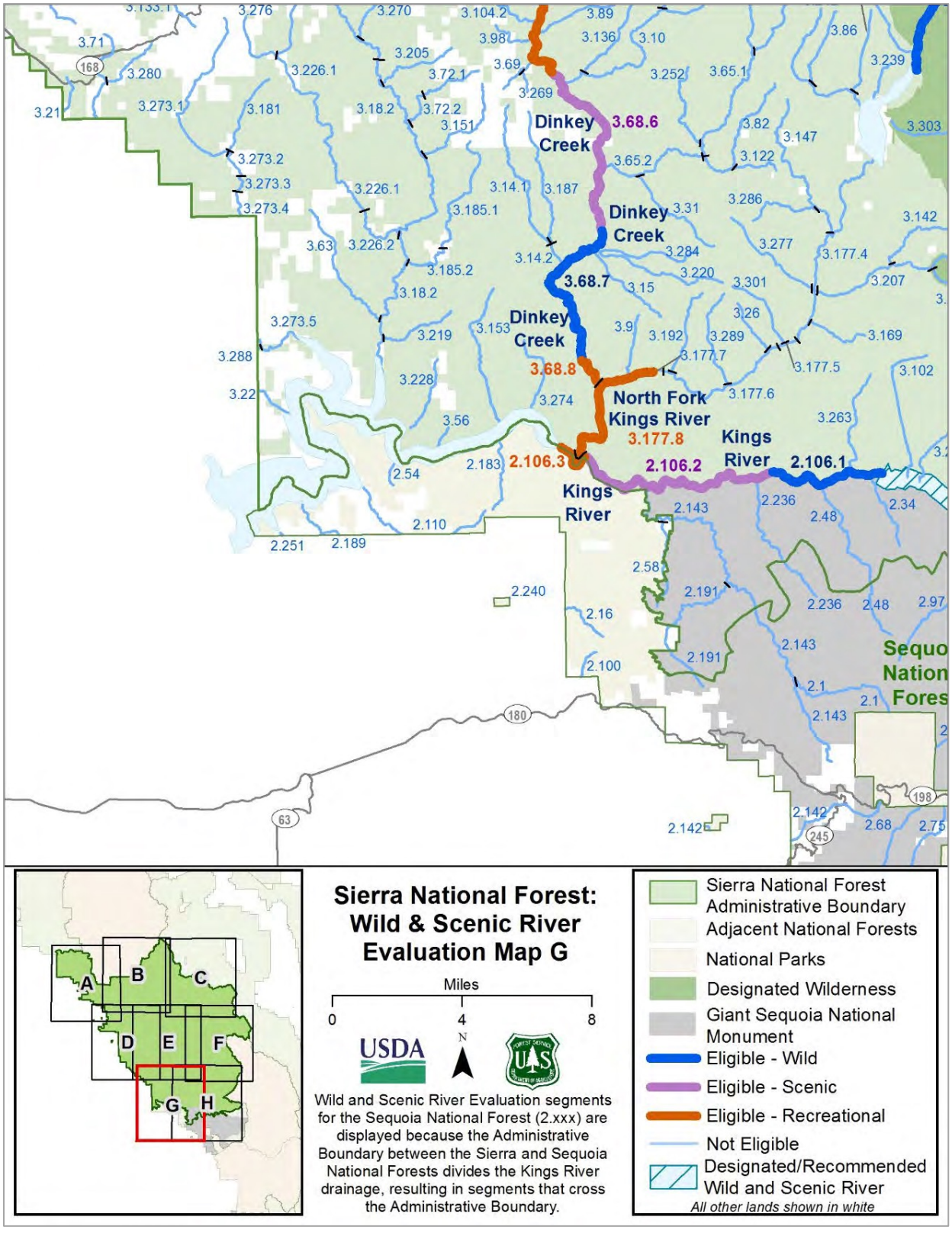
Map C-14. Sierra National Forest wild and scenic river evaluation map D



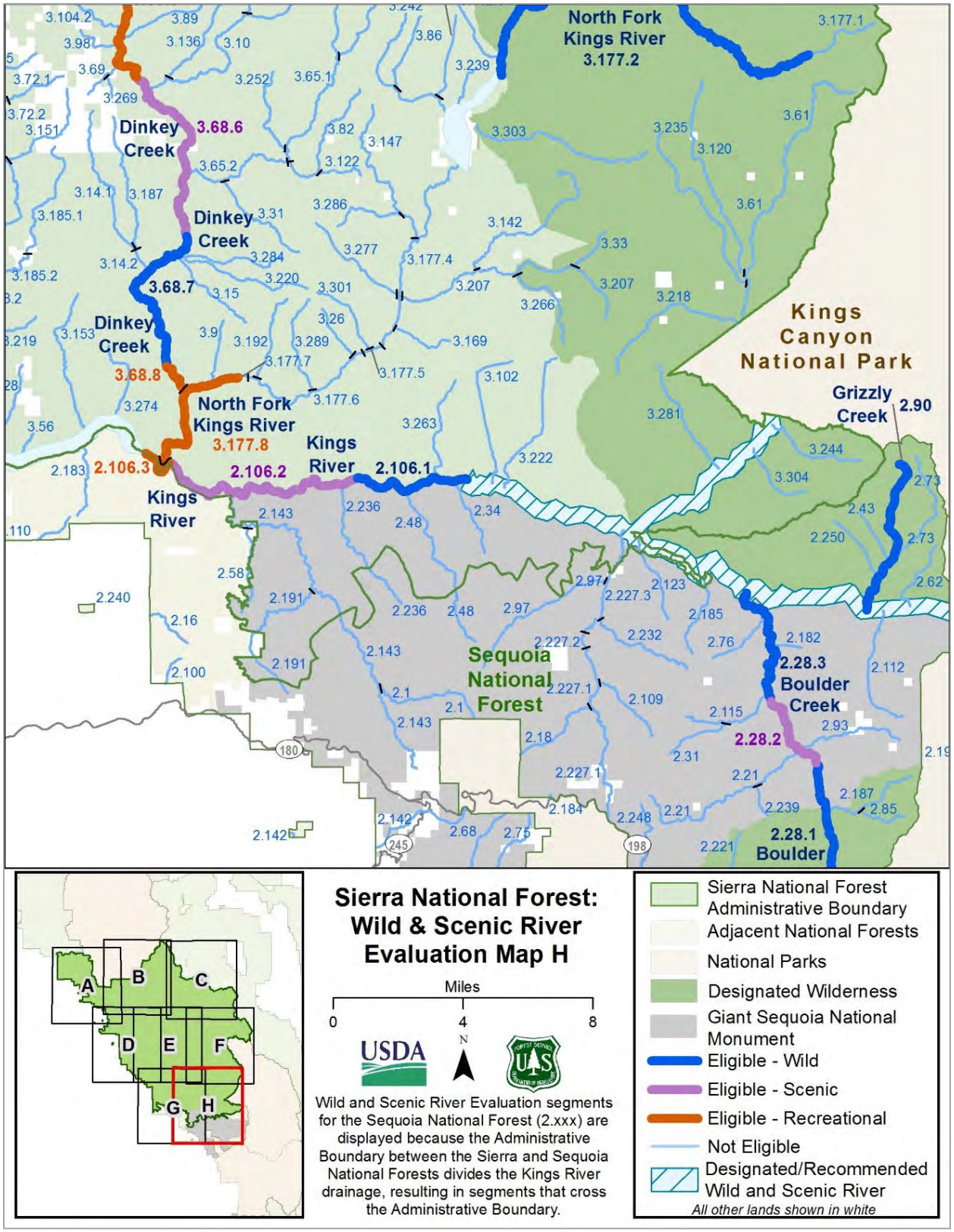
Map C-15. Sierra National Forest wild and scenic river evaluation map E



Map C-16. Sierra National Forest wild and scenic river evaluation map F



Map C-17. Sierra National Forest wild and scenic river evaluation map G



Map C-18. Sierra National Forest wild and scenic river evaluation map H

River Segments Not Previously Studied

Four hundred-sixteen river segments (approximately 1,481.4 miles) had not been previously studied. Approximately 1,432.7 miles are free flowing and approximately 48.7 miles are not free flowing. Table C-2, Table C-7, the evaluation maps above, Map C-20, and the River Segment Details section below provide more information about these river segments.

Table C-7. Sierra National Forest river segments not previously studied and not free flowing

Segment Name	GIS Number	Mileage	Free Flow
Browns Creek Ditch	3.30	2.6	No, engineered watercourse
Coon Creek	3.54.2	0.3	No, under Huntington Lake (Reservoir)
Helms Creek	3.112.2	3.6	No, under Courtright Reservoir
Home Camp Creek	3.116.2	1.2	No, under Huntington Lake (Reservoir)
Line Creek	3.140.2	0.4	No, under Huntington Lake (Reservoir)
Mill Creek	3.162.2	0.2	No, under Mammoth Pool Reservoir
Mono Creek	3.166.3	5.2	No, under Lake Thomas A. Edison (Reservoir)
North Fork Kings River	3.177.3	3.7	No, under Wishon Reservoir
North Fork Kings River	3.177.5	0.7	No, under Black Rock Reservoir
North Fork Kings River	3.177.7	0.4	No, under Reservoir at Balch Powerplant
North Fork Willow Creek	3.182.3	4.7	No, under Bass Lake (Reservoir)
North Fork Willow Creek	3.182.5	0.8	No, under Manzanita Lake (Reservoir)
Number Three Ditch	3.183	3.7	No, engineered watercourse
Number Three Forbay Penstock	3.184	0.7	No, engineered watercourse
San Joaquin River	3.233.2	7.6	No, under Mammoth Pool Reservoir
San Joaquin River	3.233.5	5.4	No, under Redinger Lake (Reservoir)
San Joaquin River	3.233.7	3.3	No, under Kerckhoff Lake (Reservoir)
San Joaquin River	3.233.8	1.2	No, under Dam Six Lake (Reservoir)
Slide Creek	3.249.2	0.5	No, under Bass Lake (Reservoir)
South Fork San Joaquin River	3.260.1	2.5	No, under Florence Lake (Reservoir)
Total	-	48.7	-

Region of Comparison

- **Scenery** – Sierra National Forest. Few National Forests offer the range of scenic attractions found in the Sierra National Forest. The Sierra National Forest landscape is quite diverse, ranging from steeply rolling chaparral and grass-woodland foothills to barren windswept crags on the Sierra Crest. The mid-elevations are characterized by steep-walled river canyons interspersed with gentler highly productive heavily forest areas. At the high elevations the knife-edged ridges, sharp peaks, and steep-walled basins, frequently containing lakes, owe their form to the abrading action of glaciers. The lower elevations are characterized by rolling topography and foothills. Existing designated wild and scenic rivers within the Sierra National Forest flow through exceptional scenery. For example, glaciated peaks, towering waterfalls, lakes, alpine and sub-alpine meadows, and spectacular wildflower displays surround the alternating pools and cascades of the Merced River and South Fork Merced River. Wildflower displays are spectacular. Scenery along the Kings River, Middle Fork Kings River, and South Fork Kings River includes spectacular granite canyon walls and granite domes, along with waterfalls.

- **Recreation** – Sierra Nevada Mountain Range. This area includes the southern Sierra Nevada Mountain Range including portions of the Inyo and Sequoia National Forests, as well as several other national forests. The region of comparison was determined based on the recreation values common across the mountain range and likely travel distances for similar recreation opportunities for both local visitors and nonlocal visitors.
- **Geology** – Southern Sierra Nevada Mountain Range. The geomorphology (geology and landforms) of the Sierra National Forest is similar to the geomorphology of Yosemite National Park, Sequoia and Kings Canyon National Parks, Sequoia National Forest, and Giant Sequoia National Monument. Glacial processes have occurred throughout the Southern Sierra Nevada at higher elevations and glacial landforms and features are ubiquitous. There are geological differences in the eastern Sierra Nevada, which has many volcanic geologic processes that are not common on the Sierra National Forest. North of the Sierra National Forest there are also different geological processes, including substantial lahar flow deposits that have created inverted topography from stream erosion, that are not present on the Sierra National Forest.
- **Fisheries** – State of California. The State of California has 11 native heritage trout. Golden trout are the State Fish of California. Due to the high interest in California for conservation and angling for heritage trout, the region of comparison for fish populations and habitat is the State of California.
- **Wildlife** – Southern Sierra Nevada Mountain Range, including Yosemite National Park, Sequoia and Kings Canyon National Parks, Sequoia National Forest, and Giant Sequoia National Monument. The Sierra National Forest is in a Mediterranean ecosystem and has many months with no rain. This elevates the importance of water sources for most wildlife. Several species are associated with creeks all the time. Several endemic species of salamander are present in and along creeks or rivers year-round. Most birds and mammals move around and use these areas as corridors and for food and water. Just as an oasis in the desert attracts many wildlife and has value because of its rarity on the landscape, perennial creeks and rivers on the Sierra National Forest attract and are essential to wildlife. These areas have high value for breeding, foraging, and dispersal. Since some species are endemic to the Sierra National Forest, and some are found throughout the Southern Sierra Nevada Mountain Range, the region of comparison for wildlife populations and habitat is the Southern Sierra Nevada Mountain Range.
- **Prehistory/Cultural** – Sierra National Forest. Cultural/Prehistory value were evaluated for sites associated with the indigenous occupation of the Sierra National Forest, including the Western Mono tribes, as well as Miwuk and Yokuts. Instead of requiring comparison of the uniqueness or relative importance of archaeological sites to dissimilar properties associated with other tribal groups in different areas of the state of California or even the Sierra Nevada mountains, this parochial concentration is appropriate for two general reasons. First, it allows for a relevant and unique focus on cultural groups. Of particular importance in this regard are historic and late prehistoric archaeological sites related to the tribes that adapted to and lived in the mountains and/or foothills of the contemporary Sierra National Forest. Their long-standing distinctive cultural adaptation and strong traditional affinity to Sierra National Forest lands provides a context for evaluating the significance of sites as representative of their culture in ancestral as well as contemporary terms.
- **History** –State of California. Since many of the historic themes found on the Sierra National Forest are common throughout the state or at least the Sierra Nevada region, this level of comparison is appropriate. Themes include the Gold Rush and subsequent mining operations, cattle ranching, livestock (including sheep) grazing, the emergence of the Forest Service as a land management agency, homesteading, fur trapping, hydroelectric power development, historic themes related to inter-regional, and even international cultural, social, and economic patterns. The evaluation of historic sites on the Sierra National Forest focused on the value of a site as it represents a local,

important event or trend that is connected to and significant in light of a broader geographic context.

- **Botany** – Sierra Nevada Mountain Range. Botanic Areas were first defined for the unique, endemic, and rare plants present in the areas by comparing across the Sierra Nevada Mountain Range to determine which plant species are unique.

Outstandingly Remarkable Values

The Interagency Wild and Scenic Rivers Coordinating Council technical paper "The Wild and Scenic River Study Process," describes the baseline criteria for outstandingly remarkable scenery, recreation, geology, fish and wildlife populations and habitat, prehistory/cultural, and history values. Outstandingly remarkable botanical values are based upon unique and rare plants and vegetation types.

River Segment Details

Alder Creek (GIS Number 3.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Mount Hooper
- End Point: South Fork San Joaquin River
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - ♦ Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - ♦ Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Alder Creek is ineligible because it has no outstandingly remarkable values.

Anderson Creek (GIS Number 3.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters are east of Long Top and west of Corral Mountain
- End Point: North Fork Kings River

- Special Area: John Muir Wilderness

Mileage

- Studied: 2.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Anderson Creek is ineligible because it has no outstandingly remarkable values.

Aspen Creek (GIS Number 3.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters near Horsethief Lake
- End Point: Confluence with San Joaquin River
- Special Area: None

Mileage

- Studied: 3.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal hamlet associated with meadow and creek.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Aspen Creek is ineligible because it has no outstandingly remarkable values.

Bald Mill Creek (GIS Number 3.7)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters near Bald Mountain near Meadow Lakes - private property
- End Point: San Joaquin River - crosses private land
- Special Area: None

Mileage

- Studied: 5.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal Poshgisha Mono Hamlet associated with creek.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison and this is not an exemplary prehistoric site. Therefore, the site is not considered outstandingly remarkable.
- **Botany**
  - Description: Abundant Carpenteria (*Carpenteria californica*), a species native to the Sierra Nevada foothills that grows along the edges of seasonal creeks and is only found within the Sierra National Forest and some nearby private lands, beautiful pools, diverse chaparral distinctive of Sierra National Forest San Joaquin River watershed.
  - Determination: Botany is not an outstandingly remarkable value. While Carpenteria occurs within the creek corridor, it also occurs elsewhere within the region of comparison. Therefore, botany is not considered outstandingly remarkable.

Summary: Bald Mill Creek is ineligible because it has no outstandingly remarkable values.

Balsam Creek (GIS Number 3.8)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters northeast of Balsam Meadow
- End Point: Big Creek
- Special Area: None

Mileage

- Studied: 3.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Middle Archaic to Transitional Periods aboriginal hamlets associated with creek.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Balsam Creek is ineligible because it has no outstandingly remarkable values.

Bear Creek (GIS Number 3.10)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters near Nelson Mountain
- End Point: Dinkey Creek
- Special Area: None

Mileage
- Studied: 8.7
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Aboriginal hamlets associated with creek.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Bear Creek (GIS Number 3.10) is ineligible because it has no outstandingly remarkable values.

Bear Creek (GIS Number 3.11)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of Bear Creek and East Fork Bear Creek, west of Upper Bear Creek Meadow
- End Point: South Fork San Joaquin River
- Special Area: John Muir Wilderness

Mileage

- Studied: 11.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating. The portion of Bear Creek that has whitewater boating use is within the John Muir Wilderness and can only be accessed on foot.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Bear Creek has been documented. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.
- **Scenery**
  - Description: Variety Class A (Distinctive). Barren granite-walled canyons on the Sierra Crest interspersed with patches of forested areas. Consists of views of Bear Dam Diversion, Twin Falls, and several nice crystal-clear and emerald-green pools near Bear Creek Trail.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are views of canyons, forest, dams, falls, and pools, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated valley with glacial erosional and depositional landforms (moraines) as well as a variety of granitic bedrock bodies and metamorphic rocks.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Bear Creek (GIS Number 3.11) is ineligible because it has no outstandingly remarkable values.

Bear Meadow Creek (GIS Number 3.14.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters southwest Dinkey Mountain in Bear Meadow
- End Point: Oak Flat Creek
- Special Area: None

Mileage

- Studied: 5.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal hamlets and Middle Archaic occupation.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Bear Meadow Creek is ineligible because it has no outstandingly remarkable values.

Bench Canyon (GIS Number 3.17)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Blue Lake
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 3.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region

of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Bench Canyon is ineligible because it has no outstandingly remarkable values.

Big Creek (GIS Number 3.18.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of unnamed stream at 10S18, 0.7 mile upstream (north) of the Bretz Mill site
- End Point: Pine Flat Reservoir
- Special Area: None

Mileage

- Studied: 13.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Middle Archaic through Late Prehistoric period prehistoric trail system, as well as late Prehistoric through early 20th century villages, hamlets and Indian allotments associated with the Poshgisha and Holkoma Mono peoples.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the area of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Big Creek (GIS Number 3.18.2) is ineligible because it has no outstandingly remarkable values.

Big Creek (GIS Number 3.19.3)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: South side of Huntington Lake at the Gaging Station near Dam.
- End Point: San Joaquin River east of Chawanakee Flats
- Special Area: None

Mileage

- Studied: 9.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **History**
  - Description: Big Creek Hydro System Historic District.
  - Determination: History is not an outstandingly remarkable value. Other hydropower sites also exist elsewhere within the region of comparison. Therefore, this site is not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Mono cultural property. Mono peoples are only found on the Sierra National Forest.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Big Creek (GIS Number 3.19.3) is ineligible because it has no outstandingly remarkable values.

Big Creek (GIS Number 3.20.2)

Location
- Ranger District: Bass Lake
- County: Madera and Mariposa
- Beginning Point: Confluence with White Chief Branch
- End Point: Forest boundary with Yosemite National Park, north of Summerdale Campground
- Special Area: None

Mileage
- Studied: 6.0
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating from Fish Camp to the South Fork of the Merced River.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Big Creek has been documented. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Aboriginal hamlets associated with creek
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Big Creek (GIS Number 3.20.2) is ineligible because it has no outstandingly remarkable values.

Billy Creek (GIS Number 3.23)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters east of Home Camp Research Natural Area
- End Point: Huntington Lake
- Special Area: 0.9 mile is in Kaiser Wilderness

Mileage

- Studied: 1.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal hamlets associated with creek eligible for National Register of Historic Places listing.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Billy Creek is ineligible because it has no outstandingly remarkable values.

Bishop Creek (GIS Number 3.24)

Location

- Ranger District: Bass Lake
- County: Mariposa
- Beginning Point: Forest boundary Yosemite National Park
- End Point: South Fork Merced River
- Special Area: None

Mileage

- Studied: 1.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Botanical resources. Bishop Creek flows along the northern boundary of the Bishop Creek Proposed Research Natural Area, which is a candidate research area for the Pacific ponderosa pine forest type.
  - Determination: Botany is not an outstandingly remarkable value. The ponderosa pine forest is described as the "distinctive feature" of the Bishop Creek Proposed Research Natural Area, along with "extensive stands of scrub forest that form ecotones between conifer forest and the chaparral, mixed evergreen forest, and oak woodland communities occurring at lower elevation." While Pacific ponderosa pine forest occurs within the creek corridor, it does not contribute substantially to the functioning of the creek ecosystem, is not creek-dependent, and does not owe its location or existence to the presence of the creek. Pacific ponderosa pine forest also occurs commonly throughout the region of comparison. Therefore, botany is not considered outstandingly remarkable.
- **Prehistory**
  - Description: Early Archaic occupation. A notable change in the archaeological record for this period is a dramatic increase in the number of ground stone tools, suggesting an increased dependence on plant resources.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Bishop Creek is ineligible because it has no outstandingly remarkable values.

Black Rock Creek (GIS Number 3.26)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters east Black Rock
- End Point: Kings River
- Special Area: None

Mileage

- Studied: 1.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal hamlets associated with creek.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Black Rock Creek is ineligible because it has no outstandingly remarkable values.

Boulder Creek (GIS Number 3.28)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of Dutch Meadow
- End Point: South Fork San Joaquin River at Florence Lake
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Boulder Creek is ineligible because it has no outstandingly remarkable values.

Burnt Corral Creek (GIS Number 3.32)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Thompson Pass
- End Point: Post Corral Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 6.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Burnt Corral Creek is ineligible because it has no outstandingly remarkable values.

Cabin Creek (GIS Number 3.33)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Chain Lakes
- End Point: Rancheria Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 1.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Cabin Creek is ineligible because it has no outstandingly remarkable values.

California Creek (GIS Number 3.34)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters near its intersection with Forest Road 05S038
- End Point: Confluence with Nelder Creek
- Special Area: Nelder Grove Historic Area

Mileage

- Studied: 3.9
- Eligible: 3.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: There are giant sequoias along the creek, within the Nelder Grove Historic Area, that are accessible via the Chimney trail.
  - Determination: Scenery is an outstandingly remarkable value. The giant sequoias are unique and exemplary scenic values.
- **Recreation**
  - Description: The Nelder Grove Historic Area contains hiking trails through a unique landscape for nature viewing.
  - Determination: Recreation is an outstandingly remarkable value. While the 2017 Railroad Fire impacted the area, the area continues to offer unique recreation opportunities.
- **Botany**
  - Description: There are giant sequoias along the creek, within the Nelder Grove Historic Area. Near the creek, there are also mountain lady's slipper orchid (*Cypripedium montanum*), a Forest sensitive species.
  - Determination: Botany is an outstandingly remarkable value. Giant sequoias are rare and only occur in the southern sierras. Lady's slipper orchids are also rare.

Summary: California Creek is eligible because scenery, recreation, and botany are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: A small campground and hiking trails

Accessibility: Roads and nonmotorized trails

Water Quality: Unknown

Classification: Recreational

Cargyle Creek (GIS Number 3.41)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters at Straube Lake
- End Point: Middle Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 5.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Cargyle Creek is ineligible because it has no outstandingly remarkable values.

Chetwood Creek (GIS Number 3.43)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters south of Sadler Peak
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 2.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Chetwood Creek is ineligible because it has no outstandingly remarkable values.

Chiquito Creek (GIS Number 3.47.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence of West Fork Chiquito Creek near the Upper Chiquito campground
- End Point: Mammoth Pool Reservoir
- Special Area: None

Mileage

- Studied: 2.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: The area along Chiquito Creek between Logan Meadow and Mammoth Pool contains a Late Prehistoric period trail hub and a 19th to 20th century Nim cultural property.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Chiquito Creek is ineligible because it has no outstandingly remarkable values.

Cirque Creek (GIS Number 3.49)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Cirque Lake
- End Point: Bear Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Cirque Creek is ineligible because it has no outstandingly remarkable values.

Clearwater Creek (GIS Number 3.50)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters east of Source Point
- End Point: Ross Creek
- Special Area: None

Mileage

- Studied: 2.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Traditional and cultural site.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Clearwater Creek is ineligible because it has no outstandingly remarkable values.

Cold Creek (GIS Number 3.53)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of Silver Pass Lake
- End Point: Lake Thomas A. Edison (Reservoir)
- Special Area: John Muir Wilderness

Mileage

- Studied: 9.6

- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, spectacular lateral glacial moraines, Graveyard Meadow Glacial lake lacustrine deposits.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Cold Creek is ineligible because it has no outstandingly remarkable values.

Cora Creek (GIS Number 3.55)

Location
- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters at Cora Lakes
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage
- Studied: 3.7
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Cora Creek is ineligible because it has no outstandingly remarkable values.

Cow Creek (GIS Number 3.57)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at north of Willow Meadow south of Forest Road 9S62

- End Point: Dinkey Creek
- Special Area: None

Mileage

- Studied: 4.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population)**
  - Description: Lahontan cutthroat trout population is one of 14 recognized subspecies of cutthroat trout in western United States. The species is managed under the recovery plan and is monitored annually for population abundance.
  - Determination: The fish (population) is not an outstandingly remarkable value. This species is also found in several other creeks in the inventory and within the region of comparison. Therefore, it is not unique and not considered outstandingly remarkable.

Summary: Cow Creek is ineligible because it has no outstandingly remarkable values.

Crown Creek (GIS Number 3.61)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters east of Crown Basin, west of Kettle Ridge
- End Point: Forest boundary with Kings Canyon National Park
- Special Area: John Muir Wilderness

Mileage

- Studied: 10.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Crown Creek is ineligible because it has no outstandingly remarkable values.

Dike Creek (GIS Number 3.67)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters unnamed lake in the Ritter Range
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 3.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Dike Creek is ineligible because it has no outstandingly remarkable values.

Dinkey Creek (GIS Number 3.68.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Island Lake
- End Point: Upper waterfalls north of Dinkey Lakes Trailhead
- Special Areas: 3.5 miles is in Dinkey Lakes Wilderness, Dinkey Creek Roof Pendent Geological Area

Mileage

- Studied: 4.0
- Eligible: 4.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Spectacular views of granite domes and lakes.

- Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of steep granitic domes and lakes, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Popular day hiking trail follows the creek from the trailhead to Island Lake. Six miles of trails provide a loop experience for visitors to access four lakes in the Dinkey Lakes Wilderness.
  - Determination: Recreation is an outstandingly remarkable value. This segment of Dinkey Creek is located in wilderness and includes the Dinkey Lakes Trail, which is a popular wilderness route. The recreation use associated with the sub-alpine setting and creek is substantial and attracts visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape. The Dinkey Creek Roof Pendant Geological Area is a series of rocks that have been folded three different ways. The Pendant includes schist, quartzite, hornfelds, calc-silicate rocks, and marble. These rocks are thought to have been originally deposited sometime between the Paleozoic and the Cretaceous Period of the Mesozoic in a shallow marine area. The age range would be anywhere between 524 to 146 million years ago.
  - Determination: Geology is an outstandingly remarkable value. The 1991 Sierra National Forest Plan notes that while there are other roof pendants located in nearby areas of the Sierra Nevada, the Dinkey Creek pendants are more varied and afford relatively easy access (1991 FEIS App. 7N-3). Therefore, geology is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.1) is eligible because recreation and geology are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

Dinkey Creek (GIS Number 3.68.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Upper waterfalls north of Dinkey Lakes Trailhead
- End Point: Dinkey Lakes Inventoried Roadless Area boundary 0.6 mile upstream from the Swamp Creek confluence
- Special Area: Dinkey Creek Roof Pendent Geological Area

Mileage

- Studied: 1.8
- Eligible: 1.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of granite-walled river canyons interspersed with patches of forested areas as well as lakes and domes, including Dinkey Dome.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of steep granitic walls, domes, deep canyons, and lakes, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Access by roads and motorized trails. The creek is crossed by Swamp Motorized Trail. Just east of the creek crossing is an example of the Dinkey Creek Roof Pendant Geological Area.
  - Determination: Recreation is an outstandingly remarkable value.

- **Geology**
  - Description: Glaciated landscape. The Dinkey Creek Roof Pendant Geological Area is a series of rocks that have been folded three different ways. The Pendant includes schist, quartzite, hornfelds, calc-silicate rocks, and marble. These rocks are thought to have been originally deposited sometime between the Paleozoic and the Cretaceous Period of the Mesozoic in a shallow marine area. The age range would be anywhere between 524 to 146 million years ago.
  - Determination: Geology is an outstandingly remarkable value. The 1991 Sierra National Forest Plan notes that while there are other roof pendants located in nearby areas of the Sierra Nevada, the Dinkey Creek pendants are more varied and afford relatively easy access (1991 FEIS App. 7N-3). Therefore, geology is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.2) is eligible because recreation and geology are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Motorized and nonmotorized trails

Water Quality: Unknown

Classification: Recreational

Dinkey Creek (GIS Number 3.68.3)

Location

- Ranger District: High Sierra

- County: Fresno
- Beginning Point: Dinkey Lakes Inventoried Roadless Area boundary 0.6 mile upstream from the Swamp Creek confluence
- End Point: Confluence with Cow Creek
- Special Area: None

Mileage

- Studied: 4.1
- Eligible: 4.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Includes 3.22 miles within Variety Class A (Distinctive). Barren granite-walled river canyons and Dinkey Dome.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of steep granitic walled river canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Whitewater boating, SuperDink run put-in near Dinkey Dome. Dinkey Dome is a popular rock-climbing destination.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating and other recreation opportunities attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Glacially scoured valley down to Cow Creek.
  - Determination: Geology is an outstandingly remarkable value. This segment exhibits exceptional glacial scour. Therefore, geology is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.3) is eligible because recreation and geology are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

Dinkey Creek (GIS Number 3.68.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence with Cow Creek
- End Point: Confluence with Rock Creek
- Special Area: None

Mileage

- Studied: 1.7
- Eligible: 1.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, the SuperDink run continues through this segment. Hiking (Dinkey Creek Trail), fishing, swimming, and sightseeing.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating, hiking, fishing, swimming, and sightseeing are popular activities and attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Valley with some evidence of glacial features.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.4) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Scenic

Dinkey Creek (GIS Number 3.68.5)

Location

- Ranger District: High Sierra
- County: Fresno

- Beginning Point: Confluence with Rock Creek
- End Point: South of the gauging station and north of Strawberry Meadow
- Special Area: None

Mileage

- Studied: 4.0
- Eligible: 4.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: 1.85 miles within Variety Class A. Views of granite domes and lakes and historical structures.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of steep granitic domes and lakes, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Dinkey Creek is a popular recreation destination that offers camping, picnicking, fishing, water play, horse riding, organization camps, rental cabins, and recreation residences. Whitewater boating, the SuperDink run continues in this segment, with take-out near Dinkey Campground and Cherry Bomb Falls run put-in near Dinkey Campground.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating, camping, picnicking, fishing, waterplay, horse riding, and overnight lodging are popular activities and attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **History**
  - Description: Dinkey Creek Bridge listed on the National Register of Historic Places.
  - Determination: History is an outstandingly remarkable value.

- **Prehistory**
  - Description: Archaic and Late Prehistoric period prehistoric and ethnographic Mono Indian trails and villages.
  - Determination: Prehistory is an outstandingly remarkable value.

Summary: Dinkey Creek (GIS Number 3.68.5) is eligible because recreation, history, and prehistory are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Campground, organization camps, cabins

Accessibility: Roads and nonmotorized trails

Water Quality: Unknown

Classification: Recreational

Dinkey Creek (GIS Number 3.68.6)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: South of the gauging station and north of Strawberry Meadow
- End Point: Sycamore Springs Inventoried Roadless Area boundary 0.6 mile upstream from the Turtle Creek confluence
- Special Area: None

Mileage

- Studied: 6.5
- Eligible: 6.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Below the gaging station north of Strawberry Meadow extending downstream to the Sycamore Springs Inventoried Roadless Area, Dinkey Creek contains numerous pools that are popular swimming spots. Whitewater boating, the Cherry Bomb Falls run continues through this segment with take-out near Ross Crossing and a class V+ whitewater boating run to its confluence with North Fork Kings River put-in near Ross Crossing.
  - Determination: Recreation is an outstandingly remarkable value. Swimming and whitewater boating are popular activities and attract visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.6) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Roads, motorized and nonmotorized trails

Water Quality: Unknown

Classification: Scenic

Dinkey Creek (GIS Number 3.68.7)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Sycamore Springs Inventoried Roadless Area boundary 0.6 mile upstream from Turtle Creek confluence
- End Point: Sycamore Springs Inventoried Roadless Area boundary

- Special Area: None

Mileage

- Studied: 6.1
- Eligible: 6.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: A class V+ whitewater boating run continues through this segment.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating attracts visitors from throughout and beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.7) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

Dinkey Creek (GIS Number 3.68.8)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Sycamore Springs Inventoried Roadless Area boundary
- End Point: Confluence with North Fork Kings River
- Special Area: None

Mileage

- Studied: 1.1
- Eligible: 1.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: A class V+ whitewater boating run continues through this segment.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating attracts visitors from throughout and beyond the region of comparison and connects to similar

opportunities on the North Fork Kings River. Therefore, recreation is considered outstandingly remarkable.

Summary: Dinkey Creek (GIS Number 3.68.8) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification
Water Resources Development: Free of impoundment

Shoreline Development: Balch Camp Compound and Balch Siphon (Kings River)

Accessibility: Roads

Water Quality: Unknown

Classification: Recreational

Dusy Creek (GIS Number 3.73)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Thompson Lake
- End Point: Courtright Reservoir
- Special Area: John Muir Wilderness

Mileage
- Studied: 5.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Parallels the historic Dusy-Ershim OHV Route for entire length. This motorized trail is nationally known, draws visitors from across the country, and provides OHV access for camping and fishing.
  - Determination: Recreation is not an outstandingly remarkable value. Although the Dusy-Ershim OHV Route is nationally known, it is known for OHV access and not specifically related to Dusy Creek. Therefore, Dusy Creek recreation is not considered outstandingly remarkable.

- **History**
  - Description: The Dusy-Ershim OHV Route is an historic trail.
  - Determination: Although the OHV Route parallels the creek, the historic value of the OHV Route is not specifically related to Dusy Creek. Therefore, history is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Clovis Culture has been discovered in this area with documentation that wooly mammoths were hunted in this area.

- Determination: Prehistory is not an outstandingly remarkable value. Although wooly mammoth hunting has been documented within the segment, similar prehistoric sites exist elsewhere within the region of comparison. Therefore, this area is not unique and not considered outstandingly remarkable.

Summary: Dusy Creek is ineligible because it has no outstandingly remarkable values.

East Fork Bear Creek (GIS Number 3.76)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Black Bear Lake
- End Point: Bear Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 4.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of lakes, granitic walls, and waterfalls.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of lakes, granitic walls, and waterfalls, similar views are relatively common in the high country and also exist elsewhere within the region of comparison. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: East Fork Bear Creek is ineligible because it has no outstandingly remarkable values.

East Fork Big Creek (GIS Number 3.77.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of Dutch Oven Meadow
- End Point: Confluence with unnamed stream northeast Rock House Meadow

- Special Area: John Muir Wilderness

Mileage

- Studied: 1.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated Landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.
- **Recreation**
  - Description: Hiking and horse riding in a primitive setting.
  - Determination: Recreation is not an outstandingly remarkable value. Similar opportunities for hiking and horse riding are common within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.
- **Wildlife (Population)**
  - Description: Above 6,000 feet and includes habitat for listed amphibians.
  - Determination: The wildlife (population) is not an outstandingly remarkable value.

Summary: East Fork Big Creek (GIS Number 3.77.1) is ineligible because it has no outstandingly remarkable values.

East Fork Big Creek (GIS Number 3.77.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence with unnamed stream at Ershim Meadow
- End Point: Confluence with South Fork Big Creek
- Special Areas: John Muir Wilderness, Dinkey Lakes Wilderness

Mileage

- Studied: 3.0
- Eligible: 3.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Recreation**
  - Description: Dusy-Ershim is a motorized trail that is nationally known, draws visitors from across the country, and provides OHV access for camping and fishing.
  - Determination: Recreation is not an outstandingly remarkable value. Although the Dusy-Ershim OHV Route is nationally known, it is known for OHV access, and not specifically related to East Fork Big Creek. Therefore, East Fork Big Creek recreation is not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: The segment is occupied by large populations of threatened Yosemite toad, closely associated with the creek. Yosemite toads are most frequently associated with wet meadows, so these populations exist in a unique situation. Habitat occupancy along the creek may enable population expansion and genetic diversity increases due to the possibility of movement along the watercourse and the existence of other populations nearby and also connected by creeks. The segment includes the southernmost and largest known populations of Yosemite toad on the Sierra National Forest.
  - Determination: The wildlife (population) is unique and is an outstandingly remarkable value.

Summary: East Fork Big Creek (GIS Number 3.77.2) is eligible because wildlife (population) is an outstanding remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Primitive road, nonmotorized trails

Water Quality: Unknown

Classification: Scenic

East Fork Cargyle Creek (GIS Number 3.79)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters south of Iron Lake
- End Point: Cargyle Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: East Fork Cargyle Creek is ineligible because it has no outstandingly remarkable values.

East Fork Granite Creek (GIS Number 3.83)

Location
- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters north of McClure and Sadler Lakes
- End Point: Confluence of Granite Creek and West Fork Granite Creek
- Special Area: Ansel Adams Wilderness

Mileage
- Studied: 11.3
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: East Fork Granite Creek is ineligible because it has no outstandingly remarkable values.

East Pinnacles Creek (GIS Number 3.85)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Aweetasal Lake
- End Point: Piute Creek

- Special Area: John Muir Wilderness

Mileage

- Studied: 3.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, significant and unique glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: East Pinnacles Creek is ineligible because it has no outstandingly remarkable values.

Fall Creek (GIS Number 3.90)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Mount Hutton
- End Point: North Fork Kings River
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fall Creek is ineligible because it has no outstandingly remarkable values.

Fernandez Creek (GIS Number 3.92)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters unnamed lake north of Ruth Lake
- End Point: West Fork Granite Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 1.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fernandez Creek is ineligible because it has no outstandingly remarkable values.

Fish Creek (GIS Number 3.96.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Red and White Lake on the Sierra managed by the Inyo National Forest
- End Point: Confluence with Minnow Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 8.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fish Creek (3.96.1) is ineligible because it has no outstandingly remarkable values.

Fish Creek (GIS Number 3.96.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence with Minnow Creek
- End Point: Middle Fork San Joaquin River
- Special Areas: John Muir Wilderness, Ansel Adams Wilderness

Mileage

- Studied: 11.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fish Creek (GIS Number 3.96.2) is ineligible because it has no outstandingly remarkable values.

Fleming Creek (GIS Number 3.97.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Fleming Lake
- End Point: Confluence with unnamed creek, west of Devils Punch Bowl
- Special Area: John Muir Wildernesses

Mileage

- Studied: 4.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fleming Creek (GIS Number 3.97.1) is ineligible because it has no outstandingly remarkable values.

Fleming Creek (GIS Number 3.97.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence with unnamed creek, west of Devils Punch Bowl
- End Point: North Fork Kings River
- Special Area: John Muir Wildernesses

Mileage

- Studied: 3.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated Landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Fleming Creek (GIS Number 3.97.2) is ineligible because it has no outstandingly remarkable values.

French Canyon (GIS Number 3.101)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters French Lake
- End Point: Piute Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: French Canyon is ineligible because it has no outstandingly remarkable values.

Glen Meadow Creek (GIS Number 3.104.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: 0.1 mile east of the Glen Meadow work center
- End Point: Dinkey Creek
- Special Area: None

Mileage

- Studied: 2.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **History**
  - Description: Historic vernacular landscape associated with early 20th century Forest Service use. Historic buildings constructed and used by the Forest Service (Pine Logging Camp and Dinkey Ranger Station complex).
  - Determination: History is not an outstandingly remarkable value. Other similar historic sites (logging camps and ranger stations) also exist elsewhere within the region of comparison. Therefore, these sites are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Prehistoric archaeological district.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the

region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Glen Meadow Creek is ineligible because it has no outstandingly remarkable values.

Golden Creek (GIS Number 3.105)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Summit Lake
- End Point: Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.
- **Prehistory**
  - Description: Traditional cultural property.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Golden Creek is ineligible because it has no outstandingly remarkable values.

Granite Creek (GIS Number 3.107.1)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence of the East Fork Granite Creek and West Fork Granite Creek near the Granite Creek campground
- End Point: 0.1 mile south of Granite Creek Campground Forest Road 4S60A terminus
- Special Area: None

Mileage

- Studied: 0.9
- Eligible: 0.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, a run that begins at Strawberry Mine (West Fork Granite Creek GIS Number 3.294.3) continues through this segment.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating has been documented on social media and some whitewater boating websites. This run provides an opportunity to paddle in the High Sierras without committing to a class V run, and whitewater boating has the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Granite Creek (GIS Number 3.107.1) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Campground

Accessibility: Roads and nonmotorized trails

Water Quality: Unknown

Classification: Recreational

Granite Creek (GIS Number 3.107.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: 0.1 mile south of Granite Creek Campground Forest Road 4S60A terminus
- End Point: Confluence with unnamed tributary with stained granite entry 0.3 mile east of Forest Road 5S84A
- Special Area: None

Mileage

- Studied: 1.5
- Eligible: 1.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, a run that begins at Strawberry Mine (West Fork Granite Creek GIS Number 3.294.3) continues through this segment.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating has been documented on social media and some whitewater boating websites. This run provides an opportunity to paddle in the High Sierras without committing to a class V run, and whitewater boating has the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.
- **Prehistory**
  - Description: Contains a Late Archaic period prehistoric trans-Sierra economic exchange corridor.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Granite Creek (GIS Number 3.107.2) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: No roads or trails

Water Quality: Unknown

Classification: Wild

Granite Creek (GIS Number 3.107.3)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence with an unnamed tributary with a stained granite entry 0.3 mile east of Forest Road 5S84A
- End Point: Intersection of Granite Creek and Ansel Adams Wilderness boundary 0.15 mile west of 6,640 feet elevation

- Special Area: None

Mileage

- Studied: 2.7
- Eligible: 2.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, a run that begins at Strawberry Mine (West Fork Granite Creek GIS Number 3.294.3) continues in this segment with a take-out near Cassidy Trail.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating has been documented on social media and some whitewater boating websites. This run provides an opportunity to paddle in the High Sierras without committing to a class V run, and whitewater boating has the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Granite Creek is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Roads and nonmotorized trails

Water Quality: Unknown

Classification: Scenic

Granite Creek (GIS Number 3.107.4)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Intersection of Granite Creek and Ansel Adams Wilderness boundary 0.15 mile west of 6,640 feet elevation
- End Point: Confluence with the San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 2.1
- Eligible: 2.1

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glacially scoured gorge with waterfalls and steep gradient
  - Determination: Geology is an outstandingly remarkable value. Granite Creek flows through a glacially scoured gorge, dropping 800 feet per mile and culminating in a 500-foot drop over the last 0.1 mile to the San Joaquin River confluence. The inclusion of segment 3.107.4 as eligible also joins nearly 9 continuous miles of Granite Creek with the San Joaquin River (Recommended Wild and Scenic). Therefore, geology is considered outstandingly remarkable.

Summary: Granite Creek (GIS Number 3.107.4) is eligible because geology is an outstandingly remarkable value.

Preliminary Classification
Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: No roads or trails

Water Quality: Unknown

Classification: Wild

Helms Creek (GIS Number 3.112.3)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Downstream of the dam for Courtright Reservoir
- End Point: North Fork Kings River
- Special Area: None

Mileage
- Studied: 2.6
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A (Distinctive). Steep, barren granite-walled canyons with knife-edged ridges, a unique granite-walled canyon.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are views of steep granite canyons with knife-edged ridges, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: The creek drops through a glacier carved canyon and is offers class V whitewater kayaking opportunities during normal flows of 40 cubic feet per second. There are also hiking and nature viewing opportunities in the canyon. A trail and stairway near the dam provide access to the gauging station.
  - Determination: Recreation is not an outstandingly remarkable value. Although the setting is beautiful, similar opportunities for class V whitewater kayaking and hiking also exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Helms Creek is ineligible because it has no outstandingly remarkable values.

Hilgard Branch (GIS Number 3.114)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Lake Italy
- End Point: Bear Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 7.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Hilgard Branch is ineligible because it has no outstandingly remarkable values.

Hooper Creek (GIS Number 3.118)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters northwest of Mount Hooper
- End Point: South Fork San Joaquin River
- Special Area: John Muir Wilderness

Mileage

- Studied: 4.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacial moraines, glacial lakes (tarns), high alpine glaciated valley, including cirque basin.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Hooper Creek is ineligible because it has no outstandingly remarkable values.

Hopkins Creek (GIS Number 3.119)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Upper Hopkins Lakes
- End Point: Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.8
- Eligible: 3.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Traditional cultural property and a cultural landscape.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: The segment is occupied by large populations of endangered Sierra Nevada yellow-legged frog throughout most of the creek. Habitat occupancy along the creek may enable population expansion and genetic diversity increases due to the possibility of movement along the watercourse and the existence of other populations nearby and also connected by creeks.
  - Determination: The wildlife (population) is an outstandingly remarkable value.

Summary: Hopkins Creek is eligible because wildlife (population) is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

Horse Creek (GIS Number 3.120)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters north of Woodchuck Pass
- End Point: Crown Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 6.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - ♦ Description: Glaciated Landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - ♦ Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Horse Creek is ineligible because it has no outstandingly remarkable values.

Iron Creek (GIS Number 3.126.1)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters at Iron Lakes
- End Point: Confluence of unnamed creek from Hoggen Lake
- Special Area: None

Mileage

- Studied: 2.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - ♦ Description: Connects to Iron Lakes, Junction Lake, Bare Island, and Hoggem Lake. These water forms and the sheer granitic walls are special visual features.
  - ♦ Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of lakes and sheer granitic walls, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

Summary: Iron Creek (GIS Number 3.126.1) is ineligible because it has no outstandingly remarkable values.

Iron Creek (GIS Number 3.126.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence of unnamed creek from Hoggen Lake
- End Point: South Fork Merced River
- Special Area: None

Mileage

- Studied: 2.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Scenery is similar to the South Fork Merced Wild and Scenic River and the segment connects Iron Lake to the South Fork Merced Wild and Scenic River.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views similar to the South Fork Merced Wild and Scenic River, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

Summary: Iron Creek (GIS Number 3.126.2) is ineligible because it has no outstandingly remarkable values.

Iron Creek (GIS Number 3.128)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters at Iron Lake west of Iron Mountain east of boundary between the Sierra National Forest and Inyo National Forest
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 3.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Iron Creek (GIS Number 3.128) is ineligible because it has no outstandingly remarkable values.

Jackass Creek (GIS Number 3.130.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Jackass Meadow
- End Point: Mammoth Pool
- Special Area: None

Mileage

- Studied: 13.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Intermediate Period prehistoric trail now called the French Trail.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric trail within the segment, similar prehistoric trails also exist elsewhere within the region of comparison. Therefore, the trail is not unique and not considered outstandingly remarkable.

Summary: Jackass Creek is ineligible because it has no outstandingly remarkable values.

Jose Creek (GIS Number 3.133.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of Jose Creek and Musick Creek
- End Point: San Joaquin River at Powerhouse 3, east of the Chawanakee School
- Special Area: Critical Aquatic Refuge

Mileage

- Studied: 4.7
- Eligible: 4.7

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Ethnographic landscape for the Nim and Poshgisha Mono people eligible for National Register of Historic Places listing.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: The Jose Creek basin supports the only known population of foothill yellow-legged frogs within the Sierra National Forest and is one of only a handful of populations in the Southern Sierra Nevada Mountain Range. Foothill yellow-legged frogs are listed as sensitive by the US Forest Service. The frog population is within one-quarter mile of Jose Creek and owes its existence to Jose Creek.
  - Determination: The wildlife (population) is unique and is an outstandingly remarkable value.

Summary: Jose Creek is eligible because wildlife (population) is an outstanding remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Roads

Water Quality: Unknown

Classification: Recreational

Kaiser Creek (GIS Number 3.134.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Lower Twin Lakes
- End Point: Kaiser Creek at trail 26E30
- Special Area: Less than 0.5 mile is in Kaiser Wilderness

Mileage

- Studied: 2.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Significant carbonate and glaciated landscape.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Kaiser Creek is ineligible because it has no outstandingly remarkable values.

Lakecamp Creek (GIS Number 3.135)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Mt. Givens, east of Dusy-Ershim
- End Point: Big Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Lakecamp Creek is ineligible because it has no outstandingly remarkable values.

Laurel Creek (GIS Number 3.137)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of Finch Lake
- End Point: Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 4.4
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Significant glaciated landscape and high alpine glacial landforms including tarns.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Traditional cultural property, cultural landscape.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Laurel Creek is ineligible because it has no outstandingly remarkable values.

Lewis Fork (GIS Number 3.139.2)

Location
- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Forest boundary at Sugar Pine private property
- End Point: Forest boundary at Cedar Valley private property
- Special Area: None

Mileage
- Studied: 4.5
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: The Lewis Creek National Recreation Trail is a high use hiking trail with access to waterfalls.
  - Determination: Recreation is not an outstandingly remarkable value. Similar opportunities for hiking with access to waterfalls are common within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **History**
  - Description: Chukchansi cultural property associated with the mid to late-19th century diaspora of Native Californians.

- Determination: History is not an outstandingly remarkable value. Although there are historic sites within the segment, similar historic sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Lewis Fork is ineligible because it has no outstandingly remarkable values.

Little Fine Gold Creek (GIS Number 3.141)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters are east of Teaford Saddle
- End Point: Forest boundary, 1.27 miles southwest of Goat Mountain Fire Lookout
- Special Area: None

Mileage

- Studied: 3.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Ethnographic Mono Hamlet.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Little Fine Gold Creek is ineligible because it has no outstandingly remarkable values.

Long Canyon (GIS Number 3.145)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Scarab Lake
- End Point: Fish Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Long Canyon is ineligible because it has no outstandingly remarkable values.

Long Creek (GIS Number 3.146)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Rockbound Lake
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Long Creek is ineligible because it has no outstandingly remarkable values.

Madera Creek (GIS Number 3.154)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Madera Lakes
- End Point: West Fork Granite Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Madera Creek is ineligible because it has no outstandingly remarkable values.

Meadow Brook (GIS Number 3.157)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Cold Springs
- End Point: North Fork Kings River
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Meadow Brook is ineligible because it has no outstandingly remarkable values.

Mills Creek (GIS Number 3.164)

Location

- Ranger District: High Sierra

- County: Fresno
- Beginning Point: Headwaters Upper Mills Creek Lake
- End Point: Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 6.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Traditional cultural property and a cultural landscape
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Mills Creek is ineligible because it has no outstandingly remarkable values.

Minnow Creek (GIS Number 3.165)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Minnie Lake
- End Point: Fish Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Minnow Creek is ineligible because it has no outstandingly remarkable values.

Mono Creek (GIS Number 3.166.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Pioneer Basin Lakes
- End Point: Golden Creek 0.5 mile north of Mono Rock
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.5
- Eligible: 3.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Mono Recesses/peaks and granite-walled river canyons are visual features of the Sierra Crest.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of peaks and granite-walled river canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Pioneer Basin Lakes provide camping opportunities in the John Muir Wilderness.
  - Determination: Recreation is not an outstandingly remarkable value.

- **Geology**
  - Description: Glaciated landscape, glacial moraines, glacial lakes
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Mono Trail Traditional Cultural Property from Mammoth area on the Inyo National Forest to the Mono Hot Springs Area is eligible for National Register of Historic Places listing.
  - Determination: Prehistory is an outstandingly remarkable value. The Mono Trail Traditional Cultural Property is unique on the Sierra National Forest.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Mono Creek (GIS Number 3.166.1) is eligible because prehistory is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trail

Water Quality: Unknown

Classification: Wild

Mono Creek (GIS Number 3.166.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Golden Creek, 0.5 mile north of Mono Rock
- End Point: Northeast end of Lake Thomas A. Edison Reservoir
- Special Area: John Muir Wilderness

Mileage

- Studied: 9.9
- Eligible: 9.9

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Mono Recesses/peaks and granite-walled river canyons are visual features of the Sierra Crest.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of peaks and granite-walled river canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking trails provide access to the segment, which has whitewater boating.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Mono Creek has been documented. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, glacial moraines, u-shaped valley, hanging valleys.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Mono Trail Traditional Cultural Property from Mammoth area on the Inyo National Forest to the Mono Hot Springs Area is eligible for National Register of Historic Places listing.
  - Determination: Prehistory is an outstandingly remarkable value. The Mono Trail Traditional Cultural Property is unique on the Sierra National Forest.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Mono Creek (GIS Number 3.166.2) is eligible because prehistory is an outstandingly remarkable value.

Preliminary Classification
Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

Mono Creek (GIS Number 3.166.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: 0.66 mile southwest of Vermillion Valley Dam on Lake Thomas A. Edison (Reservoir)
- End Point: South Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 6.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Hiking trails provide access to the segment, which has whitewater boating.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Mono Creek has been documented. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Mono Creek (GIS Number 3.166.4) is ineligible because it has no outstandingly remarkable values.

Mule Creek (GIS Number 3.169)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters east side of the Kings River Geological Area
- End Point: North Fork Kings River
- Special Area: None

Mileage

- Studied: 2.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Carbonate, glaciated landscape, caves within Kings River Geological Area.
  - Determination: The Kings Cavern Geological Area includes three cave systems and is the most extensive and well-preserved cavern on the Sierra National Forest. Other more extensive, notable and developed cave systems exist elsewhere within the region of comparison. Sequoia and Kings Canyon National Parks contain half of the total number of caves more than a mile long that exist in California, as well as the longest cave in California, numerous karst streams, and some of the best alpine karst topography in the United States. Therefore, Kings Cavern Geological Area is not unique and geology is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Aboriginal cultural site.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Mule Creek is ineligible because it has no outstandingly remarkable values.

Nelder Creek (GIS Number 3.173.1)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters near intersection with Forest Road 05S038
- End Point: Confluence with California Creek
- Special Area: Nelder Grove Historical Area

Mileage

- Studied: 3.2
- Eligible: 3.2

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: There are giant sequoias along the creek, within the Nelder Grove Historic Area, that are accessible via the Nelder Grove National Recreation Trail.

- Determination: Scenery is an outstandingly remarkable value. The giant sequoias are unique and exemplary scenic values.

- **Recreation**
  - Description: The Nelder Grove Historic Area contains hiking trails through a unique landscape for nature viewing.
  - Determination: Recreation is an outstandingly remarkable value.

- **Botany**
  - Description: There are giant sequoias along the creek, within the Nelder Grove Historic Area. Near the creek, there are also two populations of western waterfan lichen (*Peltigera gowardii*) and eight populations of the mountain lady's slipper orchid (*Cypripedium montanum*), a Forest sensitive species.
  - Determination: Botany is an outstandingly remarkable value. Giant sequoias are rare and only occur in the southern sierras. Lady's slipper orchids are also rare.

Summary: Nelder Creek is eligible because scenery, recreation, and botany are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Trailhead facility with toilet building

Accessibility: Roads and nonmotorized trails

Water Quality: Unknown

Classification: Recreational

Nelson Creek (GIS Number 3.174)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters northeast of Nelson Mountain
- End Point: Courtright Reservoir
- Special Area: Dinkey Lakes Wilderness

Mileage

- Studied: 4.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across

its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Nelson Creek is in eligible because it has no outstandingly remarkable values.

North Fork Kings River (GIS Number 3.177.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters north of Battalion Lake
- End Point: Confluence of unnamed creek south of Blackcap Basin
- Special Area: John Muir Wilderness

Mileage

- Studied: 2.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of the Sierra crest, knife-edged granite ridges.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of knife-edged granite ridges, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Wilderness hiking.
  - Determination: Recreation is not an outstandingly remarkable value.

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, significant and unique glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: North Fork Kings River (GIS Number 3.177.1) is ineligible because it has no outstandingly remarkable values.

North Fork Kings River (GIS Number 3.177.2)

Location

- Ranger District: High Sierra

- County: Fresno
- Beginning Point: Blackcap Basin, 1.3 miles west of Pearl Lake
- End Point: At the northeast end of Wishon Reservoir, 1.73 miles west of Cape Horn
- Special Area: John Muir Wilderness

Mileage

- Studied: 15.6
- Eligible: 15.6

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A (Distinctive). Barren, granite-walled river canyons interspersed with patches of forested areas. There is one section where granite-walled river canyons are prominent.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of barren, granite-walled canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Wilderness hiking. Whitewater boating, "Above Wishon Reservoir" run.
  - Determination: Recreation is an outstandingly remarkable value. The Above Wishon Reservoir whitewater boating run is described on a variety of whitewater boating websites and there are videos posted on social media. The Above Wishon Reservoir whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: North Fork Kings River (GIS Number 3.177.2) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

North Fork Kings River (GIS Number 3.177.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Just below the dam of Wishon Reservoir
- End Point: Black Rock Reservoir
- Special Area: None

Mileage

- Studied: 7.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: 4.23 miles within the segment are Variety Class A (Distinctive). Barren, granite-walled river canyons interspersed with patches of forested areas. There is one section where granite-walled river canyons are prominent.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of barren, granite-walled canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Granite Gorge provides excellent views of waterfall that drop over 100 feet. Some visitors hike cross-country and climb to the large boulders at the bottom of the Granite Gorge. Opportunities for canyoneering in a deep gorge.
  - Determination: Recreation is not an outstandingly remarkable value. Although there are hiking, climbing, canyoneering, and waterfall viewing opportunities, other similar areas exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: North Fork Kings River (GIS Number 3.177.4) is ineligible because it has no outstandingly remarkable values.

North Fork Kings River (GIS Number 3.177.6)

Location

- Ranger District: High Sierra

- County: Fresno
- Beginning Point: Just below the dam of Black Rock Reservoir
- End Point: Reservoir at Balch Powerplant
- Special Area: None

Mileage

- Studied: 4.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater kayaking. Canyoneering between the confluence of Weir Creek and Balch Camp Powerhouse, Upper and Lower Jump Canyons.
  - Determination: Recreation is not an outstandingly remarkable value. Although there are whitewater kayaking and canyoneering opportunities, other similar areas exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

Summary: North Fork Kings River (GIS Number 3.177.6) is ineligible because it has no outstandingly remarkable values.

North Fork Kings River (GIS Number 3.177.8)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: 125 feet downstream from base of Balch Powerplant reservoir dam
- End Point: Kings River
- Special Area: None

Mileage

- Studied: 4.9
- Eligible: 4.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, "Balch Afterbay to Confluence with Dinkey Creek" and "Dinkey Creek to Main Kings Confluence" runs.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating runs on the lower portion of the North Fork Kings River below Balch Powerplant are listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). They are also described on a variety of whitewater boating websites and there are videos posted on social media. The lower

North Fork Kings whitewater boating runs are high quality and attract visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Carbonate, glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

- **Prehistory**
  - Description: Holkoma Mono ethnographic village.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: North Fork Kings River (GIS Number 3.177.8) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Roads, energy transmission lines, Balch Camp Compound

Accessibility: Roads

Water Quality: Unknown

Classification: Recreational

North Fork Mono Creek (GIS Number 3.178)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Bighorn Lake
- End Point: Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.3
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Mono Trail Traditional Cultural Property.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: North Fork Mono Creek is ineligible because it has no outstandingly remarkable values.

Nutmeg Creek (GIS Number 3.185.2)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Haslett Basin - where the creek leaves private property and enters Sierra National Forest
- End Point: Big Creek
- Special Area: None

Mileage
- Studied: 1.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**

- Description: Traditional cultural landscape for the Holkoma Mono people.
- Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Nutmeg Creek is ineligible because it has no outstandingly remarkable values.

Owl Creek (GIS Number 3.190)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Whiskey Ridge east of Whiskey Falls Campground
- End Point: Whiskey Creek
- Special Area: None

Mileage

- Studied: 2.3
- Eligible: 2.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Botany**
  - Description: Rawson's flaming trumpet (*Collomia rawsoniana*) occurs along the creek. Brook pocket moss (*Fissidens aphelotaxifolius*) and western waterfan lichen are in the creek. The brook pocket moss location is one of only two in California.
  - Determination: Botany is an outstandingly remarkable value.

Summary: Owl Creek is determined to be eligible because botany is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Roads

Water Quality: Unknown

Classification: Recreational

Pitman Creek (GIS Number 3.198)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of Tamarack Creek and South Fork Tamarack Creek
- End Point: Big Creek

- Special Area: None

Mileage

- Studied: 2.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Contains ethnographic trails.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Pitman Creek is ineligible because it has no outstandingly remarkable values.

Piute Creek (GIS Number 3.199.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Humphreys Lake
- End Point: Confluence of unknown creek from Muriel Lake
- Special Area: John Muir Wilderness

Mileage

- Studied: 2.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of the Sierra crest, knife-edged granite ridges.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of knife-edged granite ridges, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, lacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region

of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Piute Creek (GIS Number 3.199.1) is ineligible because it has no outstandingly remarkable values.

Piute Creek (GIS Number 3.199.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of unknown creek from Muriel Lake
- End Point: Kings Canyon National Park boundary
- Special Area: John Muir Wilderness

Mileage

- Studied: 11.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Hiking, viewing scenery. Whitewater boating.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Piute Creek has been documented in videos on social media. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.
- **Scenery**
  - Description: Views of knife-edged granite ridges. Headwaters in scenic alpine basin, upper portion flows in rough rocky, heavily glaciated gorge, gradient decreases downstream. Granite outcroppings, boulders, and bare rock dominate scenery with timber and alpine meadows interspersed. Access by trail.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.
- **Geology**

- Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Piute Creek (GIS Number 3.199.2) is ineligible because it has no outstandingly remarkable values.

Piute Creek (GIS Number 3.199.3)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Kings Canyon National Park boundary
- End Point: South Fork San Joaquin River
- Special Area: John Muir Wilderness

Mileage

- Studied: 0.06
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Hiking, viewing scenery. Whitewater boating.
  - Determination: Recreation is not an outstandingly remarkable value. Whitewater boating on Piute Creek has been documented in videos on social media. However, it is not described on a variety of whitewater boating websites, and it does not have the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is not considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region

of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Piute Creek (GIS Number 3.199.3) is ineligible because it has no outstandingly remarkable values.

Post Corral Creek (GIS Number 3.202.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters north of Red Rock Basin
- End Point: Confluence of Burnt Corral Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Post Corral Creek (GIS Number 3.202.1) is ineligible because it has no outstandingly remarkable values.

Post Corral Creek (GIS Number 3.202.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of Burnt Corral Creek
- End Point: North Fork Kings River

- Special Area: John Muir Wilderness

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Post Corral Creek (GIS Number 3.202.2) is ineligible because it has no outstandingly remarkable values.

Post Creek (GIS Number 3.203)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Post Lakes
- End Point: West Fork Granite Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Post Creek is ineligible because it has no outstandingly remarkable values.

Providence Creek (GIS Number 3.205)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of Forked Meadow
- End Point: Big Creek
- Special Area: None

Mileage

- Studied: 2.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Clovis Culture has been discovered in this area.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Providence Creek is ineligible because it has no outstandingly remarkable values.

Rancheria Creek (GIS Number 3.207)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters north of Spanish Lakes
- End Point: North Fork Kings River
- Special Area: None

Mileage

- Studied: 8.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Spectacular waterfall into Granite Gorge. Opportunities for viewing scenery and nature photography.
  - Determination: Recreation is not an outstandingly remarkable value. Although there are opportunities for nature photography and scenery viewing, including a waterfall, other similar

areas exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

Summary: Rancheria Creek (GIS Number 3.207) is ineligible because it has no outstandingly remarkable values.

Rancheria Creek (GIS Number 3.208)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters east of Idaho Lake
- End Point: Huntington Lake
- Special Area: None

Mileage

- Studied: 5.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: On the lower portion of the creek, spectacular view of a waterfall at the end of Rancheria Falls National Recreation Trail. Trail is designed to accommodate various abilities. Opportunities for viewing scenery and nature photography.
  - Determination: Recreation is not an outstandingly remarkable value. Although there are opportunities for hiking and scenery viewing, including a waterfall, other similar areas exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

Summary: Rancheria Creek (GIS Number 3.208) is ineligible because it has no outstandingly remarkable values.

Rock Creek (GIS Number 3.215.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Cutts Meadow
- End Point: Confluence of unnamed creek west of Bald Mountain
- Special Area: None

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Rock Creek (GIS Number 3.215.1) is ineligible because it has no outstandingly remarkable values.

Rock Creek (GIS Number 3.217)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Rock Creek Lake
- End Point: San Joaquin River
- Special Area: None

Mileage

- Studied: 6.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Rock Creek (GIS Number 3.217) is ineligible because it has no outstandingly remarkable values.

Rodgers Creek (GIS Number 3.218)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters at Geraldine lakes east of Spanish Mountain
- End Point: Kings Canyon National Park boundary, where Rodgers Creek meets Crown Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 5.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable. Summary: Rodgers Creek is ineligible because it has no outstandingly remarkable values.

Summary: Rodgers Creek (GIS Number 3.218) is ineligible because it has no outstandingly remarkable values.

Rough Creek (GIS Number 3.322)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Rogers Ridge, east of Garlic Meadow
- End Point: Kings River
- Special Area: Kings River Special Management Area

Mileage

- Studied: 5.0
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.

- Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Rough Creek is ineligible because it has no outstandingly remarkable values.

Rube Creek (GIS Number 3.224.1)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters north of Rube Meadow
- End Point: Confluence with unnamed creek near Heitz Meadow
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Rube Creek (GIS Number 3.224.1) is ineligible because it has no outstandingly remarkable values.

Rube Creek (GIS Number 3.224.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence with unnamed creek near Heitz Meadow
- End Point: South Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 1.1
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated Landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Rube Creek (GIS Number 3.224.2) is ineligible because it has no outstandingly remarkable values.

Rush Creek (GIS Number 3.226.2)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: South of Burrough Mountain and east of Bob's Flat.
- End Point: Big Creek
- Special Area: None

Mileage
- Studied: 2.1
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Protohistoric period village.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Rush Creek is ineligible because it has no outstandingly remarkable values.

Sallie Keyes Creek (GIS Number 3.231)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters unnamed lake southeast of Mt. Hooper
- End Point: South Fork San Joaquin River

- Special Area: John Muir Wilderness

Mileage

- Studied: 4.6
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Sallie Keyes Creek is ineligible because it has no outstandingly remarkable values.

San Joaquin River (GIS Number 3.233.1)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Hells Half Acre
- End Point: Mammoth Pool Reservoir
- Special Area: None

Mileage

- Studied: 0.4
- Eligible: 0.4

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking, viewing scenery. Final portion of whitewater boating runs that begin on the Middle Fork San Joaquin (previously found suitable for addition to the Wild and Scenic River System) and South Fork San Joaquin Rivers, which end at Mammoth Pool Reservoir.

- Determination: Recreation is an outstandingly remarkable value. The Middle Fork San Joaquin River and South Fork San Joaquin River whitewater boating runs, including the final portion to Mammoth Pool Reservoir, are listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). They are also described on a variety of whitewater boating websites. These whitewater boating runs, including the final segment, are high quality and attract visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

Summary: San Joaquin River (GIS Number 3.233.1) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: No roads or trails

Water Quality: Unknown

Classification: Wild

San Joaquin River (GIS Number 3.233.3)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Mammoth Pool Dam
- End Point: Mammoth Pool Powerhouse
- Special Area: None

Mileage

- Studied: 8.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Class VI-V whitewater, fishing, deep canyon with limited access. Rock Creek and Fish Creek have multiple falls dropping into the canyon and offer scenic views.
  - Determination: Recreation is not an outstandingly remarkable value. Although there are opportunities for whitewater recreation, fishing, and scenery viewing, including a waterfall,

other similar areas exist elsewhere within the region of comparison. Therefore, recreation is not considered outstandingly remarkable.

Summary: San Joaquin River (GIS Number 3.233.3) is ineligible because it has no outstandingly remarkable values.

San Joaquin River (GIS Number 3.233.4)

Location

- Ranger District: Bass Lake / High Sierra
- County: Madera, Fresno
- Beginning Point: Outlet of Dam 6 Lake (Reservoir)
- End Point: Redinger Lake
- Special Area: None

Mileage

- Studied: 5.5
- Eligible: 5.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking, viewing scenery. Whitewater boating "Chawanakee Gorge" run.
  - Determination: Recreation is an outstandingly remarkable value. The Chawanakee Gorge whitewater boating run is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites. The Chawanakee Gorge whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

Summary: San Joaquin River (GIS Number 3.233.4) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Road

Water Quality: Unknown

Classification: Scenic

San Joaquin River (GIS Number 3.233.6)

Location

- Ranger District: Bass Lake / High Sierra
- County: Madera, Fresno
- Beginning Point: Redinger Lake Dam
- End Point: Powerhouse at Kerckhoff Lake
- Special Area: None

Mileage

- Studied: 6.1
- Eligible: 6.1

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Recreation**
  - Description: Hiking, viewing scenery. Whitewater boating "Horseshoe Bend" run.
  - Determination: Recreation is an outstandingly remarkable value. The Horseshoe Bend whitewater boating run is listed in two books, "C*alifornia Whitewater: A Guide to the Rivers*" (Cassady and Calhoun 1995) and "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites and there are videos posted on social media. The Horseshoe Bend whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.

Summary: San Joaquin River (GIS Number 3.233.6) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Scenic

Scepter Creek (GIS Number 3.235)

Location

- Ranger District: High Sierra

- County: Fresno
- Beginning Point: Headwaters south of Scepter Pass; north of Scepter Lake
- End Point: Crown Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 7.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Wildlife (Population)**
  - Description: Endangered Sierra Nevada yellow-legged frog.
  - Determination: The wildlife (population) is not an outstandingly remarkable value. Historic accounts indicate that Sierra Nevada yellow-legged frogs were once extremely abundant across its range with some populations in the hundreds and even thousands. There are 48 known occupied locations distributed across the Sierra National Forest and this is not an exemplary population. Therefore, it is not considered outstandingly remarkable.

Summary: Scepter Creek is ineligible because it has no outstandingly remarkable values.

Senger Creek (GIS Number 3.236)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters northeast of Mount Senger
- End Point: Sallie Keyes Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 4.2
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, lacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Senger Creek is ineligible because it has no outstandingly remarkable values.

Shakeflat Creek (GIS Number 3.237)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters southeast Shuteye Pass
- End Point: San Joaquin River near Shakeflat Trailhead
- Special Area: None

Mileage
- Studied: 3.9
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Prehistoric district.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Shakeflat Creek is ineligible because it has no outstandingly remarkable values.

Sharktooth Creek (GIS Number 3.238)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Sharktooth Lake
- End Point: Fish Creek
- Special Area: John Muir Wilderness

Mileage
- Studied: 3.8
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Fish (Population)**
  - Description: Paiute cutthroat trout population. This subspecies evolved from Lahontan cutthroat trout (*O. c. henshawi*) in Silver King Creek, below Llewellyn Falls. The separation of the subspecies is believed to have occurred following the desiccation of Lake Lahontan.
  - Determination: The fish (population) is not an outstandingly remarkable value. Paiute cutthroat trout are nonnative and were introduced to this creek and are found in other locations within the region of comparison. They endemic to and protected within the Carson Ranger District of the Humboldt-Toiyabe National Forest. Therefore, it is not considered outstandingly remarkable.

Summary: Sharktooth Creek is ineligible because it has no outstandingly remarkable values.

Shirley Creek (GIS Number 3.241)

Location
- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters Shirley Lake
- End Point: Madera Creek
- Special Area: Ansel Adams Wilderness

Mileage
- Studied: 2.7
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Shirley Creek is ineligible because it has no outstandingly remarkable values.

Shuteye Creek (GIS Number 3.243)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters northeast Shuteye Peak
- End Point: West Fork Chiquito Creek
- Special Area: None

Mileage

- Studied: 2.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Aboriginal cultural site.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric site within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Shuteye Creek is ineligible because it has no outstandingly remarkable values.

Silver Creek (GIS Number 3.244)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters west of the Gorge of Despair in Kings Canyon National Park
- End Point: Middle Fork Kings River at Little Tehipite Valley
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Silver Creek (GIS Number 3.244) is ineligible because it has no outstandingly remarkable values.

Silver Creek (GIS Number 3.245)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Big Margaret Lake
- End Point: Fish Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 9.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Silver Creek (GIS Number 3.245) is ineligible because it has no outstandingly remarkable values.

Silver Pass Creek (GIS Number 3.246)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Silver Pass Lake
- End Point: North Fork Mono Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 2.6
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Silver Pass Creek is ineligible because it has no outstandingly remarkable values.

Slide Creek (GIS Number 3.250)

Location
- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters northeast of Stevenson Meadow
- End Point: North Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage
- Studied: 2.5
- Eligible: 0.0

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Slide Creek is ineligible because it has no outstandingly remarkable values.

South Fork Bear Creek (GIS Number 3.256)

Location
- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters southeast of Three Island Lake
- End Point: East Fork Bear Creek

- Special Area: John Muir Wilderness

Mileage

- Studied: 4.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork Bear Creek is ineligible because it has no outstandingly remarkable values.

South Fork Dinkey Creek (GIS Number 3.258.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Confluence of unnamed creek from Sportsman Lake
- End Point: Dinkey Creek
- Special Area: None

Mileage

- Studied: 3.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Variety Class A (Distinctive). Barren, granite-walled river canyons interspersed with patches of forested areas and views of lakes and granite domes. Connects to Dinkey Creek and offers views of Bear Mountain and Virginia Lakes.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of barren, granite-walled canyons, lakes, and granite domes, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glacially scoured valley. Granitic bedrock with small metamorphic bodies including silicated marble bodies. Monzonite of Dinkey Dome and Granodiorite of Eagle Peak.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork Dinkey Creek is ineligible because it has no outstandingly remarkable values.

South Fork San Joaquin River (GIS Number 3.260.2)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Florence Lake Dam
- End Point: John Muir Wilderness boundary 0.25 mile downstream from the Hooper Creek confluence
- Special Area: None

Mileage

- Studied: 3.6
- Eligible: 3.6

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating.
  - Determination: Recreation is an outstandingly remarkable value. The South Fork San Joaquin River whitewater boating run is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites. The South Fork San Joaquin River whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape, u-shaped valley, hanging valleys.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork San Joaquin River (GIS Number 3.260.2) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Roads, light development

Accessibility: Campgrounds, roads, nonmotorized trails

Water Quality: Unknown

Classification: Recreational

South Fork San Joaquin River (GIS Number 3.260.3)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: John Muir Wilderness boundary 0.25 mile downstream from the Hooper Creek confluence
- End Point: John Muir Wilderness boundary east of Mono Hot Springs
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.3
- Eligible: 3.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating.
  - Determination: Recreation is an outstandingly remarkable value. The South Fork San Joaquin River whitewater boating run is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites. The South Fork San Joaquin River whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape, U-shaped valley, hanging valleys.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork San Joaquin River (GIS Number 3.260.3) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trail

Water Quality: Unknown

Classification: Wild

South Fork San Joaquin River (GIS Number 3.260.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: John Muir Wilderness boundary east of Mono Hot Springs
- End Point: Ansel Adams Wilderness boundary west of Mono Hot Springs
- Special Area: None

Mileage

- Studied: 0.8
- Eligible: 0.8

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating.
  - Determination: Recreation is an outstandingly remarkable value. The South Fork San Joaquin River whitewater boating run is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites. The South Fork San Joaquin River whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, u-shaped valley, hanging valleys.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork San Joaquin River (GIS Number 3.260.4) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: Roads, light development

Accessibility: Campgrounds, roads, nonmotorized trails

Water Quality: Unknown

Classification: Recreational

South Fork San Joaquin River (GIS Number 3.260.5)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Ansel Adams Wilderness boundary west of Mono Hot Springs
- End Point: San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 20.3
- Eligible: 20.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating.
  - Determination: Recreation is an outstandingly remarkable value. The South Fork San Joaquin River whitewater boating run is listed in the book "*The Best Whitewater in California*" (Holbeck and Stanley 1998). It is also described on a variety of whitewater boating websites. The South Fork San Joaquin River whitewater boating run is high quality and attracts visitors from beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Scenery**
  - Description: Variety Class A. Steep granitic walls, domes, and deep canyons.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of granitic walls, domes, and deep canyons, similar views also exist elsewhere within the

region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, u-shaped valley, hanging valleys.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: South Fork San Joaquin River (GIS Number 3.260.5) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Nonmotorized trails

Water Quality: Unknown

Classification: Wild

South Fork Willow Creek (GIS Number 3.262.1)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence of Sand Creek and North Fork Sand Creek
- End Point: Forest boundary at private property
- Special Area: None

Mileage

- Studied: 4.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **History**
  - Description: Traditional cultural landscape for the Nim Mono people associated with the Late Prehistoric through early 20th century periods.
  - Determination: History is not an outstandingly remarkable value. Although there are historic sites within the segment, similar historic sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

- **Prehistory**
  - Description: Ethnographic Nim hamlets and Indian Allotments.

- Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: South Fork Willow Creek is ineligible because it has no outstandingly remarkable values.

Stairway Creek (GIS Number 3.265)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters south of Stairway Meadow
- End Point: Middle Fork San Joaquin River
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 3.9
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **Fish (Population):**
  - Description: Paiute cutthroat trout population. This subspecies evolved from Lahontan cutthroat trout (*O. c. henshawi*) in Silver King Creek, below Llewellyn Falls. The separation of the subspecies is believed to have occurred following the desiccation of Lake Lahontan.
  - Determination: The fish (population) is not an outstandingly remarkable value. Paiute cutthroat trout are nonnative and were introduced to this creek and are found in other locations within the region of comparison. They endemic to and protected within the Carson Ranger District of the Humboldt-Toiyabe National Forest. Therefore, it is not considered outstandingly remarkable.

Summary: Stairway Creek is ineligible because it has no outstandingly remarkable values.

Statham Creek (GIS Number 3.266)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters on Rodgers Ridge

- End Point: Rancheria Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Statham Creek is ineligible because it has no outstandingly remarkable values.

Stevenson Creek (GIS Number 3.268.4)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Stevenson Creek at the base of the Shaver Lake Dam where the creek leaves private property and enters Sierra National Forest lands
- End Point: San Joaquin River
- Special Area: Critical Aquatic Refuge

Mileage

- Studied: 4.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Prehistory**
  - Description: Traditional cultural landscape.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there are prehistoric sites within the segment, similar prehistoric sites also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: Stevenson Creek is ineligible because it has no outstandingly remarkable values.

Sycamore Creek (GIS Number 3.273.3)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Sierra National Forest boundary with private property in section 11 east of Davis Mountain
- End Point: Sierra National Forest boundary with private property
- Special Area: None

Mileage

- Studied: 0.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Cultural/Prehistory**
  - Description: Holkoma Mono cultural property associated with the mid to late 19th century diaspora of Native Californians.
  - Determination: Cultural/prehistory is not an outstandingly remarkable value. Although there is a cultural/prehistoric site within the segment, similar cultural/prehistoric sites also exist elsewhere within the region of comparison. Therefore, the site is not unique and not considered outstandingly remarkable.

Summary: Sycamore Creek is ineligible because it has no outstandingly remarkable values.

Timber Creek (GIS Number 3.279)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Headwaters west of Timber Knob
- End Point: West Fork Granite Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 1.7
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.

- Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Timber Creek is ineligible because it has no outstandingly remarkable values.

Tombstone Creek (GIS Number 3.281)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters near Obelisk
- End Point: Middle Fork Kings River
- Special Area: Monarch Wilderness

Mileage

- Studied: 4.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Tombstone Creek is ineligible because it has no outstandingly remarkable values.

Turret Creek (GIS Number 3.283)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters northeast of Turret Peak
- End Point: Piute Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 1.8
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: Turret Creek is ineligible because it has no outstandingly remarkable values.

West Fork Bear Creek (GIS Number 3.290)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters Marshal Lake
- End Point: South Bear Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 3.5
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: Views of lakes, granitic walls, and waterfalls.
  - Determination: Scenery is not an outstandingly remarkable value. Although there are beautiful views of lakes, granitic walls, and waterfalls, similar views also exist elsewhere within the region of comparison and these views are not exemplary. Therefore, scenery is not considered outstandingly remarkable.

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: West Fork Bear Creek is ineligible because it has no outstandingly remarkable values.

West Fork Granite Creek (GIS Number 3.294.1)

Location

- Ranger District: Bass Lake

- County: Madera
- Beginning Point: Slab Lakes
- End Point: Post Creek
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 4.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: West Fork Granite Creek (GIS Number 3.294.1) is ineligible because it has no outstandingly remarkable values.

West Fork Granite Creek (GIS Number 3.294.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Post Creek
- End Point: 1.1 miles upstream for intersection with Forest Road 5S030
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 3.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

- **History**
  - Description: Strawberry Mine was a tungsten mine used to supply tungsten during World War II.
  - Determination: History is not an outstandingly remarkable value. Although there is historic mining within the segment, similar historic sites and many mines also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: West Fork Granite Creek (GIS Number 3.294.2) is ineligible because it has no outstandingly remarkable values.

West Fork Granite Creek (GIS Number 3.294.3)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: 1.1 miles upstream to intersection with Forest Road 5S030
- End Point: East Fork Granite Creek at Granite Creek Campground
- Special Area: Ansel Adams Wilderness

Mileage

- Studied: 2.3
- Eligible: 2.3

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Recreation**
  - Description: Whitewater boating, Granite Creek run put-in at Strawberry Mine.
  - Determination: Recreation is an outstandingly remarkable value. Whitewater boating has been documented on social media and some whitewater boating websites. The run provides an opportunity to paddle in the High Sierras without committing to a class V run, and it has the potential to attract visitors from throughout or beyond the region of comparison. Therefore, recreation is considered outstandingly remarkable.
- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.
- **History**
  - Description: Strawberry Mine was used to supply tungsten during World War II.
  - Determination: History is not an outstandingly remarkable value. Although there is historic mining within the segment, similar historic sites and many mines also exist elsewhere within the region of comparison. Therefore, the sites are not unique and not considered outstandingly remarkable.

Summary: West Fork Granite Creek (GIS Number 3.294.3) is eligible because recreation is an outstandingly remarkable value.

Preliminary Classification

Water Resources Development: Free of impoundment

Shoreline Development: No development

Accessibility: Roads

Water Quality: Unknown

Classification: Recreational

West Fork Jackass Creek (GIS Number 3.295.2)

Location

- Ranger District: Bass Lake
- County: Madera
- Beginning Point: Confluence of Nehouse Creek
- End Point: Jackass Creek
- Special Area: None

Mileage

- Studied: 1.4
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - Description: Glaciated landscape.
  - Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.
- **Prehistory**
  - Description: Intermediate Period prehistoric trail now called the French Trail.
  - Determination: Prehistory is not an outstandingly remarkable value. Although there is a prehistoric trail within the segment, similar prehistoric trails also exist elsewhere within the region of comparison. Therefore, the trail is not unique and not considered outstandingly remarkable.

Summary: West Fork Jackass Creek is ineligible because it has no outstandingly remarkable values.

West Fork Portuguese Creek (GIS Number 3.306)

Location

- Ranger District: Bass Lake
- County: Madera

- Beginning Point: Headwaters south of Burro Lake
- End Point: East Fork Portuguese Creek
- Special Area: One mile is in Ansel Adams Wilderness

Mileage

- Studied: 3.3
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Fish (Population)**
  - ♦ Description: Lahontan cutthroat trout population is one of 14 recognized subspecies of cutthroat trout in western United States. The species is managed under the recovery plan and is monitored annually for population abundance.
  - ♦ Determination: The fish (population) is not an outstandingly remarkable value. This species is also found in several other creeks in the inventory and within the region of comparison. Therefore, it is not unique and not considered outstandingly remarkable.

Summary: West Fork Portuguese Creek is ineligible because it has no outstandingly remarkable values.

West Pinnacles Creek (GIS Number 3.297)

Location

- Ranger District: High Sierra
- County: Fresno
- Beginning Point: Headwaters south of Hoopal Lake
- End Point: Piute Creek
- Special Area: John Muir Wilderness

Mileage

- Studied: 2.1
- Eligible: 0.0

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Geology**
  - ♦ Description: Glaciated landscape, glacially scoured bedrock and valleys, moraines, glacial landforms.
  - ♦ Determination: Geology is not an outstandingly remarkable value. Although there are many beautiful and interesting geologic forms in this area, they also exist elsewhere within the region of comparison. Therefore, these features are not unique and not considered outstandingly remarkable.

Summary: West Pinnacles Creek is ineligible because it has no outstandingly remarkable values.

River Segments Previously Studied

Description of Previous Studies Completed

The National Rivers Inventory of January 1982 identified three rivers on the Sierra National Forest that may be suitable for inclusion in the National Wild and Scenic Rivers System:

- Merced River, including the South Fork
- San Joaquin River, including the North Fork, Middle Fork, and South Fork
- Kings River, including the Middle Fork

The 1988 Sierra National Forest Land and Resource Management Plan DEIS, Appendix E provides a detailed discussion of the eligibility study of the Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings Rivers.

Merced River, Including the South Fork

Table C-8. Merced River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

Merced River	Segment 7	Segment 8
Outstandingly Remarkable Values	Geology Vegetation Wildlife Recreation Cultural, History	Geology Vegetation Wildlife Recreation Cultural, History
Beginning and End Points (Mileage)	West boundary El Portal Administrative Site to confluence with South Fork Merced River (5 miles)	Confluence with South Fork Merced River to Northwest boundary Sierra National Forest (5 miles)
Free Flowing	Yes	Yes
Impoundments	No	No
Diversions	No	No
Classification	Recreation	Recreation

Note: Segments 1 through 6 are managed by National Park Service; segments 9 and 10 are managed by Bureau of Land Management.

Table C-9. South Fork Merced River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

South Fork Merced River	Segment 6	Segment 7
Outstandingly Remarkable Values	Geology Vegetation Wildlife Fisheries Recreation Cultural, History	Geology Wildlife Fisheries Recreation Cultural, History
Beginning and End Points (Mileage)	Yosemite National Park / Forest Service boundary to 2 miles upstream of Hite Cove (12 miles)	2 miles upstream of Hite Cove to confluence with Merced River (6 miles)
Free Flowing	Yes	Yes
Impoundments	No	No
Diversions	No	No
Classification	Wild	Scenic

Note: Segments 1 through 5 are managed by National Park Service.

During the course of preparing the 1988 Sierra National Forest LRMP and its accompanying EIS, Congress took a considerable amount of legislative action. For example, in November 1987 and October 1992, the Merced and the South Fork Merced Rivers were designated under the Wild and Scenic River Act, negating the need for further study. Management of the Merced River is shared by National Park Service, the Bureau of Land Management, and the Forest Service. The Forest Service sections include portions of the Sierra National Forest and the Stanislaus National Forest. However, the Sierra National Forest is the lead administrator of the Merced Wild and Scenic River.

San Joaquin River, Including the North Fork, Middle Fork, and South Fork

Table C-10. San Joaquin River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

San Joaquin River	Segment 1	Segment 2
Outstandingly Remarkable Values	Geology Fisheries Scenery	Geology Fisheries Scenery
Beginning and End Points (Mileage)	Confluence of North Fork and Middle Fork San Joaquin River to Hells Half Acre (Ansel Adams Wilderness) (12 miles)	Hells Half Acre to Northeast end of Mammoth Pool Reservoir (2 miles)
Free Flowing	Yes	Yes
Impoundments	No	No
Diversions	No	No
Classification	Wild	Wild

Table C-11. North Fork San Joaquin River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

North Fork San Joaquin River	Segment 1	Segment 2	Segment 3
Outstandingly Remarkable Values	Geology Wildlife Recreation Scenery	Geology Wildlife Recreation Scenery	Geology Wildlife Scenery Cultural, History
Beginning and End Points (Mileage)	Headwaters to Hemlock Crossing (Ansel Adams Wilderness) (4 miles)	Hemlock Crossing to Cora Creek (Ansel Adams Wilderness) (4 miles)	Cora Creek to confluence with the Main Fork San Joaquin River (Ansel Adams Wilderness) (6 miles)
Free Flowing	Yes	Yes	Yes
Impoundments	No	No	No
Diversions	No	No	No
Classification	Wild	Wild	Wild

Table C-12. Middle Fork San Joaquin River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

Middle Fork San Joaquin River	Segment 4
Outstandingly Remarkable Values	Scenery Geology Recreation
Beginning and End Points (Mileage)	Rainbow Falls to confluence with North Fork San Joaquin (Ansel Adams Wilderness, Devils Postpile National Monument, Sierra National Forest) (9 miles)
Free Flowing	Yes
Impoundments	No
Diversions	No
Classification	Wild

Notes: Segment 1 is all on the Inyo National Forest. With updated GIS data, segment 2 includes 4.0 miles on the Inyo National Forest and 0.5 mile within Devils Postpile National Monument (National Park Service). Segment 3 includes 1.5 miles within Devils Postpile National Monument and 0.5 mile on the Inyo National Forest. Segment 4 is actually 10 miles and includes 0.5 mile within Devils Postpile National Monument, 5.5 miles on the Inyo National Forest, and 4.0 miles on the Sierra National Forest.

Table C-13. South Fork San Joaquin River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

South Fork San Joaquin River	Segment 2	Segment 3	Segment 4
Outstandingly Remarkable Values	Geology Wildlife Scenery	Wildlife Scenery	Wildlife Scenery
Beginning and End Points (Mileage)	Kings Canyon National Park / Sierra National Forest boundary to Hot Springs area (John Muir Wilderness) (3 miles)	Hot Springs area to west end of Blayney Meadows (private parcel) (2 miles)	Blayney Meadows area to end of Florence Lake (John Muir Wilderness) (2 miles)
Free Flowing	Yes	Yes	Yes
Impoundments	No	No	No
Diversions	No	No	No
Classification	Wild	Recreation	Scenic

Note: Segment 1 is managed as wilderness by Kings Canyon National Park.

In 1992, the following San Joaquin River segments that were not included in the congressional designations were determined to be suitable and are currently managed as recommended wild and scenic rivers until Congress makes a final determination on their designation:

- 14 miles of the North Fork San Joaquin River from its headwaters in sec 8, T3S, R25 E to the confluence with the Main Fork San Joaquin River.
- 22 miles of the Middle Fork San Joaquin River from its headwaters at Thousand Island Lake to the confluence with the North Fork San Joaquin River. Note: With updated GIS data, the total mileage is actually 22.9 miles.
- 12 miles of the San Joaquin River from the confluence of the Middle Fork San Joaquin River with the North Fork San Joaquin River to Hells Half Acre.
- 17 miles of the South Fork San Joaquin River from its headwaters to the south end of Florence Lake.

Kings River, Including the Middle Fork

Table C-14. Middle Fork Kings River eligibility study results, 1988 Sierra National Forest LRMP DEIS, Appendix E

Middle Fork Kings River	Segment 2
Outstandingly Remarkable Values	Geology Wildlife Recreation Scenery Cultural, History
Beginning and End Points (Mileage)	Southeast boundary Sierra National Forest to confluence of the Middle Fork Kings River with the South Fork Kings River, at the north boundary of Sequoia National Forest) (Monarch Wilderness) (8 miles)
Free Flowing	Yes
Impoundments	No
Diversions	No
Classification	Wild

Note: Segment 1 is managed as wilderness by Kings Canyon National Park.

- In November 1987, the Kings River, from the confluence of the Middle Fork with the South Fork to the point at elevation 1,595 feet above mean sea level, was designated under the Wild and Scenic River Act, negating the need for further study. The Middle Fork, from its headwaters at Lake Helen to its confluence with the main stem, was also designated. The South Fork, from its headwaters at Lake 11599 to its confluence with the main stem, was also designated.
- In addition, a 48,000-acre Kings River Special Management Area, including the Kings River from the confluence of the Middle Fork with the South Fork to Bailey Bridge, was designated.
- During the course of preparing the 1988 Sierra National Forest LRMP and its accompanying EIS, the lower Kings River, from the confluence of Garlic Meadow Creek with the main stem to the high-water line of Pine Flat Reservoir was not studied because of ongoing controversy and discussions about raising the height of Pine Flat Dam, which would result in the flooding of this segment. This was appealed and in part of the appeal's settlement, the segment was studied for eligibility as Segments 3, 4, and 5 in the 1991 Kings River Special Management Area Implementation Plan, Appendix B, as shown in Table C-15. These three segments of the Lower Kings River are included in the current study. Another segment of the Lower Kings River, 17.5 miles under Pine Flat Reservoir, was not free flowing.

Table C-15. Lower Kings River eligibility study results, 1991 Kings River Special Management Area Implementation Plan, Appendix B

Lower Kings River	Segment 3 (Sierra National Forest)	Segment 4 (Sierra National Forest)	Segment 5 (Sequoia National Forest)
Outstandingly Remarkable Values	Scenery Recreation Geology Botanical Wildlife/Fish Cultural/Historic Science/Educational	Scenery Recreation Geology Wildlife/Fish Cultural/Historic Science/Education	Scenery Recreation Wildlife/Fish Cultural/Historic
Beginning and End Points (Mileage)	Elevation 1595 to Garnet Dike (4 miles[10])	Garnet Dike to Kings River Special Management Area boundary (7 miles[11])	Kings River Special Management Area boundary to high water line of Pine Flat Reservoir (1 mile[12])
Free flowing	Yes	Yes	Yes
Impoundments	No	No	No
Diversions	No	No	No
Classification	Wild	Scenic	Recreational

Changed Circumstances and New Information Since Previous Studies

The Sierra National Forest interdisciplinary team reviewed the 1986 Draft Environmental Impact Statement for the Sierra National Forest Land and Resource Management Plan, Appendix E and found there were no changed circumstances or new information that affected free flow, outstandingly remarkable values, previous eligibility determinations, preliminary classification, or suitability for the river segments listed in Table C-10, Table C-11, Table C-12, and Table C-13, including two segments of the San Joaquin River, three segments of the North Fork San Joaquin River, one segment of the Middle Fork San Joaquin River, and three segments of the South Fork San Joaquin River.

The interdisciplinary team also reviewed the 1991 Kings River Special Management Area Implementation Plan and found there were no changed circumstances or new information that affected free flow, outstandingly remarkable values, previous eligibility determinations, or preliminary classification for the river segments listed in Table C-15, including three segments of the Lower Kings River.

The Sierra National Forest interdisciplinary team found the record to be complete. The outstanding remarkable values of the eligible and recommended rivers segments is well defined and acceptable as written during the previous eligibility and suitability studies. These rivers will continue to be managed as recommended wild and scenic rivers until Congress makes a final determination on their designation.

However, there are portions of the San Joaquin River, South Fork San Joaquin River, and North Fork Kings River that were not included in the previous studies. These segments are included in the current study and documented in this appendix.

[10] With updated GIS data, the mileage is actually 3.9 miles.
[11] With updated GIS data, the mileage is actually 7.5 miles.
[12] With updated GIS data, the mileage is actually 1.3 miles.

Kings River (GIS Number 2.106.1)

Location

- County: Fresno
- Beginning Point: Elevation 1,595 feet
- End Point: Garnet Dike
- Special Area: Kings River Special Management Area, Giant Sequoia National Monument

Mileage

- Studied: 3.9
- Eligible: 3.9

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: This segment of the Kings River flows through the incredible steep-sided Kings River gorge with a wide variety of geomorphology that provides outstanding visual diversity.
  - Determination: Scenery is an outstandingly remarkable value. The excellent water quality, undisturbed shorelines, and distant views of hills, cliffs, and high mountains make the scenic character of the segment unique within the region of comparison. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: This segment parallels the Kings River National Recreation Trail. Mill Flat Campground is the only developed facility. Fishing, hiking, and whitewater boating are popular activities in this remote setting.
  - Determination: Recreation is an outstandingly remarkable value. This is one of the most challenging whitewater kayaking and rafting runs in the United States for expert paddlers. This segment attracts expert paddlers from outside the region of comparison. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Sensitive salamanders and their habitats occur on the banks of this segment. These salamanders are rare and endemic to this river.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Due to the presence of rare and endemic salamanders, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kings River (GIS Number 2.106.1) is eligible because scenery, recreation, prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Nonmotorized trail

Accessibility: Nonmotorized trail

Water Quality: Excellent

Classification: Wild

Kings River (GIS Number 2.106.2)

Location

- County: Fresno
- Beginning Point: Garnet Dike
- End Point: Kings River Special Management Area boundary
- Special Area: Kings River Special Management Area, Giant Sequoia National Monument

Mileage

- Studied: 7.5
- Eligible: 7.5

Eligibility Determination

Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The dry, steep-sided canyon contrasts sharply with the flat river corridor and the excellent water quality of the river. The wide variety of geologic morphology and the distant views of high mountains provide visual diversity.
  - Determination: Scenery is an outstandingly remarkable value. The visual diversity is outstanding and the contrast of the river corridor with the steep canyon walls is exceptionally high. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**

- Description: This segment provides an outstanding whitewater boating setting. Outfitter guides provide float trips that attract visitors from well outside the region of comparison. At medium and high flows, the Kings River is one of few whitewater rivers between the Colorado River in Arizona and the Klamath River in northern California that is suitable for river-running dories. It also provides attractive wild trout waters for anglers. The relatively undisturbed shoreline is accessible by a dirt road appropriate for high-clearance vehicles.
- Determination: Recreation is an outstandingly remarkable value. This segment of the Kings River provides the most whitewater rafting opportunities and has the longest boating season among all undammed rivers in the Sierra Nevada region. The whitewater boating setting is outstanding, and the river is uniquely suited to running dories. Therefore, recreation is considered outstandingly remarkable.

- **Geology**
  - Description: Best preserved/exposed remnants of pre-batholithic rock on the west slope of the Sierra Nevada Mountains, glacial carved, 13,291-foot vertical drop in elevation.
  - Determination: Geology is an outstandingly remarkable value. The geology is unique compared to most other rivers systems in the southern Sierra Nevada Mountains. Therefore, geology is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur. Wild trout waters have nonnative trout.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Multiple species and their habitat occur: Winter range for two major deer herds, many bird species (including golden eagle, peregrine falcon, prairie falcon, willow flycatcher), mountain lion, gray fox, and ringtail cat.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of multiple wildlife species and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kings River (GIS Number 2.106.2) is eligible because scenery, recreation, prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification
Water Resources Development: None

Shoreline Development: Road and access points

Accessibility: Road and nonmotorized trail

Water Quality: Excellent

Classification: Scenic

Kings River (GIS Number 2.106.3)

Location

- County: Fresno
- Beginning Point: Kings River Special Management Area boundary
- End Point: High water line of Pine Flat Reservoir
- Special Area: None

Mileage

- Studied: 1.3
- Eligible: 1.3

Eligibility Determination
Free Flow: Yes

Outstandingly Remarkable Values

- **Scenery**
  - Description: The dry, steep-sided canyon contrasts sharply with the flat river corridor and the excellent water quality of the river. The distant views of high mountains provide visual diversity.
  - Determination: Scenery is an outstandingly remarkable value. The contrast of the river corridor with the steep canyon walls is exceptionally high. Therefore, scenery is considered outstandingly remarkable.

- **Recreation**
  - Description: This segment provides an outstanding whitewater boating setting. Outfitter guides provide float trips that attract visitors from well outside the region of comparison. At medium and high flows, the Kings River is one of few whitewater rivers between the Colorado River in Arizona and the Klamath River in northern California that is suitable for river-running dories. The wild trout waters and angling attract many fly fishers. The relatively undisturbed shoreline is accessible by a paved road.
  - Determination: Recreation is an outstandingly remarkable value. This segment of the Kings River provides the most whitewater rafting opportunities and has the longest boating season among all undammed rivers in the Sierra Nevada region. The fishing and whitewater boating setting is outstanding, and the river is uniquely suited to running dories. Therefore, recreation is considered outstandingly remarkable.

- **Fish (Population and Habitat)**
  - Description: Native hardhead minnow and other native cool water fishes occur. The trout are not native and are not unique.
  - Determination: Fish population and habitat are not outstandingly remarkable values. Hardhead minnows are becoming rarer, but they are found in the Tule River and several other rivers systems in the southern Sierra Nevada Mountains. The nonnative trout are not unique. Therefore, fish population and habitat are not considered outstandingly remarkable.

- **Wildlife (Population and Habitat)**
  - Description: Multiple species and their habitat occur: Winter range for two major deer herds, many bird species, (including golden eagle, peregrine falcon, prairie falcon, willow flycatcher), mountain lion, gray fox, and ringtail cat.
  - Determination: Wildlife population and habitat are outstandingly remarkable values. Based on the presence of multiple wildlife species and their habitat, wildlife population and habitat are considered outstandingly remarkable.

- **Prehistory**
  - Description: Includes a site where there is evidence of occupation or use by Native Americans.
  - Determination: Prehistory is an outstandingly remarkable value. Identified and documented prehistoric sites are rare, unusual, or one of a kind. Based on existing knowledge and data, prehistory is considered outstandingly remarkable.

- **History**
  - Includes identified and documented historic sites.
  - Determination: History is an outstandingly remarkable value. Identified and documented historic sites are unusual or one of a kind. Based on existing knowledge and data, history is considered outstandingly remarkable.

Summary: Kings River (GIS Number 2.106.3) is eligible because scenery, prehistory, history, and wildlife population and habitat are outstandingly remarkable values.

Preliminary Classification

Water Resources Development: None

Shoreline Development: Road and access points

Accessibility: Road and nonmotorized trail

Water Quality: Excellent

Classification: Recreational

Description of the Wild and Scenic Rivers Study Process

Inventory

The inventory was completed considering best available scientific information and public input. Table C-16 shows the total number of river segments included in the inventory for each forest and map C-19 and map C-20 show the locations of the river segments included in the inventory for each forest.

The inventory was developed through the following steps:

1. A regional hydrologist used the national hydrological dataset to create a preliminary list of rivers and river segments that were the equivalent of all named rivers on a 7.5 minute quad. This preliminary list was then checked against the standard U.S. Geological Survey 7.5 minute quadrangle maps to ensure that all named rivers were included.
2. Any of the named rivers in the dataset that were already designated as wild and scenic rivers were removed from the inventory.
3. Any rivers recommended as an addition to the National Wild and Scenic Rivers System through a previous suitability study and NEPA process were removed from the inventory.
4. To ensure that rivers of interest identified by the public were included in the inventory, the following references were reviewed:

    - **Sierra Forest Legacy Conservation Strategy, wild and scenic river appendix:** http://www.sierraforestlegacy.org/FC_ConservationStrategy/FC_ConservationStrategy2.php
    - **The Nationwide Rivers Inventory (NRI):** http://www.nps.gov/ncrc/programs/rtca/nri/index.html
    - **Listing of California rivers that are part of the National Rivers Inventory created by the National Park Service:** http://www.gehwa.org/Wild%20&%20Scenic%20River%20Files/NRI/California%20NRI%20205S-3264M.pdf
    - **Friends of the River publication "Potential Wild and Scenic Rivers in California – 2001 Inventory:** http://www.friendsoftheriver.org/site/DocServer/2001PWSRC_Inventory.pdf?docID=222

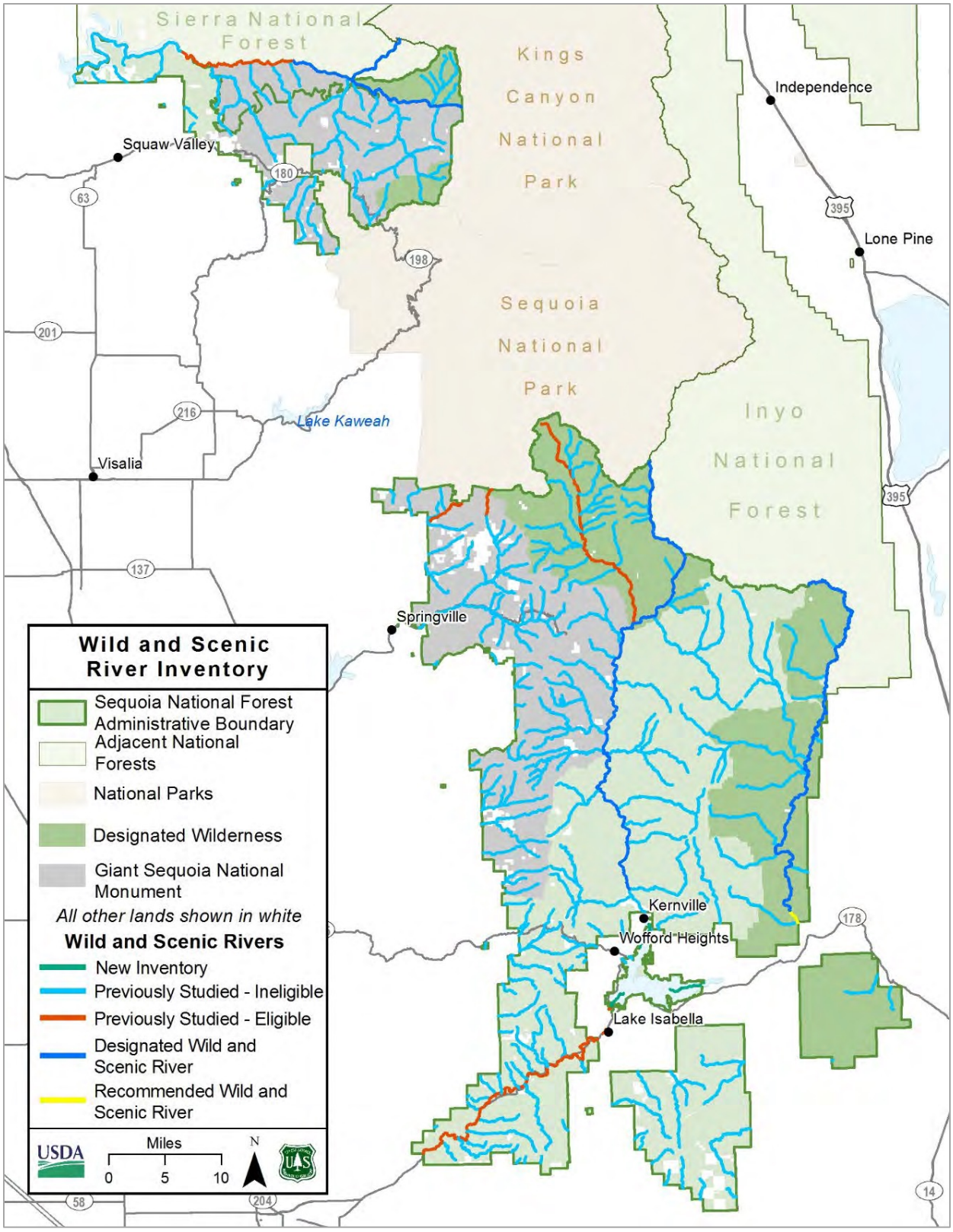
      Identified 5 river segments on the Sequoia National Forest and 7 on the Sierra National Forest.
5. Detailed feedback specific to wild and scenic rivers received during the assessment phase of the forest plan revision process was compiled into a report (Wild & Scenic Rivers (WSR) – Public Feedback from Assessment Phase, 11/25/13) and reviewed for content related to rivers of interest to include in the inventory. It was affirmed that all rivers of interest were included in the inventory.
6. Comments on wild and scenic rivers were received during the public comment period for the proposed action. The comments were also reviewed for content related to rivers of interest to include in the inventory. It was affirmed that all rivers of interest were included in the inventory.
7. Comments on wild and scenic rivers were also received in the 2016 draft environmental impact statement that requested specific rivers and creeks be added to the inventory that were not previously considered. Upon approval by the responsible official these rivers and creeks were added to the inventory.

8. After the final inventory dataset was created, all records of previous wild and scenic river eligibility and suitability study were examined and segments that had been included in previous studies were identified. The previous findings for eligibility, outstandingly remarkable values, and classification were documented in the dataset. The inventory was then divided into river segments that had been included in previous studies and those that had not.

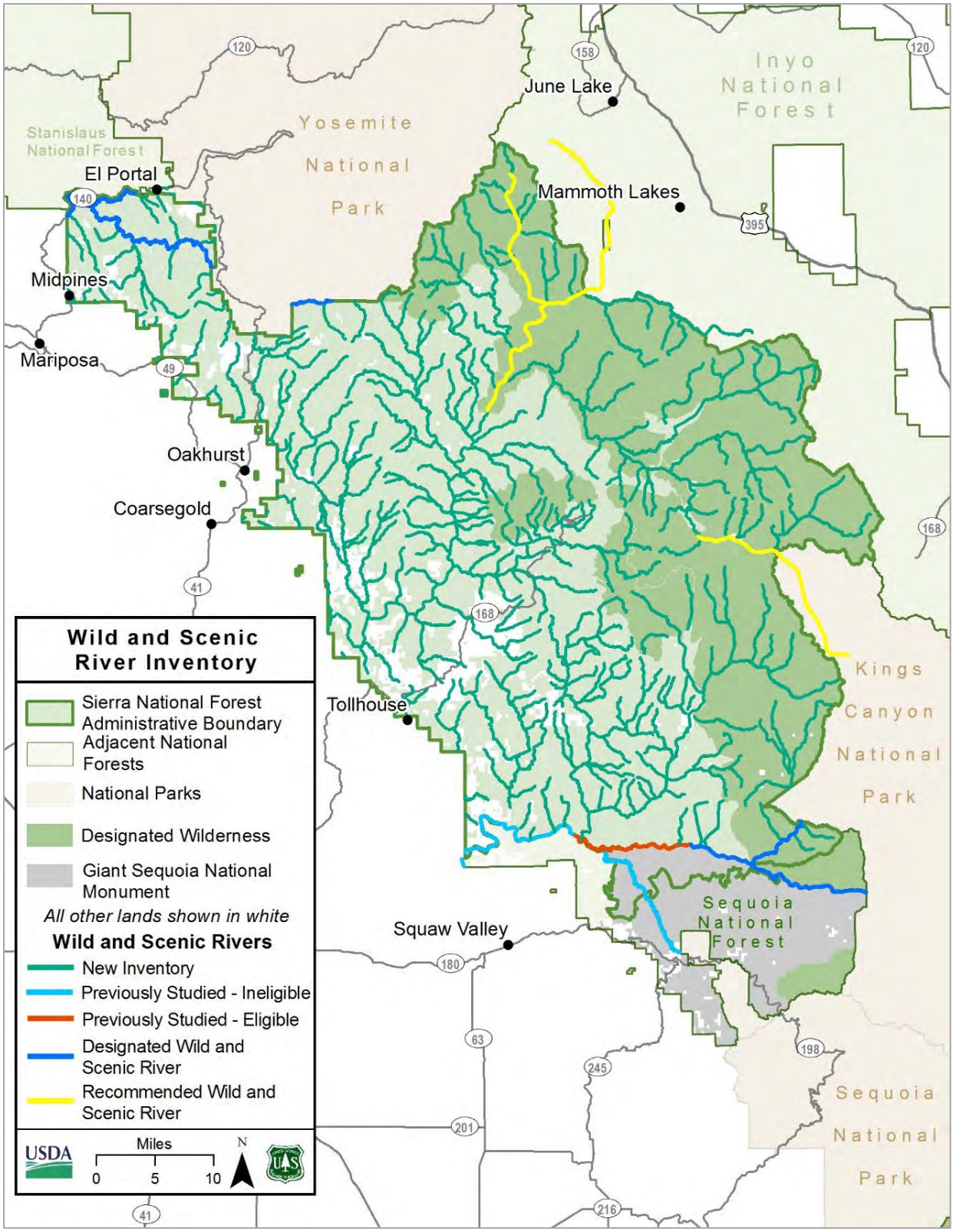
Table C-16. Inventory of all potential wild, scenic, and recreational rivers, Sequoia National Forest and Sierra National Forest

Inventory	Sequoia National Forest	Sierra National Forest
Number of river segments previously studied (approximate mileage)	300[13] (1,025 miles)	4 (30.2 miles)
Number of river segments not previously studied (approximate mileage)	2 (7.3 miles)	416 (1,481.4 miles)
Total number of river segments (approximate mileage)	302 (1,0632.3 miles)	419 (1,511.6 miles)

[13] Excludes four river segments (approximately 30.2 miles) of the Lower Kings River (from elevation 1,595 to the National Forest boundary) that were included in the 1991 Sequoia National Forest eligibility study but for the purposes of the current study are included in the Sierra National Forest section and Sierra National Forest tables and totals.



Map C-19. Sequoia National Forest wild and scenic river inventory map



Map C-20. Sierra National Forest wild and scenic river inventory map

Eligibility Determination and Preliminary Classification

River Segments Analysis

Each national forest interdisciplinary team completed the following steps:

1. Identified which river segments may have river-related values for scenery, recreation, geology, fish and wildlife populations and habitat, prehistory, history, or other river-related values (i.e., paleontological or botanical), including reviewing public comments on the 2016 Draft Environmental Impact Statement for information about river-related values. In this initial screening step, values that may be unique, rare, exemplary, or significant at a regional or national scale were identified, but a determination was not made about the relative significance of the values. Potential river-related values were documented in the dataset. If a river segment had no values that were identified, it was not carried forward for further study.

   Criteria used to identify river-related values are described below:

   a) Scenery – The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features or attractions.

   b) Recreation – Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region. Recreation opportunities within the region of comparison are diverse and attract visitors from outside the region. Common recreation activities include developed and dispersed camping, picnicking and day use, hiking, mountain biking, off-highway vehicles, fishing, sightseeing, and general forest exploration. Unique or rare recreation opportunities within the region of comparison would include unique fishing opportunities for heritage trout populations, whitewater rafting, boating, and sightseeing and photography related to scenery values.

   c) Geology – The river, or the area within the river corridor, contains one or more example of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. Potential outstanding values for geology included glacial features, volcanic features, and unique rock formations.

   d) Fish – The presence of wild stocks, or federal or state-listed threatened, endangered, or sensitive species or the river provides exceptionally high-quality habitat for these fisheries. Within the region of comparison, creeks with heritage trout were identified as having river-related values.

   e) Wildlife – The presence of wildlife species considered to be unique and/or Federal or State listed threatened, endangered, or sensitive species or the river corridor provides exceptionally high-quality habitat for these species. Creeks with threatened, endangered or sensitive amphibian species were also considered. Within the region of comparison, creeks with Sierra, mountain, or foothill yellow-legged frog, or Yosemite toad were identified as having river-related values.

   f) Prehistory – The river, or area within the river corridor, contains one or more sites where there is evidence of occupation or use by Native Americans. Sites must have unique or rare characteristics or exceptional human-interest values. Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period first identified and described; may have been used concurrently by two or more cultural groups; and/or may have been used by cultural

groups for rare sacred purposes. Many such sites are listed on the National Register of Historic Places, which is administered by the National Park Service.

g) History – The river or area within the river corridor contains one or more sites or features associated with a significant event, an important person, or a cultural activity of the past that was rare or one of a kind in the region. Many such sites are listed on the National Register of Historic Places. A historic site or features is 50 years old or older in most cases.

h) Other (Botanical) – Unique and rare plants, vegetation types, and ecosystems.

2. Determined which river segments had free flow. Free flowing is defined in the National Wild and Scenic Rivers System Act:

> Existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification. Low dams, diversion works, and other minor structures may be permitted, provided the waterway remains generally natural and riverine in appearance. Segments of rivers above or below impoundments can also qualify as free flowing. There is no established minimum size for eligibility, either in length or volume of flow. Flows are considered sufficient for eligibility if they sustain or complement the outstandingly remarkable values for which the river would be designated.

Anecdotal references, local-knowledge of Forest Service employees involved in land management, public comments on the 2016 Draft Environmental Impact Statement, and Forest Service GIS databases were used to determine whether each river segment has free flow, as defined in the Wild and Scenic Rivers Act. Free flow information was documented in the dataset.

3. Documented a region of comparison for determining if any river-related values are outstandingly remarkable values.

4. Documented criteria for determining if any river-related values are outstandingly remarkable values. The Interagency Wild and Scenic Rivers Coordinating Council technical paper "The Wild and Scenic River Study Process," describes the baseline criteria. Any additional criteria used are documented in the results section of this appendix, before the river segment details.

5. Determine if any river-related values are outstandingly remarkable values using the regions of comparison, criteria, and best available science. Outstandingly remarkable values information for each river segment was documented in the dataset and the results section of this appendix. River segments with both free flow and at least one outstandingly remarkable value were determined to be eligible for inclusion in the National Wild and Scenic Rivers System.

6. Assigned a preliminary classification to all eligible river segments based on the condition of the river segment and the development level of adjacent lands as they exist at the time of the study. Preliminary classifications for each river segment were documented in the dataset.

7. Documented study results for each river segment in the results section of this appendix with the following information:

- River segment name
- River segment geographic information system number
- River segment location
- River segment beginning point description
- River segment end point description

- Name(s) of any special areas that intersect with the river segment
- Mileage of the total river segment length studied
- Mileage of the total river segment length determined eligible
- Free flow determination
- Outstandingly remarkable values determination, including a description for each river-related value that was studied
- Summary of eligibility determination
- Preliminary classification

River Segments Previously Studied

Each national forest interdisciplinary team completed the following steps:

1. Compiled and summarized any previous wild and scenic river studies that were completed.
2. Determined if there were any changed circumstances or new information since previous studies, using the best available science and public input. This included reviewing river segments previously determined eligible as well as river segments previously determined ineligible, using the same regions of comparison and outstandingly remarkable values criteria as river segments not previously studied. If changed circumstances or new information was identified, it was documented in the results section of this appendix.
3. Determined if any changed circumstances or new information affected free flow, outstandingly remarkable values, previous eligibility determinations, or preliminary classification, and documented the effects in the results section of this appendix.
4. Reviewed the record to ensure that comprehensive study results information existed for river segments determined to be eligible for inclusion in the National Wild and Scenic Rivers System without changes from previous studies. If the record was incomplete, the missing information was added to the results section of this appendix.

Summary of Public Input

The public provided input on the wild and scenic rivers studies through three avenues:

1. Comments during the November 2013 Assessment phase on the Assessment Topic Papers for Designated Areas
2. Comments on the notice of intent and proposed action
3. Comments on the 2016 Draft Environmental Impact Statement.

In general, the comments provided suggestions on five topics:

1. Comprehensive river management plans for existing designated wild and scenic rivers.
    a) The forest plans should include a process and timeline to update the existing comprehensive river management plans for the North and South Forks of the Kern River, Kings River, and Merced Rivers because of changed circumstances, including potential impacts to outstandingly remarkable values and increases in the nonboating recreation use, particularly on the North Fork of the Kern River.
    b) The forest plans should include interim measures to protect the outstandingly remarkable values of wild and scenic rivers until comprehensive river management plans are updated or completed.

2. Process used to determine which river segments are eligible rivers for inclusion in the National Wild and Scenic River System.

    a) The Forest Service should complete a new study process for wild and scenic rivers during forest plan revision, including a comprehensive inventory of potentially eligible creeks, and suitability studies for eligible creeks. For previously inventoried rivers, new information or changed circumstances should trigger updates to the inventory.

    b) Suitability determinations should be deferred until triggered by either a conservation or development proposal and are not necessary during forest plan revision.

    c) Sequoia National Forest should complete suitability determinations for river segments determined to be eligible because the Sequoia National Forest made this commitment through settlement agreements on their current land and resource management plans during the early 1990s.

    d) Sequoia National Forest should determine the suitability of the North Fork and Middle Fork of the Tule River to fulfill its commitment made in the 1990 appeal settlement agreement.

    e) Sequoia National Forest should determine the suitability of the unprotected segments of the Kings River during forest plan revision.

    f) Sequoia National Forest should coordinate with the Bureau of Land Management on the suitability study of the lower Kern River because the Bureau of Land Management administers the upper 3.2 miles of the river segment.

    g) Sierra National Forest should conduct a study of rivers that were not included in the National River Inventory because of the Sierra National Forest made commitments in the 1992 record of decision for its land and resource management plan.

    h) Sierra National Forest should retain the recommendation for designation of the upper San Joaquin, North Fork San Joaquin, and Middle Fork San Joaquin Rivers it made in the 1992 Record of Decision for the Land and Resource Management Plan. In addition, the changed circumstances on the South Fork San Joaquin, which now has partially restored flows, should be studied.

    i) Sierra National Forest should amend its wild and scenic river recommendation for the main stem San Joaquin to include the lower 2 miles of the main stem because there are no plans for expansion of the Mammoth Pool Reservoir.

    j) Sierra National Forest should study Dinkey Creek because it is free-flowing and possesses outstandingly remarkable scenic, recreational, cultural, historical, geological, botanical, fisheries, and wildlife values.

    k) Sierra National Forest should study segments of the following creeks because they are free-flowing and possess outstandingly remarkable whitewater recreation and scenic values: Big Creek, North Fork Willow Creek, Big Creek (tributary of San Joaquin River), Big Creek (tributary of Kings River), North Fork Kings River, Helms Creek, Mono Creek, Bear Creek, and Granite Creek.

    l) The Forest Service should complete suitability studies during forest plan revision because if these studies are not completed, separate National Environmental Policy Act analysis would be required, which would involve additional staff costs. Also, individual suitability studies limit the context of river decisions presented to the public.

m) The Forest Service should retain the suitability determination of several rivers it has previously recommended for inclusion in the National Wild and Scenic Rivers System.

3. Outstandingly remarkable values of rivers segments studied for eligibility

    a) The North and South Fork of the Kern River and the Kings and South Fork Kings Rivers (Sequoia National Forest) have outstandingly remarkable whitewater boating opportunities.

    b) The San Joaquin River (Sierra National Forest) has outstandingly remarkable geological values due to its glacially carved canyons.

    c) The South Fork Merced River (Sierra National Forest) has outstandingly remarkable whitewater boating opportunities.

4. Plan components for wild and scenic rivers in the revised forest plans

    a) The desired conditions for wild and scenic rivers should include maintaining and enhancing river flow conditions for recreation.

    b) The desired condition statement for wild and scenic rivers should be more extensive, such as the statement contained in the Sierra Nevada Framework document.

    c) The guidelines for wild and scenic rivers should include the protection of in-stream flows for recreational values.

    d) The management areas in the forest plans should include one or more geographic areas for wild and scenic rivers to better organize the wild and scenic river plan components.

    e) The Forest Service should not include any plan components that limit fish stocking or limit angling on wild and scenic rivers.

    f) Any potential contribution of timber from designated wild and scenic rivers to the timber sale program should be described in the plan components.

5. Support for or against additional wild and scenic river designations

    a) Wild and scenic rivers are places where wildlife can live and thrive relatively undisturbed.

    b) Additional wild and scenic river designations would limit the agency's ability to make the forest more fire resilient.

    c) The South Fork Kings River upstream from its confluence with the North Fork Kings and Pinkey (sic) Creek should be excluded from consideration because of they are potential sites for hydroelectric projects.

Appendix D.
Persistence Analysis for Species of Conservation Concern

Introduction

2012 Planning Rule Framework for Species Persistence Analysis

The 2012 Planning Rule[14] requires the forest plan to include plan components,[15] to "maintain or restore": (1) "the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area"; and (2) "the diversity of ecosystems and habitat types throughout the plan area." It also requires plans be based on a complementary ecosystem and species-specific approach; this approach is referred to as the coarse-filter and fine-filter approach.

Under 36 CFR 219.9(b)(1), the responsible official (here the Forest Supervisor for the Sequoia and Sierra National Forests) must determine whether the plan components required by 36 CFR 219.9(a) provide the ecological conditions necessary to "contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern[16] within the plan area." The Planning Rule sets forth three possible outcomes of the responsible official's analysis of plan components with respect to species of conservation concern. Additionally, a fourth outcome may arise when the planning unit has developed a set of ecosystem-based plan components it thinks will provide for species persistence, but also provides supplementary species-specific plan components for greater emphasis and clarity (all four determinations are presented in the "Determination" section below).

a. The responsible official may find that the plan components required by 36 CFR 219.9(a) are sufficient to provide the ecological conditions necessary to maintain a viable population of each species of conservation concern within the planning area. 36 CFR 219.9(b)(1).

b. The responsible official may determine that the plan components required by 36 CFR 219.9(a) are insufficient to provide the ecological conditions necessary to maintain a viable population of each species of conservation concern within the planning area, and that "additional, species-specific plan components, including standards or guidelines, must be included in the plan to provide such ecological conditions in the plan area." 36 CFR 219.9(b)(1).

c. The responsible official may determine "that it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the

[14] 36 CFR 219.9(a)

[15] The 2012 Planning Rule sets forth five required plan components (desired conditions, objectives, standards, guidelines, and suitability of lands) and one optional plan component (goals). 36 CFR 219.7(e)(1)–(2). 36 CFR 219.7(f)(1)–(2) sets forth other required and optional content in the plan.

[16] A "species of conservation concern" is defined as "species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area." 36 CFR 219.9(c).

> ecological conditions to maintain a viable population of a species of conservation concern in the plan area." If the responsible official makes this determination, it shall: (1) document the basis for the determination; and (2) "[i]nclude plan components, including standards and guidelines, to maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range," in coordination with other Federal, State, tribal, and private land managers.[17]

This species persistence analysis documents the rationale for the responsible official's determination for each species of conservation concern in the plan area, including: (1) the plan components required by 36 CFR 219.9(a) are sufficient to provide the ecological conditions necessary to maintain a viable population of that species of conservation concern within the planning area; or (2) additional, species-specific plan components must be included in the plan to provide the ecological conditions necessary to maintain a viable population of that species of conservation concern within the planning area; or (3) that it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of that species of conservation concern in the plan area.

"Viable Population" Defined

The Planning Rule defines a "viable population" as "[a] population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments."[18] The Forest Service Handbook 1909.12, section 23.13c (1)(b) notes that the preamble to the proposed Planning Rule[19] addresses the meaning of the word "population" for planning purposes, explaining: "the individuals of a species of conservation concern that exist in the plan area will be considered to be members of one population of that species."

The Handbook further defines the words and phrases "persist over the long-term," "sufficient distribution," "resilient," and "adaptable," used in the Planning Rule's definition of "viable population," as follows:

> The words "persist over the long-term" means the species continues to exist in the plan area over a sufficiently long period that encompasses multiple generations of the species, the time interval between major disturbance events, the time interval to develop all successional stages of major habitat types, or the time interval needed for the overall ecosystem to respond to management. Understand that confidence in the evaluations of persistence decreases rapidly as the timeframe of projections increases and that the responsible official will change plan components using plan amendments and plan revisions when the responsible official decides plan components need to be changed because of changed conditions (FSH 1909.12 section 23.13c (1)(c)).
>
> Whether there is "sufficient distribution" of a species should be considered in the context of the species' natural history and historical distribution and on the potential distribution of the habitat within the plan area. Recognize that habitat and population distribution are dynamic over time. Sufficient distribution also implies a distribution that permits individuals to interact within the plan area within the constraints of the species' natural history. Sufficient distribution implies that ecological conditions are provided to support redundancy in numbers such that losing one or some without replacement will still support a viable population. It should not be expected that management of National Forest System lands would provide broadly or evenly distributed habitat

[17] 36 CFR 219.9(b)(2)
[18] 36 CFR 219.19
[19] 77 FR 21217, April 9, 2012

throughout a plan area for all species. Furthermore, as long as there is enough habitat in the plan area to maintain a viable population, there is no requirement that habitat to maintain all known individuals or the maximum possible number of individuals of a species must be available in the plan area (FSH 1909.12, section 23.13c(1)(d)).

The word "resilient" suggests that when disturbance events or stressors result in the local disappearance of individuals or extirpation from an area, recolonization of suitable habitat may occur in the future to facilitate long-term persistence in the plan area (FSH 1909.12 section 23.13c(1)(e)).

The word "adaptable" means that the species is able to adjust to new conditions. Ecological conditions to support the species are distributed in a way that the species may be represented in a variety of locally adapted ecotypes for increased likelihood of persistence in unknown future environments (FSH 1909.12 section 23.13c (1)(f)).

Organization of this Species Persistence Analysis

This document describes and puts into context the current planning regulations and policies that informed the development of the Sequoia and Sierra National Forests Final Environmental Impact Statement and Land and Resource Management Plans (also referred to as the "forest plans"). The regulations and policies themselves, however, are not directly incorporated into this document.

This appendix is a combination of the Sequoia National Forest and Sierra National Forest species persistence analyses for animal and plant species of conservation concern. Many of the species of conservation concern occur on both forests and are subject to similar threats. Many of the ecosystem-level components and plan considerations are the same in both forest plans, though there are a few specific measures to each plan. Due to this and the consideration that each Forest Supervisor must make a separate decision for their respective forest, the analyses are organized by species, but with designation if that species occurs on one or both forests and with separate analyses for the respective forest. Information (that is, key ecological conditions, summary table, threats, and determinations) relevant to both forests is presented, as well as specific forest conditions, plan area occurrence, and summary of determination.

There are several required plan components and optional plan components, for example goals, and other plan content (such as potential management approaches) in the plan, that serve as an overall foundation for providing the ecological conditions necessary to support the persistence of species of conservation concern within a plan area. Plan direction includes desired conditions that provide necessary ecological conditions and includes goals to increase the communication, cooperation, and collaboration with all lands partners to further conservation of at-risk species regionwide. Species of conservation concern are a subset of at-risk species. At-risk species also include federally recognized threatened, endangered, proposed, and candidate species. Because the ecosystem-level components rely heavily upon desired conditions to frame the movement of the national forests' ecological conditions over time, plan direction also includes standards and guidelines to ensure project-level, site-specific contributions of the plan areas meet needs for at-risk species and are considered early in a project's environmental planning process.

To document the plan components that provide for the key ecological conditions and address any key threats within the plan area, select forestwide plan content relevant for all species of conservation concern is summarized first, followed by crosswalk of relevant ecosystem-level plan content addressing key threats.

After summarizing the foundational plan content relevant to providing ecological conditions for the persistence of most species, the final step in this persistence analysis is a species-by-species

evaluation for each terrestrial and aquatic species of conservation concern. A separate evaluation was prepared for botanical species of conservation concern. For each species there is an evaluation of the ecological conditions and threats in the plan area followed by a listing of the relevant plan components that address each of the key ecological conditions and threats identified. For most species, the ecological conditions needed by at-risk species are adequately addressed by ecosystem-level plan components (summarized in the forestwide plan components section and Table D-4), and in many cases, additional species-specific plan components were only needed to provide additional clarity and emphasis. In a few cases, species-specific plan components were essential to species persistence and long-term viability in the plan area.

The plan component coding follows a standard format where the first two parts identify the resource and applicable area for the direction and the third part identifies the type of plan component. All plan components are numbered sequentially in the forest plan, but the numbers do not convey a ranking or priority. Goals are optional numbered plan components. Potential management approaches and proposed or possible actions are additional plan content and are not numbered. Persistence analysis is based on required and optional plan components (desired conditions, objectives, standards, guidelines, suitability of lands, and goals). Potential management approaches are included where applicable to describe the principal strategies and program priorities the responsible official intends to employ to carry out projects and activities developed under the plan.

Forestwide and Area-specific Plan Components for All Species of Conservation Concern

Forestwide and area-specific plan content relevant for providing ecological conditions necessary to support species of conservation concern is found in several areas within the plan including: Terrestrial Ecosystems and Vegetation (**TERR-FW**), Watersheds (**WTR-FW**), Animal and Plant Species (**SPEC-FW**), Riparian Conservation Areas (**WTR-RCA**), Wildlife Habitat Management Areas **(MA-WHMA),** Conservation Watersheds (**MA-CW**), Rivers and Streams (**WTR-RCA-RIV**), Lakes Pools and Ponds (**WTR-RCA-LPP**), Springs and Seeps (**WTR-RCA-SPR**), Sustainable Recreation (**REC-FW**), and Designated Wilderness Areas (**DA-WILD**). Several plan components focus on all at-risk species or all species of conservation concern, while other components that support at-risk species are written more generally to support ecosystem integrity and habitat needs for all native terrestrial and aquatic species. While generally broad, these plan components provide for ecosystems and habitat conditions that will be resilient to disturbance (both natural and human caused) and the interrelated effects of climate change. They also mitigate site-specific effects that might occur during projects or national forest management activities implemented under the land management plan in riparian areas, watersheds, terrestrial ecosystems, recreation areas, and wilderness.

A selection of these plan components relevant for providing ecological conditions necessary for the persistence of species of conservation concern follows.

Animals and Plant Species

Desired Conditions (SPEC-FW-DC)

01 Persistent populations of native, and desirable nonnative, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the National Forest. These ecosystems are also resilient to uncharacteristic fire, climate change,

and other stressors, and this resilience supports the long-term sustainability of plant and animal communities.

02 Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impacts from threats (such as disease and other site-specific threats). Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for **species of conservation concern**.

03 The structure and function of the vegetation, aquatic and riparian system, and associated microclimate and smaller scale elements of special habitats (like carbonate rock outcrops) exist in adequate quantities within the capability of the plan area to provide habitat and refugia for **at-risk species** with restricted distributions.

04 The forest provides high-quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to **native species**, while still contributing to economies of local communities.

05 Residents and visitors have ample opportunities to experience, appreciate, and learn about the Sequoia National Forest's **wildlife, fish, and plant resources**.

Goals

01 Communicate, collaborate, and cooperate with other agencies, Tribes, partners, and private landowners to encourage resource protection and restoration of ecological conditions that benefit wildlife, fish, and plants across ownership boundaries.

03 Work with the California Department of Fish and Wildlife (following the memoranda of understanding) and U.S. Fish and Wildlife Service to restore and maintain essential habitat for **at-risk species** and implement other recovery actions according to species recovery plans.

04 Coordinate with State and Federal agencies and other partners to provide education materials and best management practices information for the public and permittees to limit the potential spread of disease to caves and mines used by bats.

05 Coordinate with local, State, and Federal law enforcement and other agencies to remove and remediate poisonous substances and pesticides associated with marijuana cultivation in the wildland.

06 Coordinate with adjacent landowners to modify open pipes and other potential wildlife traps to reduce wildlife mortality.

Standard (SPEC-FW-STD)

01 ***(Sequoia NF Only)*** Where pesticide applications are proposed within 500 feet of known occupied sites for mountain yellow-legged frog, design applications to avoid adverse effects to individuals and their habitats.

01 ***(Sierra NF Only)*** Where pesticide applications are proposed within 500 feet of known occupied sites for Yosemite toad or Sierra Nevada yellow-legged frog, design applications to avoid adverse effects to individuals and their habitats.

Guidelines (SPEC-FW-GDL)

01 Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for **at-risk species** where they occur to minimize impacts on ecological conditions that provide for the persistence of at-risk species.

02 Known nest, roost, or den trees used by **at-risk species**, including surrounding trees that provide beneficial thermal or predatory protection, should not be purposefully removed, except for the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements.

04 Habitat management objectives and nonhabitat recovery actions from approved recovery plans should be incorporated, if appropriate, in the design of projects that will occur within federally listed species habitat to contribute to recovery of the species.

05 Habitat management objectives or goals from approved conservation strategies or agreements should be incorporated, if appropriate, in the design of projects that will occur within **at-risk species** habitat.

06 Water developments (such as a diversion or well) should be avoided near streams, seeps, and springs where there is high risk of dewatering aquatic and riparian habitats where **at-risk species** occur.

Terrestrial Ecosystems and Vegetation

Desired Conditions (TERR-FW-DC)

01 Each vegetation type is represented by a mosaic of conditions, densities, and structures. This mosaic, which occurs at a variety of scales across landscapes and watersheds, reflects conditions that provide for **ecosystem integrity and diversity**.

02 Vegetation structure and composition provide ecosystem resilience to climate change and other stressors including altered fire regimes, drought, and flooding in riparian systems.

05 Ecological conditions contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and support the persistence of **species of conservation concern**.

06 The landscape contains a mosaic of vegetation types and structures that provide habitat and connectivity for a variety of species including wide-ranging habitat generalists such as black bear and mule deer; more localized, semi-specialists such as ground-nesting and cavity-nesting birds and mammals; and habitat specialists such as old forest and early seral associated species.

Guidelines (TERR-FW-GDL)

01 Vegetation treatments facilitate increasing heterogeneity at all scales, from tree clumps to large landscapes. Several treatment strategies can be employed: using landscape topography (slope, aspect, and slope position) to vary stand densities; promoting tree clumps and gaps within a stand, increasing the proportion of large to small trees; retaining important habitat structures, such as large trees, snags, and trees with broken tops; and increasing diversity by promoting hardwoods, pines, and native plant species. Exceptions: does not apply to community buffers.

02 To retain essential habitat elements required for nesting, roosting, and denning by **wildlife** including fisher, California spotted owl, cavity-nesting birds, and tree-dwelling bats and other small mammals, mechanical vegetation treatments within forested habitats should maintain

and promote large and structurally complex trees, snags, and downed logs distributed widely on the landscape and consistent with forest type desired conditions, especially where they occur in clumps and along forest edges.
Exceptions: Does not apply in community buffers.

06 Design vegetation treatments to maintain or enhance special habitat features.

Watersheds

Desired Conditions (WTR-FW-DC)

01 Adequate quantity and timing of water flows support ecological structure and functions, including aquatic species diversity and riparian vegetation. Watersheds are resilient to changes in air temperatures, snowpack, timing of runoff, and other effects of climate change.

02 Water quality supports State-designated beneficial uses of water. Water quality is sustained at a level that retains the biological, physical, and chemical integrity of aquatic systems and benefits the survival, growth, reproduction, and migration of native aquatic and riparian species.

Standards (WTR-FW-STD)

03 For hydroelectric facilities that are exempt from FERC licensing on National Forest System lands, ensure that special use permit language provides adequate in-stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.

04 After restoration actions (including soil disturbance or seeding activities), limit subsequent soil-disturbing management activities until project objectives have been met.

Guideline (WTR-FW-GDL)

01 Cooperate with Federal, Tribal, State, and local governments to secure in-stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and **aquatic habitat** during all basic Federal Energy Regulatory Commission, state and other authorized water use planning, water rights, and relicensing on the national forest. Coordinate relicensing projects with the appropriate State and Federal agencies. Provide written and timely license conditions to the Federal Energy Regulatory Commission.

Riparian Conservation Areas

Desired Conditions (WTR-RCA-DC)

01 The connections of floodplains, channels, and water tables distribute flood flows and sustain diverse habitats.

02 (***Sequoia NF Only***) Riparian conservation areas have ecological conditions that contribute to the recovery of threatened and endangered species and support persistence of **species of conservation concern** as well as native aquatic and riparian-dependent plant and animal species.

02 (***Sierra NF Only***) Riparian conservation areas have ecological conditions that contribute to the recovery of threatened and endangered species and support persistence of **species of conservation concern** as well as native and nonnative aquatic and riparian-dependent plant and animal species.

03 The distribution and health of biotic communities in special aquatic habitats perpetuate their unique functions and biological diversity.

04 **Native fish, amphibians, and other native aquatic species** are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.

05 Riparian areas provide a range of substrates to sustain habitat for a variety of **aquatic and terrestrial fauna** within their natural capacity of the system.

06 Soil structure and function is sustained to infiltrate and disperse water properly, withstand erosive forces, sustain favorable conditions of stream flow, and cycle nutrients. Associated water tables support riparian vegetation and restrict non-riparian vegetation.

08 The condition of riparian vegetation in riparian conservation areas, including riparian species composition, stand density, and fuel loading, is consistent with healthy riparian systems and reduces risks from high-intensity wildfire in the watershed.

10 There are no new introductions of invasive species.

11 Along all State-designated Wild and Heritage Trout waters, streamside vegetation provides stream shading and **fish** cover, based on capability of the site.

12 Spatial and temporal connectivity for **riparian- and aquatic-dependent species** is maintained within and between watersheds. Connectivity provides physically, chemically, and biologically unobstructed movement for species survival, migration, and reproduction.

13 Native riparian vegetation is diverse, structurally complex, and provides food and cover to sustain **fish and wildlife populations**.

Goals (WTR-RCA-GOAL)

01 Coordinate and collaborate with State fish and wildlife agencies to address **native aquatic species** issues, including evaluating management and monitoring needs to address aquatic species requirements.

02 Where aquatic invasive species are adversely affecting the persistence of **aquatic native species**, work with the appropriate State and Federal wildlife agencies to reduce impacts of aquatic invasive species to native populations.

03 Restoration practices that are compatible with **beaver** reestablishment are accomplished in coordination with Tribes, local, State, and Federal agencies; adjacent landowners; and other interested parties.

Standards (WTR-RCA-STD)

01 Ensure that management activities do not adversely affect water temperatures necessary for local **aquatic- and riparian-dependent** species assemblages. Exceptions may be authorized when necessary to comply with law and regulations.

02 Limit pesticide applications to cases where project-level analysis indicates pesticide applications are consistent with riparian conservation area desired conditions.

03 Prohibit long-term storage of fuels and other toxic materials except at designated administrative sites and sites covered by special use authorization.

04 Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for **aquatic-dependent species**, except where desired to protect **native species**.

06 Locate water drafting sites to minimize adverse effects to instream flows and depletion of pool habitat.

08 Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of **aquatic species** from aquatic habitats, including juvenile fish, amphibian egg masses, and tadpoles.

Guidelines (WTR-RCA-GDL)

01 See also MA-CW-STD-01. Hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features should be maintained and restored. Roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths should have corrective actions implemented where possible to restore connectivity.

02 Water quality or habitat for aquatic and riparian-dependent species should be maintained or restored. Roads, trails, off-highway vehicle trails, staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites that have been identified as contributing to degradation of water quality or habitat for aquatic and riparian-dependent species should have corrective actions implemented where possible.

03 When vegetation is treated in near-river or stream areas, coarse wood should be considered as an addition to the streams to enhance habitat, if applicable.

05 Post-wildfire management activities should emphasize and enhance native vegetation cover, stabilize channels, reduce erosion, and minimize adverse effects from the existing road network to protect the riparian systems.

06 To improve water quality or habitat for aquatic- and riparian-dependent species, evaluate the impacts of facilities on riparian conservation areas when reissuing permits for livestock. If significant adverse impacts are found, existing livestock facilities should be relocated outside of wetlands and riparian areas or mitigated.

09 To protect water quality and spawning habitat, stream-modifying construction activities should be limited to low flow conditions. Exceptions may be authorized when necessary to comply with law and regulations.

Rivers and Streams

Desired Conditions (WTR-RCA-RIV-DC)

01 Stream ecosystems, riparian corridors, and associated stream courses sustain ecosystem structure; are resilient to natural disturbances (such as flooding) and climate change; promote the natural movement of water, sediment, and woody debris; and provide habitat for **native aquatic species** or desirable nonnative species.

02 Stream ecosystems, including ephemeral watercourses, exhibit full connectivity where feasible to maintain **aquatic species diversity**, except where barriers are maintained in good condition to protect **native aquatic species**. Ephemeral watercourses provide for dispersal, access to new habitats, perpetuation of genetic diversity, and nesting and foraging habitat for **riparian and aquatic species**.

03 Instream flows are sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and retain patterns of sediment, nutrients, and wood routing as close as possible to those with which **aquatic and riparian biota** evolved. The physical structure and condition of streambanks and shorelines minimize erosion and sustain desired habitat diversity.

04 Streams and rivers maintain seasonal water flow over time, including periodic flooding, which promotes natural movement of water, sediment, nutrients, and woody debris. Flooding creates a mix of stream substrates for **fish habitat**, including clean gravels for fish spawning, large wood structures, and sites for riparian vegetation to germinate and establish.

05 Stream channel conditions exhibit a sediment regime under which aquatic and riparian ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport. The sediment regime should be similar to the natural distribution of reference conditions.

Lakes, Pools, Ponds

Desired Condition (WTR-RCA-LPP-DC)

01 Lakes and ponds retain necessary attributes, such as adequate vegetation and large woody debris to function properly and support **native biotic communities**. Attributes include floodwater retention and groundwater recharge, stabilized islands and shoreline features, and diverse characteristics to provide for amphibian production, waterfowl breeding, and biodiversity.

Springs and Seeps

Desired Conditions (WTR-RCA-SPR-DC)

01 Springs provide sufficient water to maintain healthy habitats for **native riparian and aquatic species**.

02 Springs are resilient to natural disturbances, groundwater diversions, and changing climate conditions. Springs function across the landscape within their type and water availability.

Wildlife Habitat Management Area

Desired Conditions (MA-WHMA-DC)

01 The wildlife habitat management area consists of resilient, well-distributed, well-connected ecosystems that provide sustainable habitat for old-forest associated species, including fisher and California spotted owl.

03 The wildlife habitat management area complements aquatic and riparian areas and wilderness areas to provide habitat connectivity.

Guideline (MA-WHMA-GDL)

01 Before authorizing vegetation treatment following a large-scale, high-severity disturbance in an area that had large trees and high canopy cover prior to the disturbance, identify, retain and promote the best available patches of remaining high-quality nesting, foraging, and denning habitat (6, 5D, 5M, 4D, 4M in descending order of priority) to provide future habitat for old-forest-associated species. Desired conditions for amount, location, and configuration of retention should be informed by terrestrial vegetation desired conditions for the forest type. *Exception: Does not apply in community buffers*

Conservation Watersheds

Desired Conditions (MA-CW-DC)

01 Conservation watersheds provide high-quality habitat and functionally intact ecosystems that contribute to the persistence of **species of conservation concern** and the recovery of threatened, endangered, proposed, or candidate species.

02 Conservation watersheds exhibit long-term (multiple planning cycles), high, **watershed integrity** and aquatic, riparian, and terrestrial ecosystems are resilient to stochastic disturbance events such as wildfires, floods, and landslides.

03 The drainage connections between floodplains, wetlands, upland slopes, headwaters, and tributaries are intact and provide for breeding, dispersal, overwintering, and feeding habitats for **at-risk species**. These areas provide refugia if other areas of the watershed are disturbed by events such as floods, landslides, and fires.

04 The ecological integrity of upland vegetation is resilient and maintains soil productivity, water quality, and creates conditions to maintain or improve watershed conditions under the Watershed Condition Framework.

Standard (MA-CW-STD)

02 Locate new or relocate existing recreational facilities including trails and dispersed sites away from streams and meadows whenever possible. For existing recreation facilities within riparian conservation areas, evaluate and mitigate impacts, to the extent practicable, to ensure that these do not contribute to degradation of **aquatic habitat**.

Sustainable Recreation

Desired Conditions (REC-FW-DC)

05 Areas of the national forest provide for a variety of recreation opportunities with minimal impact on sensitive environments and resources.

09 Dispersed recreation occurs in areas outside of high visitation, developed facilities, or communities, and does not adversely impact natural or cultural resources.

Guidelines (REC-FW-GDL)

01 Avoid locating new recreation facilities within environmentally and culturally sensitive areas, such as **at-risk species** breeding habitat or **at-risk plant species** habitat. If avoidance is not possible, design facilities to maximize ecological sustainability, minimize impacts, and mitigate unavoidable impacts, in that order.

03 Use integrated resource planning when designing projects to address impacts on culturally sensitive areas and **at-risk species** habitat, and to manage recreation opportunities.

Designated Wilderness Areas

Desired Conditions (DA-WILD-DC)

02 Watersheds are functioning properly and exhibit high geomorphic, hydrologic, and **biotic integrity** relative to their natural and current potential condition.

04 Each wilderness area accommodates levels of recreation use that are ecologically sustainable.

07 National Forest System trails that access wilderness are part of a high-quality wilderness experience for visitors. National Forest System trails meet national quality standards, with minimal deferred maintenance. Trails in wilderness are located in resilient areas, and do not cause adverse impacts on **at-risk species**, water quality, soils, hydrologic connectivity, or cultural resources.

Animal Species of Conservation Concern Determinations

This section summarizes the key ecological conditions and risk factors for each species of conservation concern, and the plan components that mitigate those risk factors, provide for persistence, and contribute to maintaining a viable population of each species of conservation concern within the plan area.

Information on species distribution, ecological conditions, and threats is largely excerpted from the rationale documents for animal species of conservation concern (USDA Forest Service 2022a, b); additional information on each species of conservation concern, the associated selection process, and full references for best available science can be found in those documents and will not be repeated here. A supporting crosswalk, providing the full language for each plan component, and grouped by key ecological conditions and threats was developed to create this summary (refer to Table D-4).

Assumptions

A core element for the development of ecosystem based desired conditions for all species, is that management actions that move ecosystem conditions toward the natural range of variation will benefit persistence for most native species. That is, maintaining or restoring ecological conditions and functions similar to those under which native species evolved offers the best assurance against losses of biological diversity and maintains habitats for the vast majority of species in an area. Conversely, the further a habitat departs from that historical distribution, the greater the risk to viability of associated species. However, for some species this approach may not be adequate, because the historic natural range of variation is not achievable or because of risks not related to habitat. In that case, additional species-specific plan components were added to conserve individual species.

For many species, it is currently unknown if a truly viable population does indeed exist on the Sequoia and/or Sierra National Forests. There may be evidence of individuals, incidental sightings, or species may use the plan area for breeding and dispersal, but it is unclear if there is a breeding population that meets the definition of viable population; “[a] population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments.” In these cases, without knowledge of existing viable populations, the determination outcome defaulted to being beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain viable populations of the species. In those instances, the national forest can contribute to ecological

conditions that should move toward a desired condition that is within the natural range of variability. This would presumably maintain a viable population to the extent it currently exists or might exist in the future and potentially provide for populations expansion.

Table D-1 identifies species of conservation concern with unknown existing viable populations.

Table D-1. Unknown existing viable populations of species of special concern

National Forest	Species of Conservation Concern	Rationale for Unknown Viable Population
Sequoia/Sierra	Fringed myotis	There are no known maternity sites or documented breeding individuals since 1992 in either forest plan area. More study is needed.
Sequoia	Sierra marten	The most recent solitary individual occurrence was in 2010, no recent den sites are known. Monitoring is limited and more study is needed.
Sequoia/Sierra	Townsend's big-eared bat	The majority of suitable Townsend's big-eared bat cave and mine roosting habitat occurs on the Giant Sequoia National Monument, outside the plan area. There are no known maternity sites in either forest plan area.
Sequoia	Great gray owl	Sequoia National Forest is at the southern extent of the species range. No known nesting sites are in the plan area.
Sequoia	Kern red-winged blackbird	Due to the difficultly in subspecies identification it is unknown if a current viable population persists in the plan area without more study.
Sequoia	Mount Pinos sooty grouse	This species is geographically restricted and may be a relict population. Due to the difficultly in subspecies identification it is unknown if a current viable population persists in the plan area without more study.
Sequoia/Sierra	Willow flycatcher	There is no current documentation of breeding willow flycatchers in the plan areas.
Sierra	Hell Hollow slender salamander	A single record exists for the Hell Hollow slender salamander on the Sierra National Forest near Merced River at the southern extent of the known range.
Sequoia	Behr's metalmark	This butterfly is rare and localized, known from relatively few populations in the Greenhorn and Piute Mountains. It is unknown if a current viable population exists.
Sequoia	Evius blue	This butterfly is at the northern end of its range; constrained to a small region with highly patchy distribution. It is unknown if a current viable population exists in the plan area.
Sequoia	Greenish blue	As a result of its rarity, limited distribution, and difficulty to identify, it is unknown if a viable population of this subspecies exists within the plan area.
Sequoia	Tehachapi fritillary	With loss of habitat due to recent warming trends and long-term drought, this fritillary may be extinct (Davenport, 2018). More study in the Piute Mountains is needed.
Sierra	An isopod	No recent documentation of the species in the plan area since the discovery of the species in 1981.

In addition, for some species, the Forest Service does not have sole management authority over key risk factors. For example, disease spread by animals that wander onto the forest from private landowners, upstream water diversions, human water use, widespread tree mortality, climate

change, or mining activities on adjacent lands. Species of conservation concern with primary threats outside the Forest Service's authority include tricolored blackbird, willow flycatcher, foothill yellow-legged frog, limestone salamander, relictual slender salamander, yellow-blotched salamander, California golden trout, Central Valley hitch, Kern Brook lamprey, Kern River rainbow trout, Indian Yosemite snail, Merced Canyon shoulderband, and western pearlshell. Although the main threats have been determined to be outside the Forest Service's control, plan components were still created to maintain, improve, and protect ecological conditions to support persistence of these species to the extent possible under Forest Service authority. The Forest Service would contribute to ecological conditions that improve habitat conditions and should support viability for these species once the threats outside of Forest Service control have been addressed.

Determination outcomes for species of concern were evaluated based on viable populations being able to persist in the plan areas during the life of the plans (that is, over the next 15 years). Complex and larger effects, such as climate change and uncharacteristic wildfires, shape species' habitats. They also play important roles in determining viable persistence in the plan areas and larger landscape. These larger effects would inevitably lower many species' abilities to persist over the long term and we considered them in making species determinations. Although the Forest Service cannot completely control all the complex mechanisms associated with climate change and wildfire, the revised plans incorporate several forest management approaches and plan components that maintain or improve more resilient ecosystems where restoration treatments would occur (see volume 1, Combined Effects of Climate, Fire, Insects, and Pathogens).

In the case of large, localized events the determination outcomes could change in the short term. For example, if a large and severe wildfire removed all suitable habitat for a species of conservation concern within a plan area, it would no longer be within the capability of the plan area to support the species further, despite Forest Service management. Therefore, the species would not meet the requirements to be a species of conservation concern in that plan area.

Possible Persistence Determination Outcomes

In the individual species rationales that follow, determinations for each species will have one of four possible outcomes:

1. The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. No additional species-specific plan components are warranted.
2. The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.
3. The ecosystem plan components may not provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area.
4. It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the [SPECIES NAME] in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

For each wildlife species of conservation concern, key threats to persistence, the most relevant summarized plan components that alleviate those threats, and a summary of why plan components do or do not provide for viability in the plan areas are analyzed and presented in a table developed for each. Plan components have been designed to provide for viability of a species population at the plan-level, with consideration of management activities, and over the 15-year duration of the forest plans. Plan components cannot prevent all adverse impacts on individuals of the species. Potential management approaches, which are considered additional plan content and not plan components, are included in the narratives for the species where needed. They are designed to provide guidance and strategy for improving ecological conditions for species that lack viability in the plan areas because it is either not within the inherent capability of the land or outside Forest Service management authority.

Table D-2. Key to format for persistence analysis tables for individual species

Key Threats to Persistence Identified on the Sequoia and Sierra National Forests	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Key threats identified for species of conservation concern.	Includes select plan components that address threats or provide added emphasis/clarity DC = Desired Condition OBJ = Objective GOAL = Goal STD = Standard GDL = Guideline	Summarize how plan components provide the ecological conditions necessary to support species persistence and maintain a viable population of each species of conservation within the plan area.

Summary of Determination Outcomes

Table D-3 summarizes the responsible officials' determination for each of the 36 animal species of conservation concern in the Sierra and Sequoia National Forest plan areas over the life of the forest plans (that is, 15 years). For some species, if it is unknown if an existing viable population of a species occurs within the plan area, the determination outcome defaulted to being beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain viable populations of the species. However, this does not mean that forest plan components disregard these species persistence or habitat needs. In most cases ecosystem-level components to maintain terrestrial, aquatic, and special habitats and forestwide species direction will provide the needed management to maintain or expand a local population if one exists.

Crosswalk – Animal Species of Conservation Concern

Table D-4is a crosswalk that shows how plan components meet species-specific habitat needs grouped by the key ecological conditions or habitat elements that species share in common. Categories are not mutually exclusive. The table does not include all plan components that provide for persistence but rather focuses on key threats and primary plan components that mitigate those threats.

This ecosystem-level approach summarized in Table D-4 provides the foundation to maintain, improve, and protect biodiversity at the landscape scale, rather than initially focusing on management effects for individual species. The plan content is organized in a hierarchical manner and strives to promote ecosystem integrity. All terrestrial areas have plan content that includes terrestrial forestwide, an ecological zone (alpine, subalpine, upper montane, montane), a vegetation type, and some areas also have location-specific content related to management areas

or designated areas. All aquatic systems have plan content organized by watershed and including relevant features such as riparian conservation areas; meadows; rivers and streams; lakes, pools and ponds; and springs and seeps and may also be in management areas or designated areas. The ecosystem-level plan content is foundational to providing ecological conditions to support the persistence of species.

Where there is still concern for the persistence of an individual species after consideration of ecosystem-level plan components, we created additional species-specific components to provide clarity, address identified threats, and emphasize protection of key ecological components. More detailed information regarding the ecological needs and identified threats for individual species contained within groups can be found in the Rationales for Animal Species Considered for Designation as Species of Conservation Concern (USDA Forest Service 2022a, b). Within this document, species-specific plan content for individual species is included, where relevant, in the analysis table for the species.

Table D-3. Summary of determination outcomes for animal species of conservation concern in the Sequoia and Sierra National Forests

Species of Conservation Concern	Forest of Occurrence	Determination* 1	Determination* 2	Determination* 3	Determination* 4
Fringed myotis (*Myotis thysanodes*)	Sequoia/Sierra	-	-	-	X
Sierra marten (*Martes caurina sierra*)	Sequoia	-	-	-	X
Sierra marten	Sierra	-	X	-	-
Townsend's big-eared bat (*Corynorhinus townsendii*)	Sequoia/Sierra	-	-	-	X
American peregrine falcon (*Falco peregrinus anatum*)	Sierra	-	X	-	-
Bald eagle (*Haliaeetus leucocephalus)*	Sequoia/Sierra	-	X	-	-
California spotted owl (*Strix occidentalis occidentalis*)	Sequoia/Sierra	-	-	X	-
Great gray owl (*Strix nebulosa*)	Sequoia	-	-	-	X
Great gray owl	Sierra	-	X	-	-
Kern red-winged blackbird (*Agelaius phoeniceus aciculatus*)	Sequoia	-	-	-	X
Mount Pinos sooty grouse (*Dendragapus fuliginosus howardi*)	Sequoia	-	-	-	X
Northern goshawk (*Accipiter gentilis atricapillus*)	Sequoia/Sierra	-	X	-	-
Tricolored blackbird (*Agelaius tricolor*)	Sequoia	-	-	-	X
Willow flycatcher (*Empidonax traillii brewsteri* and spp. *adastus*)	Sequoia/Sierra	-	-	-	X
Fairview slender salamander (*Batrachoseps bramei*)	Sequoia	-	X	-	-
Foothill yellow-legged frog (*Rana boylii*)	Sequoia/Sierra	-	-	-	X
Gregarious slender salamander (*Batrachoseps gregarius*)	Sierra	-	X	-	-
Hell Hollow slender salamander (*Batrachoseps diabolicus*)	Sierra	-	-	-	X
Kern Canyon slender salamander (*Batrachoseps simatus*)	Sequoia	-	X	-	-
Kern Plateau salamander (*Batrachoseps robustus*)	Sequoia	-	-	-	X
Kings River slender salamander (*Batrachoseps regius*)	Sierra	-	X	-	-
Limestone salamander (*Hydromantes brunus*)	Sierra	-	-	-	X
Relictual slender salamander (*Batrachoseps relictus*)	Sequoia	-	-	-	X
Yellow-blotched salamander (*Ensatina eschscholtzii croceator*)	Sequoia	-	-	-	X
California golden trout (*Oncorhynchus mykiss aguabonita*)	Sequoia	-	-	-	X
Central Valley hitch (*Lavinia exilicauda exilicauda*)	Sequoia/Sierra	-	-	-	X
Hardhead (*Mylopharodon conocephalus*)	Sequoia/Sierra	-	X	-	-

Species of Conservation Concern	Forest of Occurrence	Determination* 1	Determination* 2	Determination* 3	Determination* 4
Kern Brook lamprey (*Lampetra hubbsi*)	Sierra	-	-	-	X
Kern River rainbow trout (*Oncorhynchus mykiss gilberti*)	Sequoia	-	-	-	X
Behr's metalmark (*Apodemia virgulti davenporti*)	Sequoia	-	-	-	X
Evius blue (*Plebejus icarioides evius*)	Sequoia	-	-	-	X
Greenish blue (*Plebejus saepiolus aehaja*)	Sequoia	-	-	-	X
Indian Yosemite snail (*Monadenia yosemitensis*)	Sierra	-	-	-	X
Merced Canyon shoulderband (*Helminthoglypta allynsmithi*)	Sierra	-	-	-	X
Tehachapi fritillary (*Speyeria egleis tehachapina*)	Sequoia	-	-	-	X
An ispod (*Calasellus longus*)	Sierra	-	-	-	X
Western pearlshell (*Margaritifera falcata*)	Sequoia	-	-	-	X

*Determination Outcomes:

1: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. No additional species-specific plan components are warranted.

2. The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

3. The ecosystem plan components may not provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of the [SPECIES NAME] in the plan area.

4. It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the [SPECIES NAME] in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range

NOTE: The letter X appearing in Determination columns indicates the determination for that species of conservation concern.

Table D-4. Crosswalk of ecosystem-level plan components that address key threats to ecological conditions for species of conservation concern

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Susceptible to Stochastic Events: All species	Landscape-level habitat diversity and connectivity.	Loss of habitat and connectivity due to low habitat resilience and departure from natural range of variation. Climate change, large and severe wildfires, widespread tree mortality, or other stochastic events.	**Desired Condition (TERR-FW-DC) 01** Each vegetation type is represented by a mosaic of conditions, densities, and structures. This mosaic, which occurs at a variety of scales across landscapes and watersheds, reflects conditions that provide for ecosystem integrity and diversity. **Desired Condition (TERR-FW-DC) 02** Vegetation structure and composition provide ecosystem resilience to climate change and other stressors including altered fire regimes, drought, and flooding in riparian systems. **Desired Condition (TERR-FW-DC) 03** Terrestrial ecosystems retain their essential processes and functions, despite anticipated changes in species composition associated with climate change. **Desired Condition (TERR-FW-DC) 05** Ecological conditions contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and support the persistence of species of conservation concern. **Desired Condition (TERR-FW-DC) 06** The landscape contains a mosaic of vegetation types and structures that provide habitat and connectivity for a variety of species including wide-ranging habitat generalists such as black bear and mule deer; more localized, semi-specialists such as ground-nesting and cavity-nesting birds and mammals; and habitat specialists such as old forest and early seral associated species. **Desired Condition (TERR-FW-DC) 07** The carbon carrying capacity for a given ecosystem is stable or improving, given trends in climate change, fire, insects, disease, and drought. **Desired Condition (TERR-FW-DC) 08** Fire occurs as a key ecological process in fire-adapted ecosystems where it does not pose an unacceptable risk to life and property. Fire regimes, including the frequency, extent, and severity of fire, is ecologically appropriate and enhances ecosystem resilience and habitat heterogeneity, diversity, and quality. **Desired Condition (TERR-FW-DC) 09** Composition, density, structure, and condition of vegetation help reduce the threat of undesirable wildfires to local communities, ecosystems, and scenic character. **Objective SQF (TERR-FW-OBJ) 01** Restore forest structure and composition on at least 12,000 to 18,000 acres of the montane, upper montane, and portions of the foothill landscape, using primarily mechanical treatment, within 15 years following plan approval. **Objective SNF (TERR-FW-OBJ) 01** Restore forest structure and composition on at least 54,000 to 66,000 acres of the montane, upper montane, and portions of the foothill landscapes, using primarily mechanical treatment, within 15 years following plan approval. **Objective SQF (TERR-FW-OBJ) 02** Restore low and moderate severity fire mosaics on at least 32,000 acres within 15 years following plan approval. **Objective SNF (TERR-FW-OBJ) 02** Restore low and moderate severity fire mosaics on at least 50,000 acres within 15 years following plan approval. **Goal (TERR-FW-GOAL) 01** Work cooperatively with researchers and other organizations to develop appropriate ecological restoration measures, especially within forest landscapes impacted by drought, bark beetle outbreaks, or uncharacteristic wildfire. **Goal (TERR-FW-GOAL) 02** Restoration projects following large stand-replacing events (such as wildfire, drought, and bark beetle outbreaks) in forest landscapes should be designed to consider: a) safety to people b) the development of restoration strategies that move current landscape conditions toward ecosystem desired conditions c) fuel loads and the need to restore natural fire regimes to the recovering landscape d) wildlife habitat, including the restoration of habitat for forest-dependent species e) opportunities to increase carbon storage and sequestration f) future projections in climate and their influence on ecosystems in the affected area, including the transition of one desired ecosystem type to another; g) long-term maintenance of regional biodiversity; and h) opportunities to recover some economic value as a harvested wood product from dead and dying trees to support ecological restoration objectives

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above.*	**Goal (TERR-FW-GOAL) 03** Work cooperatively with Federal and State agencies and other partners to restore low to moderate severity fire to the landscape. **Guideline (TERR-FW-GDL) 01** Vegetation treatments facilitate increasing heterogeneity at all scales, from tree clumps to large landscapes. Several treatment strategies can be employed: using landscape topography (slope, aspect, and slope position) to vary stand densities; promoting tree clumps and gaps within a stand, increasing the proportion of large to small trees; retaining important habitat structures such as large trees, snags, and trees with broken tops; and increasing diversity by promoting hardwoods, pines and native plant species. *Exceptions: Does not apply in community buffers* **Guideline (TERR-FW-GDL) 02** Mechanical vegetation treatments within forested habitats should include a widely distributed but often clumped distribution of snags and downed logs. Along forest edges and within groups and clumps of large trees, snags and downed logs should be retained to provide habitat and roost sites for wildlife species such as small mammals, cavity-nesting birds, and tree-dwelling bats. *Exceptions: Does not apply in community buffers.* **Guideline (TERR-FW-GDL) 03** Management activities that generate accumulations of green slash should not increase the potential for bark beetle outbreaks. **Desired Condition (SPEC-FW-DC) 01** Persistent populations of native, and desirable nonnative, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the national forest. These ecosystems are also resilient to uncharacteristic fire, climate change, and other stressors, and this resilience supports the long-term sustainability of plant and animal communities. **Desired Condition (SPEC-FW-DC) 02** Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impacts from threats (such as disease and other site-specific threats). Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species and improve conditions for species of conservation concern. **Goal (SPEC-FW-GOAL) 01** Communicate, collaborate, and cooperate with other agencies, tribes, partners, and private landowners to encourage resource protection and restoration of ecological conditions that benefit wildlife, fish, and plants across ownership boundaries. **Guideline (SPEC-FW-GDL) 01** Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for at-risk species where they occur to minimize impacts to ecological conditions that provide for the persistence of at-risk species. **Guideline (SPEC-FW-GDL) 02** Known nest, roost, or den trees used by species of conservation concern, including surrounding trees that provide beneficial thermal or predatory protection, should not be purposefully removed, with the exception of the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements. **Desired Condition (FIRE-FW-DC) 02** Fire management activities reduce fuel buildup, help maintain and protect habitat for a variety of species, reduce smoke from larger fires, provide added protection for communities and utility infrastructure, and restore fire on the landscape. These actions are also an integral part of achieving sustainable recreation, particularly by maintaining scenic attractiveness, integrity, and character. **Desired Condition (FIRE-FW-DC) 04** Wildland fires burn with a range of intensity, severity and frequency that allow ecosystems to function in a healthy and sustainable manner. Wildland fire is understood as a necessary process, integral to the sustainability of fire-adapted ecosystems and is used as an effective restoration tool (see TERR-FW-DC related to fire). The landscape is strategically compartmentalized by treated areas and natural features, which facilitates use of prescribed fire and wildfire to meet resource objectives for protecting values and resources. [Refer to all Terrestrial Forestwide **(TERR-FW)** plan components specific to relevant zone, forest type, and management area**:** All Montane Vegetation Types (**MONT**), All Upper Montane Vegetation Types (**UPPR**), Subalpine and Alpine (**ALPN**), Aspen (**ASPN**), Blue Oak (**BLU**), Chaparral-Live Oak (**CHAP**), Black Oak/Canyon Live Oak (**OAK**), Ponderosa Pine (**POND**), Dry Mixed Conifer (**DMC**), Moist Mixed Conifer (**MMC**), Red Fir (**RFIR**), Lodgepole Pine (**LDGP**), Jeffery Pine (**JEFF**), Montane Chaparral (**MCHP**), Pinyon-Juniper (**PINY**), Sagebrush (**SAGE**), Xeric Shrub (**XER**), Wildlife Habitat Management Area (**WHMA**) and McKinley and Nelder Giant Sequoia Grove Management Area (**GSG**).]

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Forest Dependent: Sierra marten, fringed myotis, great gray owl, northern goshawk, California spotted owl, Mount Pinos sooty grouse	Blocks of contiguous and connected, resilient forest habitat.	Loss of habitat from large and severe wildfires, forest management treatments, climate change, drought, insect and disease outbreaks.	**Desired Condition (TERR-FW-DC) 04** Native insect and disease populations are generally limited with occasional outbreaks. Vegetation structural diversity and resilience minimizes the scale of insect and disease outbreaks. **Guideline (TERR-FW-GDL) 01** Projects facilitate increasing heterogeneity at all scales, from tree clumps to large landscapes. Several treatment strategies can be employed: using landscape topography (slope, aspect, and slope position) to vary stand densities; promoting tree clumps and gaps within a stand, increasing the proportion of large to small trees; retaining important habitat structures such as large trees, snags, and trees with broken tops; and increasing diversity by promoting hardwoods, pines and native plant species. *Exceptions: does not apply to community buffers.* **Guideline (TERR-FW-GDL) 02** To retain essential habitat elements required for nesting, roosting, and denning by wildlife including fisher, California spotted owl, small mammals, cavity-nesting birds, and tree-dwelling bats, mechanical vegetation treatments within forested habitats should maintain and promote large and structurally complex trees, snags, and downed logs distributed widely on the landscape and consistent with forest type desired conditions, especially where they occur in clumps and along forest edges. *Exception: Does not apply in community buffers.* **Guideline (TERR-FW-GDL) 04** Mechanical vegetation treatments and salvage operations should retain all large hardwoods, greater than 12 inches in diameter (8 inches for blue oak), except where they pose a threat to human life or property or as needed for operability. *Exceptions: does not apply to community buffers and does not apply to CWPZ where there is no overlap with the WHMA.* **Guideline (TERR-FW-GDL) 05** Burn prescriptions should be designed and implemented to minimize loss of large hardwoods greater than 12 inches in diameter (8 inches for blue oak). Specifically minimize losses on black oaks greater than 20 inches in diameter. **Desired Condition (TIMB-FW-DC) 03** Salvage of dead and dying trees captures some of the economic value of the wood while retaining key features in quantities that provide for wildlife habitat, soil productivity, and other desired conditions of ecosystems. **Standard (TIMB-FW-STD) 06** Following regulated regeneration harvest (such as group selection) on lands identified as suitable for timber production, create and maintain planting environments that favor seedling survival and rapid growth rates. Facilitate early and periodic use of fire to reduce future wildfire-related mortality, and provide sufficient tree numbers to meet future vegetation desired conditions that support a variety of ecosystem services and resilience, including forest products, wildlife habitat and carbon sequestration. A site-specific silvicultural prescription will be designed to ensure that lands are adequately restocked within 5 years of a regeneration harvest. **Guideline (TIMB-FW-GDL) 02** Reforestation of suitable lands should be designed to achieve stocking levels, spatial arrangements and species composition to facilitate future vegetation desired conditions that allow for long-term resilience of the developing forest, while considering potential future plantation management, carbon carrying capacity, wildlife habitat and climate change adaptation. Competing vegetation, fuel levels, and fire risk should be managed to provide for the long-term survival and vigor of reestablishing forests as they move toward maturity. **Guideline (TIMB-FW-GDL) 03** On lands not suited for timber production, reforestation of deforested lands should contribute to ecological restoration of desired vegetation conditions, to provide benefits such as improved scenic character, wildlife habitat, carbon storage, and watershed condition. [Refer to all Terrestrial Forestwide **(TERR-FW)** plan components specific to relevant zone, forest type, and management area: Subalpine and Alpine (**ALPN**), All Montane Vegetation Types (**MONT**), All Upper Montane Vegetation Types (**UPPR**), Blue Oak (**BLU**), Chaparral-Live Oak (**CHAP**), Black Oak/Canyon Live Oak (**OAK**), Ponderosa Pine (**POND**), Dry Mixed Conifer (**DMC**), Moist Mixed Conifer (**MMC**), Red Fir (**RFIR**), Lodgepole Pine (**LDGP**), Jeffery Pine (**JEFF**), Pinyon-Juniper (**PINY**), Aspen (**ASPN**), Montane Chaparral (**MCHP**), Wildlife Habitat Management Area (**WHMA**) and McKinley and Nelder Giant Sequoia Grove Management Area (**GSG**).]

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Large Tree/Snag Dependent: Sierra Marten, California spotted owl, northern goshawk, great gray owl, fringed myotis, Mount Pinos sooty grouse, and bald eagle.	Large trees and snags, cavities, downed logs, woody debris, roosting/nesting / denning structures.	Fire salvage, hazard tree removal, timber harvest, mechanical thinning, large and severe wildfires.	**Standard (TERR-FW-STD) 01** Retain conifer trees greater than 30 inches in diameter, except in the case of imminent threat to life and property or if one of the conditions below is met: a) When required for equipment operability, individual trees less than 35 inches in diameter may be removed on an incidental basis. b) Outside of California spotted owl territories and where necessary to move toward terrestrial vegetation desired conditions, live trees greater than 30 inches but less than 40 inches in diameter may be felled for coarse woody debris or removed under the following limited circumstances: 1. When removing trees is needed for aspen, oak, or meadow restoration treatments or for cultural or Tribal importance; 2. In overly dense stands to favor retention or promote the growth of even larger or older shade-intolerant trees to more effectively meet tree species composition and forest structure restoration goals; 3. To promote the establishment, growth, and development of shade-intolerant species by creating small gaps (generally less than 0.5 acre) in stands historically dominated by shade-intolerant species; 4. To improve the growth and vigor of rust-resistant sugar pine trees greater than 16 inches in diameter by reducing competition from surrounding trees; or 5. To reduce loss of large-diameter trees due to competition in overly dense stands within homogeneous plantations. **Guideline (TERR-FW-GDL) 02** To retain essential habitat elements required for nesting, roosting, and denning by wildlife including fisher, California spotted owl, cavity-nesting birds, tree-dwelling bats and other small mammals, mechanical vegetation treatments within forested habitats should maintain and promote large and structurally complex trees, snags, and downed logs distributed widely on the landscape and consistent with forest type desired conditions, especially where they occur in clumps and along forest edges. *Exceptions: does not apply to community buffers* **Guideline (TERR-FW-GDL) 06** Design vegetation treatments to maintain or enhance special habitat features. **Guideline (TERR-OLD-GDL) 01** To achieve desired conditions for large tree density based on the vegetation type (see table 7 in land management plan), and to promote high quality nesting and denning habitat for old forest associated species, thinning to increase heterogeneity and resilience should retain the oldest and largest trees and large trees with habitat features (such as trees with deformities, broken tops, large branches, and cavities) that benefit these wildlife species. **Desired Condition (TERR-BLCK-DC) 01** Oak trees, snags, and down logs provide habitat for a variety of wildlife species. Oak snags and live trees with dead limbs, hollow boles, and cavities provide shelter, and resting and nesting habitat. Acorns are plentiful, provide food for wildlife, and are available for traditional cultural uses. **Desired Condition (TERR-POND-DC) 05** At the mid- to fine scale, snags greater than 20 inches in diameter are patchily distributed and highly irregular in spacing, with 2 to 40 snags per 10 acres at the landscape scale providing for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is patchily distributed, and ranges from 1 to 10 tons per acre at the landscape scale. **Desired Condition (TERR-DMC-DC) 05** At the mid- to fine scale, snags greater than 20 inches in diameter are well distributed and highly irregular in spacing, with densities between 2 to 40 snags per 10 acres at the landscape scale providing for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is irregularly distributed and ranges from 1 to 10 tons per acre at the landscape scale. Litter and surface fuel is patchy, with fewer than 3 to 10 tons per acre in fuel loading on average over 30 to 70 percent of the area. There are some small areas of up to 30 tons per acre and others with fewer than 3 tons per acre. **Desired Condition (TERR-MMC-DC) 05** At the mid- to fine scale, large snags greater than 20 inches in diameter are patchily distributed, averaging 5 to 40 snags per 10 acres at the landscape scale providing for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is patchily distributed and averages fewer than 5 tons per acre at the landscape scale. In patches centered on areas of past tree mortality, coarse woody debris can be up to 10 tons per acre. Litter and surface fuel is patchy, with fewer than 3 to 15 tons per acre in fuel loading on average over 30 to 70 percent of the area.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above.*	**Desired Condition (TERR-RFIR-DC) 07** At the mid- to fine scale, snags greater than 20 inches in diameter are distributed in patches. An average of 5 to 40 snags per 10 acres at the landscape scale provide for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is distributed in patches and ranges from 1 to 10 tons per acre at the landscape scale. Litter and surface fuel is patchy with fewer than 5 to 20 tons per acre in fuel loading on average. There may be areas with no fuels and pockets of high fuel accumulation scattered irregularly. **Desired Condition (TERR-LDGP-DC) 05** In wet lodgepole pine forests, large snag densities are between 5 and 40 snags per 10 acres at the landscape scale. Snags are well distributed, highly irregular in spacing, and provide for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is well distributed but irregular in spacing and ranges from 1 to 20 tons per acre at the landscape scale. Some small areas contain very high fuel loading of up to 30 tons per acre and other areas have fewer than 5 tons per acre. **Desired Condition (TERR-LDGP-DC) 10** In dry lodgepole pine forests, large snag densities are between 2 to 25 snags per 10 acres at the landscape scale. Snags are well distributed, highly irregular in spacing, and provide for future downed logs. Coarse woody debris, including large downed logs in varying states of decay, is well distributed but highly irregular in spacing, ranging from 1 to 10 tons per acre at the landscape scale. Surface fuel loads are highly variable and patchy. Some small areas contain higher fuel loading of up to 15 tons per acre and most areas have less than 8 tons per acre. **Guideline (FIRE-FW-GDL) 07** When safe and feasible, to maintain breeding opportunities, protect highly valued known den and nest trees, snags, or logs used by at-risk species ahead of burn operations using techniques such as targeted burning, removing fuel from the base of trees, and providing direct protection.
Old Forest Dependent: Sierra marten, California spotted owl, and great gray owl.	Old forest components and connectivity.	Loss of habitat from timber harvest, removal for fire protection, hazard tree removal, mechanical thinning, large and severe wildfires, widespread tree mortality, climate change.	**Desired Condition (TERR-OLD-DC) 01** The composition, structure, and functions of old forests and surrounding landscapes are resilient to fire, drought, insects, pathogens, and climate change. Fire occurs as a key ecological process in forest types that are adapted to fire, creating, restoring and maintaining ecosystem resilience and fire-related composition and structure. **Desired Condition (TERR-OLD-DC) 02** The landscape contains a mosaic of vegetation types and structures that provide foraging and breeding habitat, movement, and connectivity for a variety of old forest-associated species. Areas of moderate (40 to 60 percent) to high (greater than 60 percent) canopy cover, composed primarily of large trees, provide habitat connectivity for old-forest-associated species in key habitat corridors, such as canyon bottoms and drainages. **Desired Condition (TERR-OLD-DC) 03** Between 40 and 80 percent of the forested landscape contains old forest areas. Old forest areas are clumps and patches of old forest components such as old trees, snags, and large downed logs. These areas are irregularly distributed across the landscape and interspersed with stands of younger trees, shrubs, meadows, other herbaceous vegetation, and unvegetated patches. **Desired Condition (TERR-OLD-DC) 04** The number and density of old trees vary by topographic position and soil moisture. In general, more large and old trees are found on moister sites; on lower slopes, bottoms, and north and east aspects, especially where soils are deeper. Large trees are well distributed but are often clumpy. The densities vary by forest type. Trees greater than 40 inches in diameter, generally over 150 years old, represent the oldest trees, and comprise a significant proportion of large and old trees. In many areas of high soil productivity, trees grow to large sizes (around 30 inches in diameter) in fewer than 100 years. On low and very low soil productivity sites, the oldest trees may be smaller in diameter. Enough younger trees are present to provide for recruitment of old trees over time. **Desired Condition (TERR-OLD-DC) 05** Old forests are composed of both vigorous trees and decadent trees. Clumps of large trees, snags, large logs, and decadent older trees are maintained on the landscape in sufficient numbers to benefit wildlife and are distributed throughout the planning area, considering constraints imposed by climate change, fire, insects, disease, and drought. **Desired Condition (TERR-OLD-DC) 06** Large snags are scattered across the landscape, generally occurring in clumps rather than uniformly and evenly distributed, meeting the needs of species that use snags and providing for future downed logs. **Desired Condition (TERR-OLD-DC) 07** Coarse woody debris is distributed in patches and the density of large downed logs varies by vegetation type. Surface dead wood levels are sufficient to provide for wildlife and legacy soil microbial populations.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above.*	**Guideline (TERR-OLD-GDL) 01** To achieve desired conditions for large tree density based on the vegetation type (see table 7 in land management plan) and to promote high-quality nesting and denning habitat for old-forest-associated species, thinning to increase heterogeneity and resilience should retain the oldest and largest trees and large trees with habitat features (such as deformities, broken tops, large branches, and cavities) that benefit these wildlife species. **Guideline (TERR-OLD-GDL) 02** Firing patterns, burn unit layout, and other firing and holding methods during burning should limit the killing of large old trees and loss of very large snags. Consider preventing delayed tree mortality caused by smoldering at the base of large old trees and consider constructing fireline around large old trees and very large snags to reduce the risk of tree ignition while addressing firefighter safety. Limit fire intensity in areas with large old trees and very large snags where possible. *Exceptions: does not apply to community buffers where there is no overlap with WHMA.* **Desired Condition (MA-WHMA-DC) 01** The Wildlife Habitat Management Area consists of resilient, well-distributed, well-connected ecosystems that provide sustainable habitat for old-forest associated species, including fisher and California spotted owl. **Desired Condition (MA-WHMA-DC) 02** The Wildlife Habitat Management Area is characterized by higher concentrations of old forest. It includes some multi-storied canopy conditions, including some shade-tolerant understory trees such as firs and cedars, especially in drainages, swales, and canyon bottoms and on north and east-facing slopes
Complex Early Seral Habitat Dependent: Sierra marten, California spotted owl, and great gray owl.	Snags and logs, intermixed with newly re-sprouted or recently regenerated trees, shrubs, herbs and grasses to support prey.	Salvage of deadwood, recurring wildfires, removal of hazard trees.	**Desired Condition (TERR-CES-DC) 01** Complex early seral habitat contains a sufficient abundance and distribution of snags (especially large-diameter snags) for cavity-nesting wildlife, variable densities of native shrubs and herbaceous plants, and resprouting oak and aspen where they occur. *Exceptions: Does not apply to community buffers where there is no overlap with WHMA. Does not apply to CWPZ where there is no overlap the WHMA.* **Desired Condition (TERR-CES-DC) 02** Snags, logs, and live trees are widely and variably distributed where vegetation has been severely burned (greater than 75 percent mortality) in large patches (greater than 100 acres) to provide habitat while also considering the need for other resource objectives. Such resource objectives could include removal of hazard or salvage trees, reforestation to contribute to future forested conditions and carbon carrying capacity, and strategic fuel treatment, including management of fuels in and adjacent to community wildfire protection zones. *Exceptions: Does not apply to community buffers where there is no overlap with WHMA. Does not apply to CWPZ where there is no overlap the WHMA.* **Guideline (TERR-CES-GDL) 01** Post-disturbance restoration projects should be designed to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. **Guideline (TERR-CES-GDL) 02** Post-disturbance restoration projects should be designed to protect and restore important wildlife habitat. **Guideline (TERR-CES-GDL) 03** Post-disturbance restoration projects should be designed to manage the development of fuel profiles over time. **Guideline (TERR-CES-GDL) 04** Post-disturbance restoration projects should be designed to recover the value of timber killed or severely injured by the disturbance to support ecological restoration objectives. **Guideline (TERR-CES-GDL) 05** Large fires with more than 1,000 acres of contiguous blocks of high vegetation burn severity in forest vegetation types (ponderosa pine, Jeffery pine, dry or mesic mixed conifer, and red fir) should retain at least 10 percent of the high vegetation burn severity area without harvest to provide areas of complex early seral habitat. *Exceptions: Does not apply to community buffers where there is no overlap with WHMA. Does not apply to CWPZ where there is no overlap the WHMA.*

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Riparian/ Water Dependent: Bats**,** bald eagle, Kern red-winged blackbird, tricolored blackbird, willow flycatcher, foothill yellow-legged frog, salamanders, fish, butterflies, and aquatic invertebrates	Riparian and water ecosystems	Loss or degradation of habitat due to vegetation treatments, conifer encroachment , livestock grazing, water quality degradation, flow alterations, and channel modifications.	**Desired Condition (WTR-FW-DC) 01** Adequate quantity and timing of water flows support beneficial uses and ecological structure and functions, including aquatic species diversity and riparian vegetation. Watersheds are resilient to changes in air temperatures, snowpack, timing of runoff, and other effects of climate change. **Desired Condition (WTR-FW-DC) 02** Water quality supports State-designated beneficial uses of water. Water quality is sustained at a level that retains the biological, physical, and chemical integrity of aquatic systems and benefits the survival, growth, reproduction, and migration of native aquatic and riparian species. **Desired Condition (WTR-FW-DC) 03** Watersheds are fully functioning or trending toward fully functioning and resilient; recover from natural and human disturbances at a rate appropriate with the capability of the site; and have a high degree of hydrologic connectivity laterally across the floodplain and valley bottom and vertically between surface and subsurface flows. Physical (geomorphic, hydrologic) connectivity and associated natural processes (such as runoff, flooding, in-stream flow regime, erosion, and sedimentation) are maintained and restored. Watersheds provide important ecosystem services such as high-quality water, recharge of streams and shallow groundwater, and maintenance of riparian communities. Watersheds sustain long-term soil productivity. **Desired Condition (WTR-FW-DC) 04** Soil and vegetation functions in upland and riparian areas are sustained and resilient. Healthy soils provide the base for resilient landscapes and nutritive forage for browsing and grazing animals, and support timber production. Healthy upland and riparian areas support healthy fish and wildlife populations, enhance recreation opportunities, and maintain water quality. **Objective (WTR-FW-OBJ) 01** Maintain or restore watershed condition in at least three HUC-12 watersheds within 15 years of plan approval based on the watershed condition framework. At least one of these HUC-12 watersheds must be a priority watershed where restoration activities result in a shift to a higher condition class. At least two HUC-12 watersheds must be located within conservation watersheds. **Standard (WTR-FW-STD) 01** Use applicable best management practices and other soil management practices, as described in agency technical guides and handbooks, to minimize adverse impacts on soil and water resources during the planning and implementation of forest management activities. **Standard (WTR-FW-STD) 02** Restoration projects will not result in long-term degradation of aquatic and riparian conditions, including connectivity, at the watershed or subwatershed scale. Adverse effects from project activities are acceptable when they are short-term, site-scale, and support, or do not diminish, long-term recovery of aquatic and riparian resources. **Standard (WTR-FW-STD) 03** For exempt hydroelectric facilities on National Forest System lands, ensure that special use permit language provides adequate in-stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species. **Standard (WTR-FW-STD) 04** After restoration actions (including soil disturbance or seeding activities), limit subsequent soil-disturbing management activities until project objectives have been met. **Guideline (WTR-FW-GDL) 01** Cooperate with Federal, tribal, State, and local governments to secure in-stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat during all basic Federal Energy Regulatory Commission, state and other authorized water use planning, water rights, and relicensing on the national forest. Coordinate relicensing projects with the appropriate State and Federal agencies. Provide written and timely license conditions to the Federal Energy Regulatory Commission. **Goals (WTR-FW-GOAL) 01** Coordinate with Tribes; local, State, and Federal agencies; adjacent landowners; and other interested parties on watershed restoration across ownership boundaries. **Goals (WTR-FW-GOAL) 02** Take a landscape- or watershed-scale approach to restoring aquatic and riparian ecosystems so that they are resilient to climate change and other stressors. Employ partnerships and integrate restoration activities with recreation, range management, fuels, and vegetation management to efficiently use limited resources. **Desired Condition (WTR-RCA-DC) 01** The connections of floodplains, channels, and water tables distribute flood flows and sustain diverse habitats.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above.*	**Desired Condition SQF (WTR-RCA-DC) 02** Riparian conservation areas have ecological conditions that contribute to the recovery of threatened and endangered species and support persistence of species of conservation concern as well as native aquatic and riparian-dependent plant and animal species. **Desired Condition (WTR-RCA-DC) 03** The distribution and health of biotic communities in special aquatic habitats perpetuates their unique functions and biological diversity. **Desired Condition SNF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition (WTR-RCA-DC) 05** Riparian areas provide a range of substrates to sustain habitat for a variety of aquatic and terrestrial fauna within their natural capacity of the system. **Desired Condition (WTR-RCA-DC) 06** Soil structure and function is sustained to infiltrate and disperse water properly, withstand erosive forces, sustain favorable conditions of stream flow, and cycle nutrients. Associated water tables support riparian vegetation and restrict non-riparian vegetation. **Desired Condition (WTR-RCA-DC) 07** Key riparian processes and conditions (including slope stability and associated vegetation root strength, wood delivery to streams and floodplains, input of leaf and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality) operate consistently with local disturbance regimes. **Desired Condition (WTR-RCA-DC) 08** The condition of riparian vegetation, including riparian species composition, stand density, and fuel loading, is consistent with healthy riparian systems and reduces risks from high-intensity wildfire in the watershed. **Desired Condition (WTR-RCA-C) 09** Riparian areas in frequent fire landscapes (such as montane areas) have low- to moderate-severity fire restored as an ecological process. Fire effects occur in a mosaic and supports restoration of ecological integrity, including ecosystem function, composition, structure, and resilience. **Desired Condition (WTR-RCA-DC) 10** There are no new introductions of invasive species. **Desired Condition (WTR-RCA-DC) 11** Along all State-designated Wild and Heritage Trout waters, streamside vegetation provides stream shading and fish cover, based on capability of the site. **Desired Condition (WTR-RCA-DC) 12** Spatial and temporal connectivity for riparian- and aquatic-dependent species is maintained within and between watersheds. Connectivity provides physically, chemically and biologically unobstructed movement for species survival, migration, and reproduction. **Desired Condition (WTR-RCA-DC) 13** Native riparian vegetation is diverse, structurally complex, and provides food and cover to sustain fish and wildlife populations. **Objective (WTR-RCA-OBJ) 01** Restore the structure and composition of at least 400 acres in riparian areas within 15 years following plan approval, emphasizing riparian areas that face the most risk from large-scale high-intensity fire, past fire exclusion, or accelerated flooding events associated with climate change. **Standard (WTR-RCA-STD) 01** Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages. Exceptions may be authorized when necessary to comply with law and regulations. **Standard (WTR-RCA-STD) 02** Limit pesticide applications to cases where project-level analysis indicates pesticide applications are consistent with riparian conservation area desired conditions. **Standard (WTR-RCA-STD) 03** Prohibit long-term storage of fuels and other toxic materials, except at designated administrative sites and sites covered by special use authorization.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above*	**Standard (WTR-RCA-STD) 04** Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species, except where desired to protect native species. **Standard (WTR-RCA-STD) 05** All new or replaced permanent stream crossings must accommodate at least the 100-year flood, its bedload, and debris. Estimates for 100-year flood potential will reflect the best available science regarding potential effects of climate change, and species needs. **Standard (WTR-RCA-STD) 06** Locate water drafting sites to minimize adverse effects on instream flows and depletion of pool habitat. **Standard (WTR-RCA-STD) 07** Prevent disturbance to streambanks and shorelines of lakes and ponds caused by resource activities (such as livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of the stream reach, or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard may not be met within destination recreation management areas, and sites authorized under special use permits, but activities will be designed and managed to reduce the percent of impact to the extent feasible. **Standard (WTR-RCA-STD) 08** Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species from aquatic habitats, including juvenile fish, amphibian egg masses, and tadpoles. **Standard (WTR-RCA-STD) 09** Mitigate or prohibit ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining fen ecosystems and the plant species that depend on these ecosystems. **Standard (WTR-RCA-STD) 10** Assess the hydrologic function of riparian areas, meadows, fens, and other special aquatic features during rangeland management analysis. Ensure that characteristics of special features are, at a minimum, at proper functioning condition or functioning at-risk and trending toward proper functioning condition, as defined in appropriate technical report. If systems are functioning at-risk, ensure that grazing practices are not retarding rates of natural recovery and assess appropriate actions to move toward proper functioning condition. **Standard (WTR-RCA-STD) 11** Limit construction of new skid trails or temporary roads for access into riparian conservation areas unless it is the only feasible option to conduct restoration activities for improvement of riparian conservation areas. **Standard (WTR-RCA-STD) 12** Designate mechanical equipment exclusion zones within riparian conservation areas when designing projects. The default exclusion zone width is within 150 feet of perennial streams, meadows springs, and seeps; and 75 feet for intermittent streams. The width where mechanical equipment is limited can be adjusted in consideration of geomorphology, slope, soil conditions, and when needed to allow for ecological restoration activities. Temporary crossings can be authorized provided that the risk of short-term sedimentation and erosion are minimized through implementation of best management practices. **Guideline (WTR-RCA-GDL) 01** See also MA-CWPZ-STD 01. Hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features should be maintained and restored. Roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths should have corrective actions implemented where possible to restore connectivity. **Guideline (WTR-RCA-GDL) 02** Water quality or habitat for aquatic and riparian-dependent species should be maintained or restored. Roads, trails, off-highway vehicle trails, staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites that have been identified as contributing to degradation of water quality or habitat for aquatic and riparian-dependent species should have corrective actions implemented where possible. **Guideline (WTR-RCA-GDL) 03** When vegetation is treated in near-river or stream areas, coarse wood should be considered as an addition to the streams to enhance habitat, if applicable.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above*	**Guideline (WTR-RCA-GDL) 04** To reduce soil disturbance in riparian conservation areas, activities should use methods that limit soil disturbance to less than 20 percent of the riparian conservation area (such as low ground pressure equipment, helicopters, over-snow logging, extra ground cover requirements, or other non-ground disturbing actions) to achieve desired conditions consistent with best management practices and plan direction. **Guideline (WTR-RCA-GDL) 05** Post-wildfire management activities should emphasize and enhance native vegetation cover, stabilize channels, reduce erosion, and minimize adverse effects from the existing road network to protect the riparian systems. **Guideline (WTR-RCA-GDL) 06** To improve water quality or habitat for aquatic and riparian-dependent species, evaluate the impacts of facilities on riparian conservation areas when reissuing permits for livestock. If significant adverse impacts are found, existing livestock facilities should be relocated outside of wetlands and riparian areas or mitigated. **Guideline (WTR-RCA-GDL) 07** Wildfire control methods and activities that would impact the riparian conservation area (in particular dozer-built lines) should not be used unless alternative control methods are not effective, safe, or practical. **Guideline (WTR-RCA-GDL) 08** To protect ephemeral streams and adjacent soils from sedimentation and erosion, exclude mechanical equipment within 25 feet on either side of ephemeral stream channels by default. The width where mechanical equipment is limited can be adjusted in consideration of geomorphology, slope, soil conditions, and when needed to allow for ecological restoration activities. Temporary crossings can be authorized provided that the risks of short-term sedimentation and erosion are minimized through implementation of best management practices. **Guideline (WTR-RCA-GDL) 09** To protect water quality and spawning habitat, stream-modifying construction activities should be limited to low flow conditions. Exceptions may be authorized when necessary to comply with law and regulations. **Goal (WTR-RCA-GOAL) 01** Coordinate and collaborate with the State fish and wildlife agencies to address native aquatic species issues, including evaluating management and monitoring needs to address aquatic species requirements. **Goal (WTR-RCA-GOAL) 02** Where aquatic invasive species are adversely affecting the persistence of aquatic native species, work with the appropriate State and Federal wildlife agencies work to reduce impacts of aquatic invasive species to native populations. **Desired Condition (WTR-RCA-RIV-DC) 01** Stream ecosystems, riparian corridors, and associated stream courses sustain ecosystem structure; are resilient to natural disturbances (such as flooding) and climate change; promote the natural movement of water, sediment and woody debris; and provide habitat for native aquatic species or desirable nonnative species. **Desired Condition (WTR-RCA-RIV-DC) 02** Stream ecosystems, including ephemeral watercourses, exhibit full connectivity where feasible to maintain aquatic species diversity, except where barriers are maintained in good condition to protect native aquatic species. Ephemeral watercourses provide for dispersal, access to new habitats, perpetuation of genetic diversity, and nesting and foraging habitat for riparian and aquatic species. **Desired Condition (WTR-RCA-RIV-DC) 03** Instream flows are sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and retain patterns of sediment, nutrients, and wood routing as close as possible to those with which aquatic and riparian biota evolved. The physical structure and condition of streambanks and shorelines minimize erosion and sustain desired habitat diversity. **Desired Condition (WTR-RCA-RIV-DC) 04** Streams and rivers maintain seasonal water flow over time, including periodic flooding, which promotes natural movement of water, sediment, nutrients, and woody debris. Flooding creates a mix of stream substrates for fish habitat, including clean gravels for fish spawning, large wood structures, and sites for riparian vegetation to germinate and establish. **Desired Condition (WTR-RCA-RIV-DC) 05** Stream channel conditions exhibit a sediment regime under which aquatic and riparian ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport. The sediment regime should be similar to the natural distribution of reference conditions. **Desired Condition (WTR-RCA-RIV-DC) 06** Within rivers and streams, the level of coarse large woody debris is within the natural range of variation. **Objective (WTR-RCA-RIV-OBJ) 01** Enhance or restore the structure, composition, or function of habitat for fisheries and other aquatic species along at least 5 stream miles over a 15-year period. **Objective (WTR-RCA-RIV-OBJ) 02** Eliminate or mitigate at least one priority barrier to aquatic organism passage or ecological connectivity within 15 years following plan approval.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above*	**Desired Condition (MA-WHMA-DC) 03** The wildlife habitat management area complements aquatic and riparian areas and wilderness areas to provide habitat connectivity. **Standard (RANG-FW-STD) 01** Manage livestock grazing to attain desired conditions in blue oak-interior live oak woodlands, annual grasslands, aspen, special habitats, great gray owl protected activity areas, occupied willow flycatcher habitat, occupied Yosemite toad habitat, and riparian conservation areas. Where livestock grazing is found to prevent or retard attainment of desired conditions, modify grazing practices (such as number of livestock, timing, scheduled rest, and range structures). If adjusting practices is not effective, remove livestock from the area using appropriate administrative authorities and procedures. **Standard (RANG-FW-STD) 02** Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are at a minimum proper functioning condition or functioning at-risk with an upward trend, as defined in the appropriate technical reports. **Standard (RANG-FW-STD) 03** If meadow ecological status is determined to be moving in a downward trend due to grazing, modify or suspend grazing. Management of meadows that are in low ecological status or not in proper functioning condition and have active erosion will be modified to achieve or show substantial progress toward meeting mid- or late-seral status and proper functioning condition within 5 years.
Seeps/ Springs Dependent: Bats, foothill yellow-legged frog, salamanders, butterflies, and an isopod.	Slow moving water, Cold spring water sources with perennial flow	Loss and degradation including reduced water levels and quality.	**Desired Condition (WTR-RCA-SPR-DC) 01** Springs provide sufficient water to maintain healthy habitats for native riparian and aquatic species. **Desired Condition (WTR-RCA-SPR-DC) 02** Springs are resilient to natural disturbances, groundwater diversions, and changing climate conditions. Springs function across the landscape within their type and water availability. **Desired Condition (WTR-RCA-SPR-DC) 03** Springs and associated streams and wetlands have the necessary soil, water, and vegetation attributes to be healthy and functioning at or near potential. Water flow is similar to historic levels and persists over time, within constraints of climate change. **Goal (RANG-FW-GOAL) 02** Work with stakeholders ensures livestock grazing management strategies minimize negative effects on the structure and function of vegetation and aquatic and riparian ecosystems, especially for small-scale special aquatic features such as fens and springs, as well as habitat and refugia for at-risk species.
Open Water Dependent: Golden trout, central valley hitch, Kern River rainbow trout, Kern Brook lamprey, bald eagle, and Western pearlshell	Large bodies of water (lakes or reservoirs) or free flowing large rivers with adjacent large live trees or snags.	Loss or degradation of habitat from lowered water table, changes in water quality, and barriers to movement.	**Desired Condition (WTR-RCA-LPP-DC)** 01 Lakes and ponds retain necessary attributes, such as adequate vegetation and large woody debris to function properly and support native biotic communities. Attributes include floodwater retention and groundwater recharge, stabilized islands and shoreline features, and diverse characteristics to provide for amphibian production, waterfowl breeding, and biodiversity. **Goal (SPEC-GT-GOAL) 01** Continue to coordinate and collaborate with California Department of Fish and Wildlife to implement and renew the California Golden Trout Conservation Assessment and Strategy.
Wet/Riparian Meadow Dependent: Bats, Sierra marten, Kern red-winged blackbird, tricolored	Dense thickets of shrubby vegetation, structural heterogeneity, perennial water source. Perennially wet	Loss and degradation including reduced water levels and quality, conifer encroachment	**Desired Condition (WTR-RCA-MEAD-DC) 01** Meadows are hydrologically functional. Sites of accelerated erosion, such as gullies and head cuts are stabilized, recovering, or within the natural range of variation. Vegetation roots occur throughout the available soil profile. Meadows with perennial and intermittent streams have the following characteristics: (1) stream energy from high flows is dissipated, reducing erosion and improving water quality; (2) streams transport sediment and capture bedload, aiding floodplain development; (3) meadow conditions enhance floodwater retention and groundwater recharge; and (4) root masses stabilize streambanks against cutting action. **Desired Condition (WTR-RCA-MEAD-DC) 02** Wetlands and groundwater-dependent ecosystems (including springs, seeps, fens, wet meadows, and associated wetlands or riparian systems) support stable herbaceous and woody vegetation communities that are

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
blackbird, northern goshawk, great gray owl, willow flycatcher, foothill yellow-legged frog, salamanders, butterflies, and aquatic invertebrates.	marshes and wet meadows near springs, seeps and riparian areas where host plant species may occur.	, invasive species.	resilient to drought, climate change, and other stressors. Root masses stabilize stream channels, shorelines, and soil surfaces. The natural hydrologic, hydraulic, and geomorphic processes in these ecosystems sustain their unique functions and biological diversity. **Desired Condition (WTR-RCA-MEAD-DC) 03** Meadows are resilient and recover rapidly from natural and human disturbances. They exhibit a high degree of hydrologic connectivity laterally across the floodplain and vertically between surface and subsurface flows. They provide important ecosystem services such as high-quality water, recharge of streams and aquifers, and moderation of climate variability and change. **Desired Condition (WTR-RCA-MEAD-DC) 04** Soils in wet and headwater meadows are influenced by a shallow water table and function to filter water. These soils also store and release water over an extended period of time, which helps to maintain streamflow during dry summer months. **Desired Condition (WTR-RCA-MEAD-DC) 05** Meadows have substantive ground cover and a rich and diverse species composition, especially of grasses and forbs. Meadows have high plant functional diversity with multiple successional functional types represented. Perennial streams in meadows contain a diversity of age classes of shrubs along the streambank, where the potential exists for these plants. **Desired Condition (WTR-RCA-MEAD-DC) 06** A complexity of meadow habitat types and successional patterns support native plant and animal communities. Meadow species composition is predominantly native, where graminoid (grass-like) species are well represented and vigorous, and regeneration occurs naturally. Healthy stands of willow, alder, and aspen are present within and adjacent to meadows with suitable physical conditions for these species. Natural disturbances and management activities are sufficient to maintain desired vegetation structure, species diversity, and nutrient cycling. **Desired Condition (WTR-RCA-MEAD-DC) 07** Meadows in montane and upper montane areas have low- to moderate-severity fire restored as an ecological process, especially on meadow edges, limiting conifer encroachment, and enhancing native understory plant composition and cover. **Desired Condition (WTR-RCA-MEAD-DC) 08** Fen condition is within the natural range of variation. Fens are resilient with continual peat accumulation and carbon sequestration. The hydrologic regime, and vegetation, soil, and water characteristics sustain the fen's ability to support unique physical and biological attributes. **Objective (WTR-RCA-MEAD-OBJ) 01** Enhance or improve conditions on at least five meadows of any size, within 15 years following plan approval. **Desired Condition (RANG-FW-DC) 03** Manage rangelands to maintain or restore hydrologic function and soil productivity of watersheds. Livestock grazing is managed to accommodate the maintenance or restoration of aquatic and riparian processes and functions.
Same as above.	*Same as above.*	*Same as above.*	**Standard (RANG-FW-STD) 01** Manage livestock grazing to attain desired conditions in blue oak-interior live oak woodlands, annual grasslands, aspen, special habitats, great gray owl protected activity areas, occupied willow flycatcher habitat, and riparian conservation areas. Where livestock grazing is found to prevent or retard attainment of desired conditions, modify grazing practices (such as number of livestock, timing, scheduled rest, and range structures). If adjusting practices is not effective, remove livestock from the area using appropriate administrative authorities and procedures. **Standard (RANG-FW-STD) 02** Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are at a minimum proper functioning condition or functioning at-risk with an upward trend, as defined in the appropriate technical reports. **Guideline (RANG-FW-GDL) 09** Within riparian conservation areas that are properly functioning or functional at-risk with an upward trend: a) Limit annual disturbance to streambanks and shorelines of natural lakes and ponds, caused by trampling and trailing, from exceeding 20 percent of stream reach, or natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. b) Ensure that grazing practices are not retarding the rate of natural recovery in riparian conservation areas.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Dry/Non-riparian Meadow Dependent: Sierra marten, great gray owl, California spotted owl, and Mount Pinos sooty grouse.	Native plant composition. Dry meadows, clearings or openings where host plant species may occur.	Invasive plants, conifer/ woodland encroachment unmanaged grazing.	**Desired Condition (RANG-FW-DC) 02** Livestock grazing is managed to meet or move toward the desired vegetation condition represented by diverse plant functional groups, species richness and diversity, and structure and condition of plant communities. **Desired Condition (RANG-FW-DC) 05** Annual grasslands that are grazed have livestock management strategies that encourage retention and recruitment of native plants, encourage retention of desirable exotic plants, and discourage or suppress undesirable and invasive exotic plants. These livestock management strategies are adaptable to rapidly changing conditions in forage quality or production. **Standard (RANG-FW-STD) 03** If meadow ecological status is determined to be moving in a downward trend due to grazing, modify or suspend grazing. Management of meadows that are in low ecological status or not in proper functioning condition and have active erosion will be modified to achieve or show substantial progress toward meeting mid- or late seral status and proper functioning condition within 5 years**.**
Disturbance Intolerant: Townsend's big-eared bat, fringed myotis, nesting raptors, Mount Pinos sooty grouse, denning Sierra marten, limestone salamander, relictual slender salamander, Indian Yosemite snail, and Merced Canyon shoulderband.	Breeding, roosting, hibernacula, and denning habitat. Movement and forage habitat.	Human-caused disturbance, displacement, and direct mortality.	**Guideline (SPEC-FW-GDL) 01** Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for at-risk species where they occur to minimize impacts to ecological conditions that provide for the persistence of at-risk species **Desired Condition (REC-FW-DC) 09** Dispersed recreation occurs in areas outside of high visitation, developed facilities, or communities, and does not adversely impact natural or cultural resources. **Desired Condition (REC-FW-DC) 10** Permitted recreation uses, such as recreation special events or guided activities, protect natural and cultural resources, and contribute to the economic sustainability of local communities. **Guideline (REC-FW-GDL) 01** Avoid locating new recreation facilities within environmentally and culturally sensitive areas, such as at-risk species breeding habitat or at-risk plant species habitat. If avoidance is not possible, design facilities to maximize ecological sustainability, minimize impacts, and mitigate unavoidable impacts, in that order. **Guideline (REC-FW-GDL) 03** Use integrated resource planning when designing projects to address impacts on culturally sensitive areas and at-risk species habitat, and to manage recreation opportunities. **Goal (REC-FW-GOAL) 02** Manage dispersed recreation activities when evidence of impacts on natural resources emerge or are causing damage. **Goal (SPEC-FW-GOAL) 04** Coordinate with State and Federal agencies and other partners to provide education materials and best management practices information for the public and permittees to limit the potential spread of disease to caves and mines used by bats. **Desired Condition SQF (MA-SFW-DC) 03** Recreation activities are managed to minimize effects on at-risk wildlife. (South Fork Wildlife Area: Sequoia) **Desired Condition (MA-DRA-DC) 07** Interpretation and education activities provide learning opportunities to visitors about the natural and cultural environment and responsible visitor behavior. **Desired Condition (MA-CBRA-DC) 02** These areas contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors. These areas provide a diversity of terrestrial and aquatic habitats, and support species dependent on large, undisturbed areas of land. **Standard (MA-CBRA-STD) 03** Any new recreation development must be the minimum necessary to accommodate the activity and protect natural resources.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Special habitats and limited distributions: Salamanders, butterflies, and snails.	Special habitats and critical microsite conditions	Population collapse from localized large-scale events. Loss of microsite conditions or host plants. Inability to disperse due to habitat fragmentation.	**Desired Condition (TERR-SH-DC) 01** The integrity of special habitats is maintained or improved from current conditions. Composition, diversity, and structure of unique plant assemblages are maintained in all areas, including those with multiple-use activities. **Desired Condition (TERR-SH-DC) 02** Microclimate or smaller scale habitat elements provide habitat and refugia for species with a specific geographic or restricted distribution. **Desired Condition (TERR-SH-DC) 03** Conditions remain suitable for long-term sustainability of the suite of native plants adapted to special habitats and their associated symbiotic associations, such as insect pollinators. **Standard (TERR-SH-STD) 01** At the project scale, evaluate and incorporate maintenance and enhancement needs for special habitats into project design and implementation. **Guideline (FIRE-FW-GDL) 05** During wildfires, avoid fire management activities in special habitats and along the Pacific Crest National Scenic Trail (PCT), except when necessary to protect life or property. This includes activities such as line construction, staging areas, safety zones, water drafting, and camps. When conducting fire management activities near special habitats or along the PCT, take extra measures to avoid spread of invasive plants and minimize impacts on the PCT tread. **Desired Condition (SPEC-FW-DC) 01** Persistent populations of native, and desirable nonnative, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the national forest. These ecosystems are also resilient to uncharacteristic fire, climate change, and other stressors, and this resilience supports the long-term sustainability of plant and animal communities. **Desired Condition (SPEC-FW-DC) 03** The structure and function of the vegetation, aquatic, and riparian system, and associated microclimate and smaller scale elements of special habitats (like carbonate rock outcrops) exist in adequate quantities within the capability of the plan area to provide habitat and refugia for at-risk species with restricted distributions.
Susceptible to Invasive Species: All	**All habitats susceptible to invasive species**	Invasive species competition	**Desired Condition (INV-FW-DC) 01** Terrestrial and aquatic invasive species are controlled or eradicated when possible, and establishment of new populations is prevented. **Desired Condition (INV-FW-DC) 02** The area affected by invasive species and introduction of new invasive species is minimized. **Objective SNF (INV-FW-OBJ) 01** Within 15 years of plan approval, take action to control nonnative invasive plant species on at least 300 acres. **Objective SQF (INV-FW-OBJ) 01** Within 15 years of plan approval, take action to control nonnative invasive plant species on at least 800 acres. **Standard (INV-FW-STD) 01** When working in waterbodies with known aquatic invasive species, clean equipment and vehicles before moving to other waterbodies, or follow procedures described in a Forest Service-approved invasive species management plan. **Standard (INV-FW-STD) 02** Hay, straw, and other crop-related forage or mulch products used for animal feed or bedding, soil stabilization land rehabilitation, or other purposes must be certified by California or Nevada and/or to the North American Invasive Species Management Association standards as being weed-free to prevent unintentional introduction of invasive species. If certified weed-free products are not available, a local botanist will advise regarding sourcing of materials as well as approve materials prior to use. **Standard (INV-FW-STD) 03** Use an integrated pest management approach in the planning and implementation of all projects and activities. **Standard (INV-FW-STD) 04** When entering or exiting project sites, wash heavy equipment to prevent the spread of invasive species. **Guideline (INV-FW-GDL) 01** Projects should be designed to minimize invasive species spread by incorporating prevention and control measures into ongoing management or maintenance activities that involve ground disturbance, terrestrial or aquatic habitat alteration, or the possibility of spreading invasive species. When feasible, projects should include measures to use invasive species-free gravel, fill, and topsoil; and include follow-up inspections as needed and specified in regional or national strategies. **Guideline (INV-FW-GDL) 02** To the extent feasible, plant and seed materials used for revegetation, restoration, and rehabilitation projects should be native, genetically appropriate to the site, disease free, and capable of becoming established to restore natural species composition and ecosystem function.

Species or Species Group	Key Ecological Conditions at Risk	Key Threats	Key Plan Components
Same as above.	*Same as above.*	*Same as above.*	**Guideline (INV-FW-GDL) 03** Weed control and prevention measures should be included as necessary when issuing, amending or reissuing permits, including but not limited to livestock grazing, special uses, and pack stock operator permits. **Guideline (INV-FW-GDL) 04** Vegetation management projects on lands outside of wilderness should include measures to minimize the risk of introducing nonnative invasive species into wilderness. **Goal (INV-FW-GOAL) 01** Coordinate and cooperate with local, State and Federal agencies and tribes to manage and control invasive and nonnative species. **Goal (INV-FW-GOAL) 02** Work with tribes to determine priority areas for weed prevention and control, especially focused on traditional gathering areas that are threatened by weed infestations. Consult with tribes before using pesticides or herbicides that may affect traditional gathering. **Goal (INV-FW-GOAL) 03** Coordinate with research and other organizations to evaluate the potential effects of climate change on the spread of invasive and nonnative species. **Guideline (FIRE-FW-GDL) 06** When conducting fire management activities, take appropriate measures to prevent the spread of invasive species. **Desired Condition (WTR-RCA-DC) 10** There are no new introductions of invasive species. **Goal (WTR-RCA-GOAL) 02** Where aquatic invasive species are adversely affecting the persistence of aquatic native species, work with the appropriate State and Federal wildlife agencies work to reduce impacts of aquatic invasive species to native populations.

Individual Determinations—Animal Species of Conservation Concern

Background

Individual evaluations summarize the key ecological conditions and risk factors for each species, current distribution in the plan areas, and the plan components that mitigate those risk factors, provide for persistence, and contribute to maintaining a viable population within the plan areas. Species-specific plan components were added to supplement ecosystem-level components (Table D-4) to provide additional clarity and emphasis. In a few cases, species-specific plan components are essential to species persistence and long-term viability in the plan areas.

Information on species distribution, ecological conditions, and threats is largely excerpted from the documents "Rationales for Animal Species Considered for Species of Conservation Concern, Sequoia National Forest (USDA Forest Service 2022a); and "Rationales for Animal Species Considered for Species of Conservation Concern, Sierra National Forest (USDA Forest Service 2022b); additional information on each species of conservation concern, the associated selection process, and full references for best available science can be found in those documents and will not be repeated here.

Mammals

Fringed Myotis – Sequoia/Sierra

Determination: It is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the fringed myotis in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: A variety of roosting structures, most often associated with rock crevices, conifer snags, abandoned mines, caves and buildings (O'Farrell and Studier 1980, Cryan et al. 2001, Baker 1962). In forests, they are reliant on snag habitat for roosts.

Table D-5. Key threats, plan components and expected effects on fringed myotis

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of natural roost sites	(***Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Large Tree and Snag Dependent***) **Guideline (TERR-FW-GDL) 02** To retain essential habitat elements required for nesting, roosting, and denning by wildlife including fisher, California spotted owl, cavity-nesting birds, tree-dwelling bats and other small mammals, mechanical vegetation treatments within forested habitats should maintain and promote large and structurally complex trees, snags, and downed logs distributed widely on the landscape and consistent with forest type desired conditions, especially where they occur in clumps and along forest edges. *Exceptions: Does not apply in community buffers.*	Ecosystem-level plan components provide for key structural features such as snags needed for roosting. Fire is maintained as a natural process on the landscape and promotes ecosystem resilience.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of hibernacula habitat: mines and caves	**N/A**	Previous and ongoing mine reclamation practices would safeguard potential roost habitat is not lost by utilizing bat-friendly gates and entrances are not sealed.
Recreational caving and other human disturbance	(***Refer to Table D-4 Crosswalk for Disturbance Intolerant***)	Ecosystem-level plan components would protect sensitive habitats, including caves and mines, and manage recreation opportunities to limit disturbance to sensitive species such as fringed myotis. To ensure bat hibernacula and maternity roosts are protected, the Responsible officials intend to install bat gates or issue closures to restrict access and therefore, reducing potential for human disturbance.
Loss of anthropogenic roost sites	**N/A**	Removal or exclusion from anthropogenic roost sites occurs in urban areas and results from modification of buildings, human disturbance, or extermination or exclusion for human health and safety. No known anthropogenic roosts occur within the plan areas therefore it is outside the authority of forest management activities.
White-nose syndrome	**Desired Condition (SPEC-BAT-DC) 01** Caves and cave-like habitats provide the ecological conditions to support at-risk bat populations and are free from human-introduced diseases. **Goal (SPEC-FW-GOAL) 04** Coordinate with State and Federal agencies and other partners to provide education materials and best management practices information for the public and permittees to limit the potential spread of disease to caves and mines used by bats.	White-nose syndrome is a potential future threat that may or may not affect fringed myotis if the disease were to spread to California. More study is needed. Regardless of the level of impact the best method to ensure white-nose syndrome does not become a threat is prevention of contamination and spread into potential habitats. Several general plan components including SPEC-FW-GOAL 04 focus on education of environmental issues and best management practices for the public to prevent the spread of disease. SPEC-BAT-DC 01 directly addresses concerns for human-introduced diseases, such as white-nose syndrome.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events*)**	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Loss of natural roost sites such as snags, loss of hibernacula habitat such as caves and mines, loss of anthropogenic roosts, climate change, white-nose syndrome, and recreational caving or other human disturbance to roosts sites pose threats to fringed myotis persistence.

Threats under Forest Service Control

- Loss of natural roost sites through the removal of conifer and hardwood snags

- Loss of hibernacula habitat through improper closure of abandoned mines or caves
- Recreational caving and other human disturbance

Fringed myotis appears to be highly dependent on tree roosts within forest and woodland habitats. In some forested settings, this species appears to rely heavily on tree cavities and crevices as roost sites (Weller 2005), and may be threatened by certain timber harvest practices.

Forest habitat is at-risk from stand replacing fire and bark beetle outbreaks (Bentz et al. 2010, Hicke et al. 2006). Because of fringed myotis' limited occurrence on the forest, and because an entire maternal colony could be concentrated in one snag or large tree, removal or loss of even one snag could have an adverse effect on the local breeding population. Removal or loss of large snags and trees with cavities greater than or equal to 58 cm (23 inch) diameter at breast height (dbh) during timber harvest or fire may result in a reduction of roost site availability on National Forest System lands (Pierson et al. 2016). Like most forest dwelling bat species, fringed-myotis are documented to mainly use snags as roosting structures in forested habitat (Weller and Zabel 2001). Retention and recruitment of snags in number, size, configuration, and decay throughout the plan areas is considered a limiting factor based on the short-lived nature of these structures and the potential for loss during harvest operations and fires. However, the Sequoia National Forest has been experiencing extreme drought and insect related tree deaths. This is expected to continue and can increase the number and availability of snags important for bat roosting.

In addition to fire suppression practices, management activities influence post-fire vegetation characteristics and landscape composition in managed forests. These activities include salvage logging, mechanical treatments, and planting conifer species that are favored by forestry. As a result, management activities may have influences on post-fire conditions, both locally and across landscapes, for avian and bat species (Burnett et al. 2012, Campos and Burnett 2015, Campos et al. 2017).

Caves and mines are numerous across the Sequoia and Sierra Forests. Management activities would not substantially affect cliff, cave, or cave-like structures. These potential bat habitats are stable and increasing due to retiring of mines. Disturbance from active mining operations and recreation may pose a risk factor at maternity or roosting sites, but these were not identified as specific threats to fringed myotis on the Sierra or Sequoia National Forest. Potential management approaches include restricting access to caves and mines utilizing bat-friendly gates or other means to alleviate disturbance at hibernacula sites and preventing the contamination of caves and mines from diseases.

Threats Not Under Forest Service Control

- Loss of anthropogenic roost sites
- White-nose syndrome
- Habitat loss or degradation due to climate change, widespread tree mortality, or other stochastic events

Removal or exclusion from anthropogenic roost sites such as buildings is most prevalent in urban areas and results from restoration of historic structures, human disturbance, or extermination/exclusion for human health and safety reasons. Loss of roost sites in urban environments is not considered a limiting factor within the plan areas.

One of the greatest threats to North American myotis species is white-nose syndrome. White-nose syndrome is caused by a fungus that persists in cold cave environments and afflicts hibernating bats. White-nose syndrome is a potential future threat that has not yet been detected in California, but has recently been documented in Washington State (Sleeman 2016). Fringed myotis are not known to be affected by white-nose syndrome; however, white-nose syndrome has devastated other related myotis populations in eastern United States. Fringed myotis use of mines and caves for hibernacula makes them

susceptible to the disease if it were to become established in the plan area and may cause devastating impacts on this already declining species.

In 2019, the fungus that causes white-nose syndrome was detected at low levels in California for the first time. Fungal DNA of *Pseudogymnoascus destructans* was detected in samples collected in spring 2019 from bats on private land in the Plumas County town of Chester. While there is currently no indication the disease itself is affecting bat populations in California, the presence of the fungus in California poses a potential threat to myotis species (California Department of Fish and Wildlife 2019).

According to the National Report on Sustainable Forests (USDA Forest Service 2004a), there is a high possibility of increased frequency of large and severe wildfires. Large and severe wildfires and insect and disease outbreaks could decrease old forest and habitat connectivity, but increase the number of snags and potential bat roosting habitat. Several studies of species abundance in differing burn severity habitats show fire disturbances influence avian and bat diversity and species distribution. Fire suppression, fire severity, and scale of fire contribute to avian and bat species composition.

Some bird and bats in the Sierra Nevada region are resilient to mixed severity fire at the landscape scale; some species, such as those associated with open foraging behavior or cavities, preferentially select burned areas (Blakey et al. 2019, Buchalski et al. 2013, Campos and Burnett 2015, 2016). This makes wildfire important for species diversity. However, longer term effects of wildfire outside the normal range of variation may be less beneficial resulting in a net loss in roosting habitat due to snags falling over time, lack of replacement of trees into larger size classes, and large and severe wildfires completely removing entire tree stands.

Sequoia – Fringed Myotis

Information on Current Distribution of the Species in the Sequoia Planning Unit
Population size is unknown; however, they are thought to be widely distributed but rare everywhere they are found. The limited data available suggests serious population declines. Many historically occupied sites are no longer used for a variety of reasons including human disturbance, modification of surrounding habitat, and exclusion from sites for health and safety reasons (Pierson et al. 2016).

In California, the species is found throughout the state, from the coast to more than 5,900 feet in elevation in the Sierra Nevada Mountains. Museum records document only six maternity sites: two in Kern County, and one each in Marin, Napa, Tuolumne, and Tulare counties. Investigation of four of these sites since 1990 has shown that while the roosts are still available this species is no longer present at any of these sites (Pierson et al. 2016).

The CNDDB has recorded occurrences of the fringed myotis on the southern part of Sequoia National Forest and at Case Mountain near Sequoia National Park (California Department of Fish and Wildlife CNDDB 2017). The entire Sequoia National Forest is within the mapped California Wildlife Habitat Relationship (CWHR) range for this species (Szewczak and Pierson 1997). According to the CNDDB, fringed myotis have been recorded at Miracle and Democrat Hot Springs in Kern County. One male was collected in 1998 and a post-lactating adult was captured and released in 1992 (at a mine), both on the Kern River Ranger District. One male was collected in 1999 south of Delonegha Hot springs, along highway 178 and the Kern River (Kern River Ranger District). There are no occurrence records of fringed myotis in the NRIS database, however, there have been very few bat surveys conducted on the forest in recent years.

Key Ecological Conditions in Sequoia Plan Area
Large trees and snags and abandoned mines and caves provide critical roosting habitat and hibernacula. Snags documented to be used by fringed myotis for roosting in California are the tallest or second tallest

pine or fir snag, have loose or sloughing bark, are greater than 58 cm dbh (23 inches), and are often in groups of 5 (Weller and Zabel 2001). They have also been documented to use giant sequoia basal hollows as maternity roosts in Yosemite's Merced Grove (Pierson et al. 2016). Fringed myotis forage along streams and meadows.

There are 36 active mining claims on the Sequoia National Forest; 35 are located on the Kern River Ranger District and 1 active mining claim on the Western Divide Ranger District (USDI Bureau of Land Management 2013).

The Sequoia National Forest and Giant Sequoia National Monument has 255 known abandoned mines which were surveyed from 1993 to 1998 (Bureau of Land Management Mining Claim Geographic Index Report 2009 as summarized in a spreadsheet by Donna Duncan Kern River Ranger District Sequoia National Forest/Giant Sequoia National Monument).

Large snags and trees can be found throughout the Sequoia National Forest in mixtures of ponderosa pine or Jeffrey pine, sugar pine, incense cedar, and white fir dominate, with some red fir at higher elevations.

Sequoia Summary
Range-wide population trends are unknown for fringed myotis, but likely declining with many historically occupied sites no longer used. On the Sequoia National Forest there are no known maternity sites though suitable habitat does occur. Due to the colonial maternity roosting behavior the loss of even one maternity site could significantly impact local populations. Widespread forest mortality and the loss of snags due to wildfire, disease, climate change, and insect outbreaks may put fringed myotis at-risk to persistence in the planning area. In addition, the future threat of white-nose syndrome could have a devasting effect on this myotis species if the fungus were to spread throughout California.

The Forest Service's ability to directly control these threats and the lack of knowledge of existing viable populations in the Sequoia planning area makes it not within the inherent capability of the Forest Service to maintain a viable population of the fringed myotis. However, forest plan components for terrestrial ecosystems and vegetation, conservation of watersheds, sustainable recreation, and species direction should maintain or restore ecological conditions in the plan area to contribute to maintaining a viable population of the species within its range. In addition, potential management approaches to "consider installing bat gates at the entrances of caves and mines or restricting access by other means to protect known bat hibernacula or maternity colonies that may be adversely affected by recreational, management, or other activities" would advise the responsible officials to achieve proper mine and cave management and alleviate human disturbance.

Sierra – Fringed Myotis

Information on Current Distribution of the Species in the Sierra Planning Unit
Like Sequoia National Forest, population size is unknown and fringed myotis are thought to be widely distributed but rare everywhere they are found (Pierson et al. 2016).

According to the NRIS database there are 30 observations of fringed myotis on the Sierra National Forest, all recorded in the last ten years. Surveys across the Sierra National Forest have detected fringed myotis at several sites including Huntington Lake, Markwood Meadow, Buck Meadow and the Sweetwater Mine. NRIS records show that six fringed myotis bats have been captured in mist-netting surveys on the forest.

Key Ecological Conditions in Plan Area
Large trees and snags that are greater than 58 cm dbh (23 inches) and abandoned mines and caves provide critical roosting habitat and hibernacula.

The forest assessment for the Sierra National Forest, notes that the number of large trees and snags are low and highly variable across all forest types. In all conifer types, there is less than 5 large (less than 30 inch diameter) trees per acre. In addition, large trees are not evenly distributed; large tree densities are typically less than one to two trees per acre. Most areas have a few large trees per acre and some patches, often previously disturbed (timber harvest or wildfire), have none. Large snags show similar patterns to large trees, but with lower densities and higher variation. Calculations of snags greater than 15 inches diameter show the range is from 1 to 4 snags per acre in conifer forests.

Gold mining on the northern part of the Sierra National Forest has a long history that continues today with many small operators who are strongly influenced by current high gold prices. There are 491 inventoried Abandoned Mine Lands on the Sierra National Forest. Approximately, 71 abandoned mine land sites are located within designated wilderness. There are approximately 49 underground mines, 61 surface operations, 30 placer mining operations, 28 surface-underground operations, and 3 wells located within the Sierra National Forest. Three hundred twenty of the inventoried sites have unknown operation types. Mine sites have been assessed since 1985 and restoration operations are ongoing. Several of these mines have adits or shafts that have been closed with bat gates and require periodic review of the condition of the gates to ensure they are still functional or need maintenance. As of 2017, bat gates have been placed in five abandoned mine sites.

The 338-acre Kings Cavern Geological Area includes three major cave systems with at least 16 entrances and up to 2,000 feet of passageways. This is the most extensive and well-preserved cavern on the Sierra National Forest. Access is limited and distanced from population centers reducing human-caused disturbance and promotes preservation of the cave features.

The Kaiser Wilderness has several small caves that vary from 33 feet to 860 feet in length. Field reconnaissance has discovered at least three different cave systems in the Kaiser Wilderness. These caves are all located in sinkholes at the bottom of drainages. Four of these caves are eligible for nomination as significant caves because of unique characteristics in geologic, hydrological and recreational features. Biological and cultural features have not been thoroughly conducted. The location of these caves is considered sensitive information under the Federal Cave Resources Protection Act of 1988. These caves are likely subject to frequent exploration and potential damage. Biological surveys are ongoing and evidence of bat use has been observed at a number of the caves.

Sierra Summary

Similar to Sequoia National Forest, on the Sierra National Forest there are no known maternity sites though suitable habitat does occur and primary threats fall outside the Forest Service's control. In addition, the future threat of white-nose syndrome could have a devastating effect on this myotis species if the fungus were to spread throughout California. The inability to directly control primary threats and the lack of knowledge of existing viable populations within the Sierra planning area makes it not within the inherent capability of the Forest Service to maintain a viable population of the fringed myotis. However, forest management activities in the form of goals and standards for terrestrial ecosystems and vegetation, conservation of watersheds, sustainable recreation, and animals and plant species should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

In addition, potential management approaches to "consider installing bat gates at the entrances of caves and mines or restricting access by other means to protect known bat hibernacula or maternity colonies that may be adversely affected by recreational, management, or other activities" would advise the Responsible Officials to achieve proper mine and cave management and alleviate human disturbance.

Sierra Marten – Sequoia/Sierra

Sequoia Determination: It is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Sierra marten in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the Sierra marten in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

General Key Ecological Conditions: Mature coniferous forest, typically more moist than dry, with supporting features such as large-diameter trees and snags, multi-layered canopies, large down wood, moderate to high canopy closure (more than 30 percent) and structurally diverse and complex understory that is interspersed with riparian areas and meadows. Core patch size and spatial connectivity of patches is also important.

Key Threats to Persistence

Loss and fragmentation of mature forest habitat from multiple sources including timber harvest, vegetation management, extensive tree mortality, climate change, and wildfire. Recreational activities and roads (with vehicle strikes), poisoning from toxins from marijuana plantations and predation also are threats to martens.

Threats Under Forest Service Control

- Loss of habitat or connectivity due to management activities such as fuels reduction treatments and timber harvest
- Human disturbance and vehicle strikes from recreation activities
- Predation

Marten appear to be very sensitive to removal of key resting and breeding habitat features from their home ranges(Zielinski 2014). Moriarty, Zielinski, and Forsman (2011) provide compelling evidence for a decline in the marten population on the Sagehen Experimental Forest affected by the loss and fragmentation of habitat associated with decades-long timber harvest that consisted of clearcut, shelterwood and salvage sales. This study documented a substantial decline in the number of martens detected. Key factors contributing to decline in marten numbers on the Sagehen site included decreases in habitat patch size, acres of core habitat area, and total marten habitat acres, and an increase in the distance between habitat patches (Moriarty et al. 2011). Loss and fragmentation of suitable habitat composed of large-diameter live and dead or dying trees reduces the availability of resting and denning sites for marten (Moriarty et al. 2011).

Table D-6. Key threats, plan components and expected effects on Sierra marten

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of habitat or connectivity due to management activities such as fuels reduction, vegetation treatments, timber harvest and recreation use.	***(Refer to Table D-4 Crosswalk for Forest Dependent, Large Tree/ Snag Dependent, Old forest dependent, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Complex Early Seral Habitat Dependent)*** ***Where overlap occurs, see also relevant plan content in Wildlife Habitat Management Area (WHMA) as well as plan content developed for fisher (SPEC-FSHR) and California spotted owl (SPEC-CSO)*** **Desired Condition (SPEC-SM-DC) 01** Risk of large high-severity fire is reduced from current conditions in marten habitat core areas. **Desired Condition (SPEC-SM-DC) 02** Within marten core habitat, vegetation is trending toward desired conditions for terrestrial and riparian vegetation. **Desired Condition (SPEC-SM-DC) 03** Marten habitat is well distributed throughout the marten's range, providing for foraging, denning, and resting habitat and movement across large landscapes. **Guideline (SPEC-SM-GDL) 01** Within marten core habitat, retain overtopping and multi-storied canopy conditions in patches consistent with vegetation desired conditions, including some shade-tolerant understory trees such as firs, especially in drainages, swales and canyon bottoms and on north- and east-facing slopes. Retain a patchy mosaic of shrubs and understory vegetation, separated by more open areas, to reduce fuel continuity, increase habitat heterogeneity, support prey, and provide hiding cover, with a goal of 10 to 20 percent shrub cover at the home range scale. *Exception: Does not apply in community buffers.*	Ecosystem-level plan components for Terrestrial Ecosystems, Timber Management and Species Direction provide direction for maintaining habitat in areas where management activities take place. They do this by emphasizing heterogeneity, connectivity, and retention of key structural elements including large trees and snags and other old forest components. A standard for forestwide terrestrial habitat guides the retention of conifer trees greater than 30 inches in diameter while guidelines aim to have fuel reduction treatments minimize mortality of large, old trees and snags and incorporate design features that reduce fire intensity and promote delayed mortality. Objectives provide specific and measurable strategies to move forest composition and structure toward desired conditions, and return natural fire regimes to the landscape further reducing loss of habitat and promoting ecosystem resilience. These restoration-based objectives would help keep up with the pace and scale needed to maintain ecological integrity and resist key stressors over time. Desired conditions and guidelines for Wilderness and Riparian Conservation Areas mitigate threats from recreation, fire and livestock and make sure watersheds are moving toward functioning properly and that impacts on martens are minimized. Forestwide guidelines for Sustainable Recreation minimize the addition of recreational facilities in at-risk species habitat and considers at-risk species needs would be integrated into project design in recreation settings. Forestwide standards and guidelines for species direction promote design features and mitigations that consider needs of all at-risk species, including martens, during project implementation. Species specific guidelines for marten reinforce ecosystem-level plan components and specifically guides core habitat would be retained during site specific projects; that cover is adequate for marten prey species, and that heterogeneous understory habitat provides denning sites and supports prey. There is a potential management approach to *maintain or increase understory heterogeneity in marten denning habitat to promote hiding cover such as shrub patches, coarse woody debris, and slash piles following vegetation treatments. Design projects to have non-linear edges*. This approach encourages forest managers to consider marten habitat during project design and implementation.
Human disturbance from recreational activities including vehicle strikes.	(***Refer to Table D-4 Crosswalk for Disturbance Intolerant***)	Public use of forest roads has grown steadily, and driving for pleasure is the single largest recreation use of Forest Service managed lands. Attempts to reduce this risk have included placing signs and reducing speed limits, as well as identifying high priority travel corridors and developing culvert passageways under roads.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of quality mature forest or meadow riparian habitats due to climate change, widespread tree mortality, or other stochastic events, such as wildfire and reductions in snowpack.	(***Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Forest Dependent, Riparian/Water Dependent, Wet/Riparian Meadow Dependent***)	Ecosystem-level plan components that include desired conditions for Watersheds, Terrestrial Ecosystems, Old Forest, Montane, Subalpine and Alpine, and Riparian areas help to make sure martens have adequate habitat for movement, dispersal, feeding, and reproduction at multiple scales that may otherwise be lost due to climate change and other stochastic events such as large and severe wildfire and insect outbreaks. Species specific plan components for marten provide desired conditions that marten core habitat areas are intact and well distributed. Desired conditions for riparian conservation areas support persistence of species of conservation, such as marten.
Inadvertent poisoning	**Goal (SPEC-FW-GOAL) 05** Coordinate with local, state, and federal law enforcement and other agencies to remove and remediate poisonous substances and pesticides associated with marijuana cultivation in the wildland.	Remediation and enforcement on illegal marijuana plots to remove poisonous substances would benefit martens by increasing prey and reducing inadvertent poisoning of martens and their prey.
Predation	**N/A**	Bobcats and mountain lions have been identified as the main predators of martens. The forest plans do not include population control for these predator species so predation on martens would continue. A potential management approach to avoid or remediate habitat modifications that unnaturally increase marten susceptibility to predation is included in the forest plans.

While vegetation management has declined substantially since the early 1990s, public use of forest roads has grown steadily over the same time period, and driving for pleasure is the single largest recreation use of Forest Service managed lands. Vehicle-related mortality of marten has been observed on the Sierra National Forest. Although there are no marten-specific plan components to address vehicle strikes, Goal (SPEC-FSHR-GOAL) 01, designed to reduce the rate of fishers hit by vehicles, would also benefit martens where their habitats overlap.

Winter recreation use on the forest is relatively low. However, potential for disturbance to marten individuals may occur from available winter recreation activities, which include downhill and cross-country skiing, snow play, riding snowmobiles and snowshoeing. Motorized travel in designated and recommended wilderness areas is not allowed and would reduce disturbance impacts on marten in those areas.

Most of the threats for Sierra marten can be addressed through ecosystem-level plan components that emphasize resilient, connected forests containing the complex structural features martens need for survival and reproduction. However, species-specific plan components have been added in a few instances for greater clarity and emphasis. Loss of old forest habitat and key structural attributes for denning and nesting are key threats. Desired conditions for Sierra marten (SPEC-SM-DC 01-03) minimize the risk from large and severe wildfires in marten habitat core areas, reinforce the overarching desired conditions from terrestrial and riparian vegetation, and aim to achieve conditions in which marten habitat is well-distributed throughout the landscape providing for foraging, denning and resting habitat

and movement across large landscapes. Guideline (SPEC-SM-GDL) 01 retains overtopping and multi-storied canopy and a patchy mosaic of shrubs and understory vegetation, separated by more open areas, to reduce fuel continuity, increase habitat heterogeneity, support prey, and provide hiding cover, with a goal of 10 to 20 percent shrub cover at the home range scale.

A monitoring project within the Sierra National Forest (the Kings River Project) has confirmed 27 mortalities (14 males and 13 females) since the inception of the project (Thompson et al. 2009). Twenty-two of the mortalities (81 percent) can be attributed to predation, with bobcats and mountain lion as the main predators (Thompson et al. 2011). The Forest Service cannot directly control predation on martens, but a potential management approach aims to promote hiding cover and heterogeneity in denning habitat and avoid or remediate habitat modifications that unnaturally increase predation on martens.

Threats Not Under Forest Service Control

- Loss of quality mature forest, meadow riparian habitats, or habitat connectivity due to climate change, widespread tree mortality, or other stochastic events, such as wildfire and reductions in snowpack
- Inadvertent poisoning from illegal marijuana cultivation

Overall, habitat connectivity for old-forest associated species like marten is high, but remains vulnerable to large and severe wildfires. Weather conditions favorable to intense fire are already increasing with climate change and are expected to increase more in the future. The forest's north-south oriented canyons and mountains across most of the forest allow for northward movement. This would become increasingly important with climate change. Past fire suppression policies have led to conditions that can result in large and severe wildfires that may be detrimental to species, such as marten, that depend on old forest. Stand-replacing fires can cause even-aged, early seral habitats blocks that do not provide the forest diversity to support Sierra marten or their prey species. Although, the Forest Service cannot entirely remove the threat of climate change and causes of widespread tree mortality the revised plan components aim to restore old forests to the natural range of variation and return healthy fire mosaics to the landscape. This would work towards providing healthy, diverse, resilient habitat for Sierra martens.

Illegal rodenticide poisons used on marijuana plantations is a growing concern throughout the Sierra Nevada region and poses a threat to numerous mammals, including martens (Gabriel et al. 2012). The impact presents a harmful effect on population health, survival and status. Goal (SPEC-FW-GOAL) 05 would work with partners to reduce this threat.

Sequoia – Sierra Marten

Information on Current Distribution of the Species in Sequoia Planning Unit

In the CNDDB there are 4 records for Sierra marten in Tulare and Kern County recorded over 20 years ago on the Kern River Ranger District. There are 397 records for marten in the NRIS database. Most observations are of solitary individuals with one record of a family unit recorded in 1992. The most recent occurrence record in the NRIS database for Sierra marten was in 2010; no recent den sites are known. However, monitoring on the Sequoia National Forest is currently limited. Dens may exist because the species has persisted on the forest over time, but without more intensive telemetry work this has not been confirmed.

Key Ecological Conditions in Sequoia Planning Area

Martens need structurally diverse mature conifer forests; abundant snags and down logs; heterogeneous habitat for cover and prey species, high canopy cover (40 to 60 percent). Marten resting/denning structures are the most critical habitat elements. These ecological conditions occur at high elevation

(4,500 to 10,500 feet) in late-successional, mature red fir and lodgepole pine forests in areas with abundant snowpack (greater than 9.2 inches in depth).

Sequoia Summary
There is no information on current marten population size or density estimates for the Sierra Nevada and there have been no documented denning sites with young on the Sequoia National Forest. Marten habitat has been fragmented, distribution reduced, and suitable habitat has also been reduced and isolated in parts of the range. The mixed conifer forests on the Sequoia National Forest are at high risk of loss from stand replacing wildfire and bark beetle related mortality. This primary risk, coupled with range wide declining and small population numbers of the marten, and reduced snowpack resulting from climate change, puts this species at future risk. These changes may be of particular concern given the Sequoia National Forests location at the edge of the species southern-most range. The Sequoia National Forest has a number of ecosystem-level and species-specific plan components in place to mitigate risks, but cannot mitigate all threats for persistence. Due to the lack of information whether a current viable population of Sierra marten exists on the Sequoia National Forest and the primary threats being outside the control of Forest Service authority is it not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Sierra marten. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra – Sierra Marten

Information on Current Distribution of Species in Sierra Planning Unit
The Sierra National Forest has 402 records of Sierra marten in the NRIS database. Incidental observations are numerous, but den sites have not been located. However, monitoring is limited and dens may likely exist because the species has persisted on the forest over time. Without more intensive telemetry work this has not been confirmed.

Key Ecological Conditions in Sierra Planning Unit
Structurally diverse mature conifer forests; abundant snags and down logs; heterogeneous habitat for cover and prey species, high canopy cover (40 to 60 percent). Similar to fisher in that resting/denning structures are the most critical habitat elements.

On the Sierra National Forest, marten habitat can be found in the Upper Montane Zone where snow is the primary precipitation. Red fir forests co-occur with Jeffrey pine in the rockier sites and western white pine can be found on more productive sites. Wetter sites, where the water table remains high in the summer, may contain pure stands of lodgepole pine. Shrub-dominated areas occur where sites have been logged or otherwise disturbed by past forest management activities. Granitic outcrops are abundant in this zone as well, with many forest endemics and other rare plants. In addition, meadows and riparian habitats close to conifer forest provide important prey species and cover.

Sierra Summary
There is no information on current marten population size or density estimates for the Sierra Nevada and there have been no documented denning sites on the Sierra National Forest, but the number of documented and incidental observations suggests a viable population exists within the Sierra National Forest plan area. The loss of contiguous old forest breeding habitat coupled with declining and or small population numbers of marten, and reduced snowpack resulting from climate change, may put the species at future risk. Further loss of larger trees and diversity in pine forests, increased risk to upper montane forest from uncharacteristic stand-replacing fire, and insect outbreaks and warming temperatures with reduction of snowpack creates substantial concern about this species ability to persist on the planning unit.

Based upon this evaluation and the assumption that a viable population of martens exists despite the lack of documentation, the final set of ecosystem plan components and the additional species-specific plan components would provide the necessary ecological conditions to maintain a viable population of Sierra marten within the plan area over the duration of the forest plan.

Townsend's Big-eared Bat – Sequoia/Sierra

Determinations: It is not within the inherent capability of the plan areas to maintain or restore the ecological conditions to maintain a viable population of the Townsend's big-eared bat in the plan areas. Nonetheless, the plan components should maintain or restore ecological conditions within the plan areas to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Multiple ecosystem types for foraging and uses roosting habitat which contains rocks (canyons, caves, mines, and cliffs), and or human-made habitat (buildings, bridges) as well as large trees and snags for roosting.

Table D-7. Key threats, plan components and expected effects on Townsend's big-eared bat

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Recreational caving and other human disturbance	(***Refer to Table D-4 Crosswalk for Disturbance Intolerant***)	Ecosystem-level plan components would protect sensitive habitats, including caves and mines, and manage recreation opportunities to limit disturbance to sensitive species, such as Townsend's big-eared bat. To make sure bat hibernacula and maternity roost are protected, the responsible officials intend to install bat gates or issue closures to restrict access and therefore, reducing potential for human disturbance.
Loss of foraging habitat due to forest management activities	(***Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Forest Dependent, Old Forest Dependent)***)	Ecosystem-level plan components that include desired conditions for Watersheds, Terrestrial Ecosystems, Old Forest, Montane, Subalpine and Alpine and Riparian areas help to guide management so bats have adequate habitat for foraging, and movement that may otherwise be lost due to climate change and other stochastic events such as large and severe wildfires, insect outbreaks, and large-scale forest mortality.
Loss of mine and cave roosting habitat due to improper management	**N/A**	Previous and ongoing mine reclamation practices would make sure potential roost habitat is not lost and entrances are not sealed. The responsible officials intend to install bat gates or issue closures to restrict access and therefore, reducing potential for roost abandonment.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
White-nose syndrome	**Desired Condition (SPEC-BAT-DC) 01** Caves and cave-like habitats provide the ecological conditions to support at-risk bat populations and are free from human-introduced diseases. **Goal (SPEC-FW-GOAL) 04** Coordinate with State and Federal agencies and other partners to provide education materials and best management practices information for the public and permittees to limit the potential spread of disease to caves and mines used by bats.	White-nose syndrome is a potential future threat that may or may not affect Townsend's big-eared bats if the disease were to spread to California. More study is needed. Regardless of the level of impact the best method to ensure white-nose syndrome does not become a threat is prevention of contamination and spread into potential habitats. Several general plan components including SPEC-FW-GOAL 04 focus on education of environmental issues and best management practices for the public to prevent the spread of disease.
Low fecundity/high first-year mortality	**N/A**	There are no forest management activities that can alleviate low fecundity or address the reproductive biology of Townsend's big-eared bat. This threat would continue.
Inadvertent poisoning	**Goal (SPEC-FW-GOAL) 05** Coordinate with local, state, and Federal law enforcement and other agencies to remove and remediate poisonous substances and pesticides associated with marijuana cultivation in the wildland.	Remediation and enforcement on illegal marijuana plots to remove poisonous substances would benefit bat species by increasing prey and reducing inadvertent poisoning.

Key Threats to Persistence

Threats include human disturbance, improper mine or cave closure, white nose syndrome, low fecundity or high first-year mortality, and unauthorized poisonous substance use. The primary limiting factor for this species is adequate maternity roosting habitat especially in caves and mines. Townsend's bats are among the most dependent of all North American bats on undisturbed abandoned or inactive mines.

Threats under Forest Service Control

- Recreational caving and other human disturbance
- Loss of foraging habitat due to forest management activities
- Loss of roosting habitat through improper closure of abandoned mines or caves

Townsend's big-eared bats are highly vulnerable to human disturbance in or adjacent to caves and mines. Particularly hibernacula and nursery sites where a single human visit may result in abandonment of the entire roost (Harris 2000, Piaggio and Perkins 2005, Gruver and Keinath 2006). The species is particularly vulnerable during the maternity season, when females are gathered and raising defenseless young (Pierson and Rainey 1998).

The preference for Townsend's bats to roost in visible clusters near the entrance of caves and mines instead of deeper in structures and within cracks makes them easy to discover. When encountered and disturbed these bats will flush from roosts sites making them more susceptible to predation and distract them from obtaining their basic needs. Even installed bat-friendly gates may not adequately prevent disturbance since Townsend's bats roost near entrances and recreationists looking in cave and mine entrances could cause bats to abandoned sites.

The species-specific potential management approach to "consider installing bat gates at the entrances of caves and mines or restricting access by other means to protect known bat hibernacula or maternity

colonies that may be adversely affected by recreational, management, or other activities" would advise the Responsible Officials to achieve proper mine and cave management and alleviate human disturbance.

Both forests are currently installing bat-friendly gates as part of mine and cave reclamation and this would continue dependent on available funding and resources.

Threats Not Under Forest Service Control

- White-nose syndrome
- Low fecundity and high first-year mortality
- Inadvertent poisoning from illegal marijuana cultivation

In addition to the existing, known threats, an emerging threat is white-nose syndrome. White-nose syndrome is a highly-contagious infection of hibernating bats and it has been associated with massive mortality of cave-hibernating bat species in the northeastern United States (Blehert et al. 2009). Due to the cave roosting nature of Townsend's big-eared bat, white-nose syndrome is a potential future threat. The spread of white-nose syndrome to Washington state was confirmed in 2016 with a detection in the state of Washington (Lorch et al. 2016). In 2020–2021, samples were collected from bats in several areas in California including Death Valley National Park, Joshua Tree National Park, and Mojave National Preserve, but the samples were inconclusive and managers have not confirmed the presence of white-nose syndrome in California to date (USDI Fish and Wildlife Service 2021)

Townsend's big-eared bats are not known to be affected by white-nose syndrome and several closely related bat species, Ozark big-eared bat and Virginia big-eared bat, in affected areas have not been documented to have the disease. In addition, bat species which have been hardest hit by white-nose syndrome are characterized by hibernating colonies with large clustering behavior and caves with higher humidity levels (Marroquin et al. 2017). Townsend's bats tend to roost alone or in small clusters which may put it less at-risk from the potential threat of white-nose syndrome, should it make its way to California. Restricting access to caves and mines, as discussed above, would reduce potential contamination and spread of white-nose syndrome. Finally, Goal (SPEC-FW-GOAL) 04 aims to alleviate this potential future threat through coordination with state and federal agencies to provide education and best management practices to the public to limit the potential spread of white-nose syndrome.

Townsend's big-eared bats have slow reproductive rates with usually one pup per year. This low fecundity combined with high sensitivity to disturbance (see above) puts the species' persistence at-risk in the region. The Forest Service cannot control the reproductive biology of bats but can reduce the amount of disturbance to potential maternity roost sites through proper management of recreation and mine/cave habitats.

Illegal use of herbicides, pesticides, insecticides, and fertilizers by marijuana growers in national forests can pose a threat to bats through reduction in prey and contamination of prey leading to poisoning. Through the legalization of marijuana in California it is anticipated illegal marijuana plantations would decrease on federal lands; however, some marijuana plots would likely persist and continue to use poisonous substances outside the control of the Forest Service. Although the Forest Service cannot completely control unauthorized use of the toxins on National Forest System lands SPEC-FW-GOAL 05: *Coordinate with local, state, and federal law enforcement and other agencies to remove and remediate poisonous substances and pesticides associated with marijuana cultivation in the wildland* would aim to alleviate this threat and contribute to the persistence of bat species.

Sequoia – Townsend's Big-eared Bat

Information on Current Distribution of the Species in the Sequoia Planning Unit
Historically, the Townsend's big-eared bat was found throughout California as a scarce, but widespread species (Barbour and Davis 1969). Research suggests substantial declines throughout California over the past 40 to 60 years, including an estimated 54 percent decline in individuals, 52 percent decline in maternity colonies, and a 45 percent decline in available roosts (Pierson and Rainey 1998). The most marked declines occurred in the central Sierra Nevada (Pierson and Rainey 1998).

There are 14 records for Townsend's big-eared bat in the CNDDB in Fresno and Kern Counties (Hume and Kern River Ranger Districts) along the Kings River. Records were collected along the southwest shore of Lake Isabella in the vicinity of Miracle Hot Springs and associated mines along highway 178 and the Kern River. Most of these past inventories recorded small colonies with less than 5 individuals present with most recent occurrence data from 1993. At Giant Sequoia National Monument there are records at Windy Cliffs and at Boyden Cave south of Wren Peak that describes a bat roost with a colony size of 25 females in 1987–1991 and noted it as a declining population. This cave is now gated to prevent disturbance.

Townsend's big-eared bat was detected as recently as 2010 in Giant Sequoia National Monument (J. Cordes, personal communication. March 2018). The Giant Sequoia National Monument is not included in the planning area, but the proximity suggests the species can use the planning area for foraging, movement, and short duration roosting. Complete bat surveys for Sequoia National Forest are limited but this species is typically easy to detect in its significant maternity habitat and prefers hanging in clusters in the open just inside entrances to mines and caves. There are no known hibernacula or maternity colonies on Sequoia National Forest; however, suitable habitat does exist.

Key Ecological Conditions in Sequoia Plan Area
The Sequoia National Forest and Giant Sequoia National Monument have 255 known abandoned mines which were surveyed from 1993-1998 by the Bureau of Land Management. There are 15 well known caves and possibly as many as 100 additional caves located on the Sequoia National Forest. The majority of the known caves are within the Giant Sequoia National Monument and fall outside the planning area; three well known caves Greenhorn, Packsaddle, and Deep Creek are located in the planning area, but Townsend's big-eared bats have not been detected there. There were no significant caves identified in the assessment for the Sequoia National Forest. In addition, there are 36 active mining claims on the Sequoia National Forest which may provide for future bat habitat when the mines are retired and undisturbed.

Starting in 1995, the Sequoia National Forest and Giant Sequoia National Monument have had an active Abandoned Mine Reclamation Program and has taken reclamation actions on approximately four abandoned mines per year. Mine closures, often with the intent to protect human safety, can eliminate access to roosts and hibernacula. Forest service records document approximately 18 bat gates and 2 bat nets with fencing installed from 1996 to 1999. Proper reclamation of mines would make sure potential Townsend's big-eared bat habitat is not lost and provides potential for creation of more suitable habitat that could aid in the recovery of the species.

Sequoia Summary
The majority of suitable Townsend's big-eared bat cave and mine roosting habitat occurs on the Giant Sequoia National Monument, outside the plan area. The amount of cliff, cave, and cave-like habitat is not expected to change in the planning area and forest management activities would not substantially affect potential bat roosting habitat. Active mining claims have the potential to increase in the future which could create additional adits and shafts for bat use after the mines have been retired. The limited occurrence data, coupled with limited suitable habitat, suggest it is not within the inherent capability of

the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Townsend's big-eared bats. The Sequoia National Forest would have a number of ecosystem-level plan components in place to mitigate risks within its management authority, and intends to make sure bat hibernacula and maternity roosts are protected by installing bat gates or issuing closures to restrict access, but cannot mitigate all threats to persistence.

Sierra – Townsend's Big-eared Bat

Information on Current Distribution of the Species in the Sierra Planning Unit
Historically, the Townsend's big-eared bat was found throughout California as a scarce, but widespread species (Barbour and Davis 1969). Research suggests substantial declines throughout California over the past 40 to 60 years, including an estimated 54 percent decline in individuals, 52 percent decline in maternity colonies, and a 45 percent decline in available roosts (Pierson and Rainey 1998). The most marked declines occurred in the central Sierra Nevada (Pierson and Rainey 1998).

In the NRIS database, the Sierra National Forest has 16 records all within the vicinity of Shaver Lake Recreation area on the High Sierra Ranger District. There are six CNDDB records, including from Shaver Lake, Markwood Creek, and Glen Meadow Creek areas. Townsend's big-eared bats have either been caught or acoustically detected during surveys that were conducted approximately 5 miles west of the Exchequer Restoration project area (USDA Forest Service 2017b). It is currently unknown what the population trend or occupancy rate is for this species on the forest.

Key Ecological Conditions in Sierra Plan Area
As described under fringed myotis, suitable roosting habitat occurs on the forest in the form of caves and mines. Proper reclamation of mines would ensure potential Townsend's big-eared bat habitat is not lost and provides potential for creation of more suitable habitat that could aid in the recovery of the species.

Sierra Summary
The amount of cliff, cave, and cave-like habitat is not expected to change in the planning area and forest management activities would not substantially affect potential bat roosting habitat. Active mining claims have the potential to increase in the future which could create additional adits and shafts for bat use after the mines have been retired. Suitable primary roosting habitat is available on Sierra National Forest, but it is unknown if the caves or mines there support Townsend's bat populations since maternity colonies have not been observed. The limited occurrence data for this species on the Sierra National Forest, coupled with its wide-ranging nature, suggests it is not within the inherent capability of the land to maintain or restore the ecological conditions to maintain a viable population of Townsend's big-eared bats in the planning area. The Sierra National Forest would have a number of ecosystem-level plan components in place to mitigate risks within its management authority, and intends to make sure bat hibernacula and maternity roosts are protected by installing bat gates or issuing closures to restrict access, but cannot mitigate all threats to persistence.

Birds

American Peregrine Falcon – Sierra

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the American peregrine falcon in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

General Key Ecological Conditions: Multiple ecosystem types containing rocks (canyons, cliffs, ledges, and talus slopes, cliffs), and manmade habitat (buildings, bridges). Falcons breed near open water like lakes, ponds, rivers, or wetlands.

Table D-8. Key threats, plan components and expected effects on American peregrine falcon

Key Threats to Persistence	Specific Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss, including nesting and foraging, due to forest management activities.	(***Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events***)	Ecosystem-level components that include desired conditions for forest and riparian habitats help to guide management so falcons have adequate habitat for foraging and movement that may otherwise be lost due to climate change and other stochastic events such as large and severe wildfires, insect outbreaks, and large-scale forest mortality. Nesting habitat is not anticipated to be lost due to forest management activities.
Human recreation and other disturbance	(***Refer to Table D-4 Crosswalk for Disturbance Intolerant***)	Ecosystem-level recreational goals and guidelines would consider disturbance to nesting peregrine falcons is minimized through public education, managing recreation activities (such as rock climbing) and planning recreation facilities away from at-risk species breeding habitat. Additionally, implementation of seasonal closures of known nesting rock cliffs during the breeding season could protect peregrine falcons.
Environmental toxins	**N/A**	National and international coordination to ban harmful pesticides has allowed peregrine falcon populations to recover although some use of toxins may still occur in the peregrine falcon's range. Peregrine falcons would most likely encounter toxins in urban areas and outside the United States. There has been no documentation or observation of poisoning of peregrine falcons on Sierra National Forest.
Illegal take	**N/A**	Illegal take in the form of shooting or taking chicks or eggs from nests has declined. Illegal take is unlikely on Forest Service and is regulated by law outside the Forest Service's authority.

Key Threats to Persistence

Environmental toxins, habitat loss, human disturbance, and illegal take.

Threats under Forest Service Control

- Habitat loss, including nesting and foraging, due to forest management activities
- Human recreation and other disturbance

Important habitat for peregrine falcons are cliffs for nesting. However, since their recovery from population declines during the 1950s through mid-1970s they have proven to be adaptable nesters moving into urban areas to utilize skyscrapers, bridges, and other man-made structures to successfully rear young. The amount of cliff habitat in Sierra National Forest is not anticipated to change or be lost due to forest management activities.

Areas adjacent and in the national forests are projected to increase in population. This growth is expected to increase recreation demand and numbers of visitors. Impacts from unmanaged recreation are often found in riparian areas, areas adjacent to the urban interface, areas of intense recreation use, and outside of developed recreation sites on the national forests. Examples of unmanaged recreation which might affect peregrine falcon include development of new rock-climbing routes, and dispersed camping in sensitive ecosystems such as riparian areas. In addition, hikers may also cause disturbance by hiking up into peregrine falcon nesting habitat along cliffs areas.

Disturbance of nest from recreational rock-climbing activities may pose a risk. Some key recreation sites on the Sierra National Forest where nesting peregrine falcons have been observed in the past include Shaver Lake, and Tollhouse Rock, which is popular among rock climbers on the forest's western boundary. Overall recreation in the San Joaquin River area is considered light, but rock climbing occurs on the granite walls and domes near the north and middle-forks.

Threats Not Under Forest Service Control

- Environmental toxins
- Illegal take

American peregrine falcon populations declined drastically during the 1950s through the mid-1970s as a result of poisoning, mainly from organochlorine insecticides (USDI Fish and Wildlife Service 1999). Following the ban on these pesticides and assisted by peregrine falcon reintroduction efforts, peregrine falcon populations have recovered significantly (NatureServe 2015). Peregrine falcons living in urban areas of California are vulnerable to accumulation of polybrominated diphenyl ethers (PBDEs) (Newsome et al. 2010). These ethers are flame retardants that are used on consumer goods, and have largely been phased out of products due to their detrimental effects on humans and wildlife (Newsome et al. 2010). The PBDEs present in the environment have significantly declined in the San Francisco Bay area due to prohibition of specific fire retardants in consumer goods; likely reducing the threat of PBDEs to peregrine falcon populations in California (Sutton et al. 2014).

Shooting of adults was a problem during the first half of the 1900s, but this activity has almost completely ceased. Primary causes for concern currently include illegal raiding of nests for chicks by falconers (White et al. 2002). Falconers can get permits to legally collect falcons and the permitting process is outside Forest Service management authority.

Information on Current Distribution of the Species in the Sierra Planning Unit

According to California Department of Fish and Wildlife nest records, approximately 29 nesting attempts were recorded on the Sierra National Forest from 1993 to 1997 in Fresno and Madera Counties at 6 different sites: Balloon Dome, Fuller Buttes, Tollhouse Rock, Sunset Point, Shuteye Peak, and Garlic Falls. A total of 7 nests successfully fledged 16 young.

There are 209 detections for American peregrine falcon in the NRIS database. The eBird database shows three different sightings of peregrine falcon on the forest within the last 3 years, including a suspected nesting individual in the vicinity of Shaver Lake (Musick Mountain) in 2016. The Sierra Nevada Bioregional Monitoring Project has been collecting monitoring data since 2009 and had one peregrine falcon observation in 2012 on the Bass Lake Ranger District. Peregrine falcons are known to occur on the eastern boundary of the Exchequer Forest Restoration Project (USDA Forest Service 2017a). Current population trends or occupancy rates for the species on the Sierra National Forest are unknown.

Key Ecological Conditions in Sierra Plan Area

On the Sierra National Forest, cliff nesting habitat near high-quality foraging habitat, such as waterfowl-rich lakes and streams, occurs on the High Sierra and Bass Lake Ranger Districts. Shaver Lake, San Joaquin River area, and Bass and Huntington Lakes are popular recreation areas, which could also provide ample foraging opportunities and potential nesting habitat. The South Fork San Joaquin River is considered potential peregrine falcon nesting habitat, listed as having outstandingly remarkable value. Additional potential habitat also occurs throughout the North and Middle Forks of San Joaquin River.

The San Joaquin River area is under consideration for Wild and Scenic River Status. Its sheer canyon walls may provide potential nesting habitat for peregrine falcons while river waters attract a variety of potential prey species. Much of the river corridor is in Ansel Adam Wilderness. In total, there are 22 miles

of river under consideration. There is also potential peregrine falcon habitat along the middle fork (segment 2) of the Kings River.

Summary
American peregrine falcon is globally secure; however, under the California State ranking some uncertainty exists as to whether it is secure or vulnerable. A population viability analysis found that the peregrine falcon population in California was increasing, with an estimated 210 individuals in 1992 and 350 in 2012 (Wootton and Bell 2014). Peregrine falcons are a current resident of the Sierra National Forest and have been observed foraging and nesting. Data on population trends is unavailable, however, existing habitat is expected to remain stable for this species and forest management activities are not anticipated to negatively affect this species. An increase in recreational climbing is a concern for nesting disturbance during the breeding season but can be minimized by ecosystem-level components to educate the public on environmental issues.

In addition, seasonal closures on specific climbing routes with known nesting falcons can be implemented to protect peregrine falcons. Ecosystem-level components should maintain or restore ecological conditions to contribute to maintaining a viable population in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection. Additionally, optional management approaches such as implementing seasonal closures when nests are active would further make sure persistence of a viable population.

Bald Eagle[20] – Sequoia/Sierra

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the bald eagle in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

General Key Ecological Conditions: Large bodies of water or free flowing large rivers with adjacent large trees or snags.

Table D-9. Key threats, plan components and expected effects on bald eagle

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Human recreation and related disturbance.	(***Refer to Table D-4 Crosswalk for Disturbance Intolerant***	Ecosystem-level desired conditions minimize disturbance from recreation related activities and human activities on sensitive resources. Guidelines constrain impacts on resources including at-risk species breeding habitat in recreation areas and make sure the needs of at-risk species, such as bald eagles, would be accounted for during recreation design.

[20] Also protected under the Bald and Golden Eagle Protection Act of 1940

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss and loss of key components such as perches, roosting, and nesting trees due to forest management activities	**Guideline (SPEC-FW-GDL) 02** Known nest, roost, or den trees used by at-risk species, including surrounding trees that provide beneficial thermal or predatory protection, should not be purposefully removed, except for the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements.	Ecosystem-level plan components guide that large trees and snags necessary for nesting and roosting and perching would be retained during project implementation and that large trees and snags are resilient to natural disturbance such as fire, insects and disease. Plan components also help to guide that a supply of trees in the larger size classes is distributed across the forest at levels that would provide sustainable nest/roost habitat for bald eagles cross the landscape. A species-specific guideline further reinforces the retention of known nest and roost trees used by bald eagles or other raptors.
Habitat loss: changes in water quality and availability forest management activities, and hydroelectric power.	(***Refer to Table D-4 Crosswalk for Open Water Dependent, Riparian/Water Dependent***)	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they are high quality and provide adequate prey for bald eagles. Specific guidelines for at-risk species promotes design features to bald eagles at-risk during project implementation. Expansion of hydropower development is unlikely on Sequoia National Forest due to being already fully developed.
Habitat loss or degradation due to climate change, widespread tree mortality, or other stochastic events.	(***Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Open Water Dependent, Riparian/Water Dependent***)	Ecosystem-level desired conditions and goals provide for ecological integrity of aquatic and riparian resource so that they are resilient to climate change and other demands and can provide the foraging habitat and prey species necessary for bald eagles.

Key Threats to Persistence

Habitat loss, human disturbance, and energy development.

Threats Under Forest Service Control

- Human recreation and related disturbance.
- Habitat loss and loss of key components such as perches, roosting, and nesting trees due to forest management activities

Fishing opportunities and recreation uses are expected to continue and impacts from those activities would continue to occur. The California Department of Fish and Wildlife is expected to continue the fish stocking program. Reservoirs would continue to exist under current management and jurisdiction to fulfill their water storage and hydroelectric needs.

Recreational use of private planes, ultra-lights, gliders, and hang gliders can be observed over the Sequoia National Forest and may pose a disturbance risk to eagles. Lake Isabella is an authorized seaplane landing area.

Most of the threats for bald eagle on the Sequoia and Sierra National Forests can be addressed in the form of desired conditions that emphasize sustainable recreation and that minimize human disturbance (refer to Table D-4 Crosswalk for Disturbance Intolerant). Desired conditions, goals, and guidelines for Terrestrial Ecosystems and Watersheds minimize habitat loss and emphasize the retention of large trees and snags that provide nest sites and suitable perches for hunting.

In addition, forestwide species direction was added to further emphasize the retention of key habitat components such as roosting and nesting trees for raptors during project implementation. A forestwide guideline SPEC-FW-GDL 02 places additional emphasis on retaining habitat for at-risk species by ensuring appropriate design features, mitigation, and project timing considerations are incorporated into projects that may affect their habitat.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change, widespread tree mortality, or other stochastic events.
- Habitat loss or changes in water quality and availability from hydroelectric power

Population growth has led to increased competition for water among various uses which can negatively impact bald eagle nesting behavior. Dams and diversions on and around both Forests have impacts on watershed conditions within the Forests. While controlling impacts from dams and hydroelectric use is beyond Forest control, ecosystem-level plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

Large scale uncharacteristically severe wildfires are expected to increase in frequency and intensity due to climate change. Risk of loss of habitat and habitat fragmentation of conifer forest from wildfire outside the natural range of variability pose the greatest threat to bald eagle persistence. Past fire suppression policies have led to conditions that can result in large and severe wildfires that may be detrimental to species that use old forest components. Compared to past conditions, forest density is greater, tree canopy is denser, and small and medium trees are more dominant in the forest. Large tree mortality has doubled in the last 2 to 3 decades across the western United States. This pattern is associated with increases in temperature and droughts.

Both national forests have been experiencing tree mortality due to extreme drought and insects, such as bark beetles and fir engravers. Tree mortality has been consistent across all major conifer with the most dramatic effects on fir species and ponderosa and Jeffrey pine. The ecosystem-level plan components aim to restore forest habitats to the natural range of variation and provide habitat resilience to climate change stressors. However, the Forest Service cannot entirely remove the threat of climate change and associated habitat loss which would continue to threaten species of conservation concern such as the bald eagle.

Sequoia – Bald Eagle

Information on Current Distribution of the Species in the Sequoia Planning Unit

There are 63 records of 89 individual bald eagle in the NRIS database; of those records, two were documented as reproducing in 1992 and 2010. The most recent sighting was not a nesting pair but rather an adult and juvenile. The most recent observations of bald eagle were in 2017. Recent sightings do not include nesting activity. There are no CNDDB records for bald eagle on the forest. In eBird, there are numerous bald eagle sightings in the vicinity of Lake Isabella.

Key Ecological Conditions in Sequoia Plan Area

Bald eagles use large conifer stands where there is access to open water or free-flowing rivers for foraging, typically within one mile of large trees, snags, or dead top trees. These conditions can be largely found in the Montane Zone dominated by mixed conifer and ponderosa and Jeffrey pine forests across most of the zone. Additional habitat can be found in the Upper Montane Zone where snow is the primary form of precipitation. Red fir forests with Jeffrey pine occur on the rockier sites in the northern half of the forest. In the southern half of the forest, red fir forests are replaced by white fir forests.

Sequoia Summary
Bald eagles are currently known to use the Sequoia National Forest for wintering and migration. Habitat loss resulting from high-intensity fires and bark beetle outbreaks continues is a potential threat. Disturbance from recreationists and extensive use and development along the shores of Lake Isabella is perhaps the biggest risk factor affecting bald eagles on the Sequoia National Forest, since there are few natural lakes. This threat would continue to be a potential risk factor for this bald eagles, as human population levels and recreation activity are expected to increase. Ecosystem-level components to promote sustainable recreation and protect at-risk species will alleviate but not fully eliminate human disturbance. However, during the life of the forest plan, ecosystem-level components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of bald eagle within its range. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Sierra – Bald Eagle

Information on Current Distribution of the Species in the Sierra Planning Unit
Bald eagles occur in Sierra National Forest throughout the year especially at or near reservoirs, lakes, and large rivers. Bald eagles are also known to winter along the middle fork of the Kings River. Most recently, winter observations were recorded at: Bass Lake; Shaver Lake; Mammoth Pool Reservoir; Redinger Lake; Lake Edison; and Florence Lake (Southern California Edison Company 2011). Five active night roosts were identified in 2011 at three of the reservoirs. Nesting was documented at four of six reservoirs surveyed in 2011. Known nest sites are at Bass and Shaver Lakes, and Lake Edison. The Sierra National Forest has 852 records for bald eagle in the NRIS database (many of these records occur at the same location but were collected at different times). According to the forest plan draft environmental impact statement, the bald eagle population in the southern Sierra Nevada region is believed to be stable or slightly increasing and the Sierra National Forest Assessment also notes the population as stable to possibly increasing on Sierra National Forest (USDA Forest Service 2022b).

Key Ecological Conditions in Sierra Plan Area

Bald eagles use large conifer stands where there is access to open water or free-flowing rivers for foraging for fish, typically within one mile of large trees, snags, or dead top trees. In the Sierra National Forest, fish populations are present in more than 1,500 miles of streams, 11 large reservoirs (greater than 150 acres), and 7,500 acres of lakes distributed across the forest. There are reservoir fisheries, high mountain lake fisheries, and both warm and cold-water fisheries, which provide a variety of fish species for bald eagles. Reservoir fisheries exist where hydroelectric power development or flood control dams were established and created lakes.

Sierra Summary
Bald eagles are currently known to use the Sierra National Forest for wintering and nesting or breeding. According to the Sierra National Forest assessment, the bald eagle population on Sierra National Forest is currently stable and possibly increasing. However, recent widespread tree mortality poses a considerable risk to availability of the large trees, and habitat loss resulting from high-intensity fires continues to be a potential threat. Increases in recreation as human population continues to grow also poses disturbance impacts on nesting eagles. Ecosystem-level components to promote sustainable recreation and protect at-risk species would alleviate human disturbance. Ecosystem-level components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

California Spotted Owl – Sequoia/Sierra

Determination: The ecosystem-level plan components may not provide the ecological conditions necessary to maintain a viable population of the spotted owl in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of the spotted owl in the plan area.

General Key Ecological Conditions: Coniferous and mixed pine-oak forests containing old forest characteristics (dense vegetation and canopy cover, large snags, cavities, larger trees, and large down woody debris).

Key Threats to Persistence

Habitat loss, degradation, or loss of connectivity from large and severe wildfires, tree mortality due to insect infestations, and management activities such as timber harvest; expansion of barred owls, climate change, pesticides and carbonates, and reduced genetic diversity.

Threats Under Forest Service Control

- Habitat loss (especially loss of nesting, resting and foraging habitat, large old trees and dense canopy cover) or loss of connectivity and disturbance due to management activities such as fuels reduction, vegetation treatments, and timber harvest.

The Sequoia and Sierra National Forests essentially abandoned even-aged reforestation management 20 years ago, in favor of stand maintenance thinning harvests intended to control density and growth of stands, generally for habitat maintenance. Thinning reduces the number of trees on a site, allowing remaining trees to increase crown and photosynthetic production, and increases growth rates on those remaining trees.

There are over 20,000 acres of plantations on the Sequoia National Forest in need of treatment that would allow the stands to develop old forest conditions. The treatments are needed to reduce fuel loading, reduce inter-tree competition, and improve the species mix within the stands. While these plantations contain some saw log size material, the majority of the trees are only suited for biomass. There are few projects that provide adequate volume to potential markets to make the projects commercially viable. This limits the forest's ability to keep up with the pace and scale necessary to realize restoration benefits.

Table D-10. Key threats, plan components, and expected effects on California spotted owl

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation or loss of connectivity due to management activities such as fuels reduction, vegetation treatments, and timber harvest.	***(Refer to Table D-4 Crosswalk for Forest Dependent, Large Tree/Snag Dependent, Old Forest Dependent, Complex Early Seral Habitat Dependent)*** ***Where overlap occurs, see also relevant plan content in Wildlife Habitat Management Area (WHMA) as well as plan content developed for fisher (SPEC-FSHR)*** **Suitability (SPEC-CSO-SUIT) 01** California spotted owl protected activity centers are not suitable for timber production. Timber harvest may be authorized for safety and restoration toward desired conditions. **Standard (TERR-FW-STD) 01** Retain live conifer trees greater than 30 inches in diameter except in the case of imminent threat to life and property, or if one of the conditions below is met: a -- When required for equipment operability, individual trees less than 35 inches in diameter may be removed on an incidental basis. b -- **Outside of California spotted owl territories** and where necessary to move toward terrestrial vegetation desired conditions, live trees greater than 30 inches but less than 40 inches in diameter may be felled for coarse woody debris, or removed, under the following limited circumstances: • When removing trees is needed for aspen, oak, or meadow restoration treatments or for cultural or Tribal importance; • In overly dense stands to favor retention or promote the growth of even larger or older shade-intolerant trees to meet tree species composition and forest structure restoration goals more effectively; • To promote the establishment, growth, and development of shade-intolerant species by creating small gaps (generally less than 0.5 acre) in stands historically dominated by shade-intolerant species; • To improve the growth and vigor of rust-resistant sugar pine trees greater than 16 inches in diameter by reducing competition from surrounding trees; or • To reduce loss of large-diameter trees due to competition in overly dense stands within homogeneous plantations. **Guideline (TERR-OLD-GDL) 01** To achieve desired conditions for large tree density based on the vegetation type (table 7), and to promote high-quality nesting and denning habitat for old-forest-associated species, thinning to increase heterogeneity and resilience should retain the oldest and largest trees and large trees with habitat features (such as deformities, broken tops, large branches, and cavities) that benefit these wildlife species.	Ecosystem-level plan content requires retention of large trees within California spotted owl territories. Species-specific plan standards and guidelines provide direction for maintaining highest quality nesting and roosting habitat in areas where management activities take place. Standards and guidelines require that key old forest components including large trees, snags and structural heterogeneity are maintained during vegetation management activities throughout old forests, spotted owl roost/nest trees are protected and maintained, and direction from existing habitat conservation strategies is used where applicable. Desired conditions and guidelines for fire and forest management promote ecological restoration practices that would improve forest resilience and maintain spotted owl habitat. California spotted owl protected activity centers are not suitable for timber production and would be managed only for safety and restoration toward desired conditions. Species-specific desired conditions, standards, and guidelines guide management so protected activity centers and nest site conditions are provided for during vegetation and fuels treatments and effects of large and severe wildfire are minimized. Vegetation treatment operating periods are generally limited during the breeding season with exceptions allowed when the benefit to landscape resilience is high and the risk of disturbance to breeding pairs is low. Land management activities support ecological conditions for survival and reproduction of California spotted owls.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above.	**Desired Condition (TERR-FW-GDL) 02** To retain essential habitat elements required for nesting, roosting, and denning by wildlife including fisher, California spotted owl, small mammals, cavity-nesting birds, and tree-dwelling bats, Mechanical vegetation treatments within forested habitats should maintain and promote large and structurally complex trees, snags, and downed logs distributed widely on the landscape and consistent with forest type desired conditions, especially where they occur in clumps and along forest edges. *Exceptions: Does not apply in community buffers.* **Guideline (SPEC-FW-GDL) 01** Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for at-risk species where they occur to minimize impacts on ecological conditions that provide for the persistence of at-risk species. **Guideline (SPEC-FW-GDL) 02** To retain areas essential for reproduction of at-risk species, known nest, roost, rest, or den trees used by at-risk species, including surrounding trees that provide beneficial thermal or predatory protection, should not be purposefully removed, except for the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements. **Desired Condition (SPEC-CSO-DC) 01** Protected activity centers provide high quality nesting and roosting habitat that contributes to successful reproduction of California spotted owls. Protected activity centers encompass habitat that is essential for nesting and roosting, as defined by the following characteristics: The habitat has a high canopy cover (including large clumps of more than 70 percent canopy cover), with multiple layers of tree canopy, and many large trees, very large trees, and snags (including some greater than 45 inches in diameter). Basal area and tree density tend toward the upper end of the range of desired conditions for the relevant forest vegetation type. Large tree density, snag density, and coarse woody debris align with the old forest desired conditions for the relevant forest vegetation type. **Desired Condition (SPEC-CSO-DC) 02** At least 40 to 60 percent (depending on the terrestrial vegetation type and site conditions) of each California spotted owl territory consists of the highest quality nesting and roosting habitat in large enough patches to provide interior stand conditions, generally 1 to 2 tree heights from an edge. The remainder of the territory consists of a diversity of many different structure and canopy classes (aligned with desired conditions for terrestrial vegetation type). For areas where multiple territories comprise over 75 percent of a watershed (typically a HUC 8 unit and greater than 10,000 acres in size) at least 30 to 50 percent (depending on the vegetation type and site conditions) of the watershed consists of the highest quality nesting and roosting habitat and the remainder of the territory consists of a diversity of many different structure and canopy classes (aligned with desired conditions for terrestrial vegetation type). **Desired Condition (SPEC-CSO-DC) 03** The Forest supports conditions for a sustainable network of dynamic, resilient, and widely distributed California spotted owl nest or roost sites across heterogeneous landscapes.	*Same as above*

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above	**Standard (SPEC-CSO-STD) 01** For vegetation treatments that maintain or improve habitat quality in California spotted owl nesting and roosting habitat outside of protected activity centers, pre-implementation surveys are not required. Before authorizing mechanical vegetation treatments within existing protected activity centers or vegetation treatments that may reduce near-term habitat quality in California spotted owl nest or roost habitat of unknown occupancy, follow current guidance for the Pacific Southwest region to: • Determine occupancy status • Identify owl nest sites (where nest location is not known, the most recent daytime roost); and • Delineate new or modify existing protected activity centers and territories, as necessary, within the project area. **Standard (SPEC-CSO-STD) 02** In California spotted owl protected activity centers, all management activities must maintain or improve habitat quality in the highest quality nesting and roosting habitat. Where necessary to increase long-term resilience, vegetation treatments that may reduce near-term habitat quality may be authorized in up to 100 acres outside of the highest quality nesting and roosting habitat. Throughout protected activity centers all vegetation treatments must: • Retain the largest/oldest trees, known nest trees, and other large trees and snags with cavities, deformities, broken tops, or other habitat features of value to old forest species; • Retain connected areas of moderate (at least 40 percent) and high (at least 60 percent) canopy cover between the known nest site (If nest site is not known, use the most recent known roost site) and areas in the rest of the protected activity center; • Avoid mechanical treatments within a 10-acre area surrounding the most recent known nest; • Avoid creating new landings, new temporary roads, or canopy gaps larger than 0.25 acre; • Increase the quadratic mean diameter of trees at the protected activity center scale; and • Maintain the average canopy cover of the protected activity center above 50 percent. *Exceptions:* *• In community buffers, this standard may be modified as necessary to meet safety objectives.* *• This standard may be modified as specified in SPEC-CSO-GDL 02 when constructing a fuelbreak where avoiding overlap with a protected activity center is not feasible.* **Standard (SPEC-CSO-STD) 03** In California spotted owl territories that do not currently meet the territory desired condition (SPEC-CSO-DC-02), retain habitat quality in the highest quality nesting habitat wherever it exists throughout the territory. If this desired condition has been met, vegetation treatments to improve resilience and increase heterogeneity should maintain highest quality nesting and roosting habitat as identified in SPEC-CSO-DC-02. In territories where survey data indicate pair occupancy and DC-02 is not met, if retaining habitat quality in the highest quality nesting habitat is insufficient to achieve the desired condition, also retain habitat quality in the best available nesting and roosting habitat to the level described in the DC-02. *Exceptions: Does not apply in community buffers.*	*Same as above.*

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above	**Standard (SPEC-CSO-STD) 04** When mechanical treatments create canopy gaps within California spotted owl territories, but outside of protected activity centers, individual openings shall not exceed 1.25 acres (and should generally not exceed 0.5 acre) and shall not comprise more than 20 to 30 percent (as appropriate depending on the desired conditions for the terrestrial vegetation type and existing site conditions) of the total area in the territory. This includes openings created for the construction of landings or temporary roads (restricted to 0.57 mile or less). *Exceptions: Does not apply in community buffers.* **Guideline (SPEC-CSO-GDL) 01** To minimize potential impacts on California spotted owl reproductive success, vegetation treatments that may reduce habitat quality in the near term should be avoided in protected activity centers with the highest likely contribution to reproductive success, and otherwise prioritized as follows (from highest to lowest priority for treatment): 1. Currently unoccupied and historically occupied by territorial singles only 2. Currently unoccupied and historically occupied by pairs 3. Currently occupied by territorial singles 4. Currently occupied by pairs 5. Currently occupied by pairs and currently or recently reproductive *Exception: Does not apply in community buffers.* **Guideline (SPEC-CSO-GDL) 02** To limit fragmentation and maintain connectivity of nesting, roosting, and foraging habitat, fuelbreak construction should avoid intersecting with California spotted owl protected activity centers. Where this is not feasible, creation of a fuelbreak should: • Avoid the 10-acres surrounding the most recent known nest site • Avoid existing highest quality nesting and roosting habitat unless on a ridgetop • Maintain at least 40 percent overstory canopy cover and 10 percent understory cover in shaded fuelbreaks, whenever fuels and fire behavior objectives can be met with this level of vegetation retention. **Guideline (SPEC-CSO-GDL) 03** To facilitate development of future nest sites, when conducting vegetation treatments in California spotted owl territories: • Promote growth of trees greater than 24 inches dbh and especially large trees greater than 30 inches in diameter, and • Retain clumps or groups of trees greater than 24 inches dbh/100 feet tall, and especially trees greater than 30 inches dbh/150 feet tall, with canopy cover greater than 60 to 70 percent. **Guideline (SPEC-CSO-GDL) 04** To promote habitat connectivity at the watershed scale, when conducting vegetation treatments in California spotted owl territories, retain connected areas of moderate (at least 40 percent) and high canopy cover (at least 60 percent) in large/tall trees.	*Same as above*

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above	**Guideline (SPEC-CSO-GDL) 05** To minimize loss or damage to known nest and roost trees, include mitigation measures when conducting prescribed fire in protected activity centers. **Guideline (SPEC-CSO-GDL) 06** To minimize impacts on overstory canopy and provide conditions for continued use for nesting and roosting within protected activity centers, reduce fuel loads with thinning and/or prescribed burning to minimize the risk of high-severity fire and promote conditions that lead to lower intensity predicted fire effects (generally flame lengths averaging 4 to 6 feet). **Guideline (SPEC-CSO-GDL) 07** To minimize the spatial extent of high-severity fire impacts on habitat in California spotted owl territories, when implementing prescribed fire in the portion of the territory outside of the protected activity center, limit the size of high-severity burn patches to generally not exceed 10 acres and to avoid exceeding 100 acres. **Guideline (SPEC-CSO-GDL) 08** To minimize disturbance that may lead to breeding failure, during the breeding season (March 1 to August 15, or following current Pacific Southwest regional guidance) apply a limited operating period prohibiting: a. Mechanical harvest within approximately 0.25 mile of the nest or known roost site; b. Prescribed burning within 500 feet of the nest; c. Discretionary low-level helicopter flights or hovering over nests; and d. Discretionary landing of helicopters within 0.25 mile of the nest. Where the location of a nest site within a protected activity center is unknown, apply the limited operating period to the entire protected activity center or determine the nest site location. *Exceptions: Does not apply in community buffers where they do not overlap with the wildlife habitat management area.* *The limited operating period may be modified or waived by the responsible official under the following circumstances:* *a. Waived if monitoring or surveys indicate that nesting owls are absent (refer to current Pacific Southwest regional guidance)* *b. Waived or modified for activities addressing imminent threats to life and property* *c. Waived or modified for activities of limited scope and duration, if a biologist determines that such activity is unlikely to result in breeding disturbance based on the intensity, duration, timing and specific location.* *d. The limited operating period buffer distance may be modified based upon a biologist's evaluation of the area needed to shield a nest site from disturbance considering topographic features, vegetation or other screening.* *e. Waived or modified where necessary to facilitate mechanical treatments with high benefits to landscape resilience and where the disturbance risk to breeding owl pairs is relatively low; limited to no more than 10 percent of protected activity centers on the forest per year* *f. Waived or modified for prescribed burning in up to 10 percent of protected activity centers per year per national forest where necessary to facilitate the benefits of using early season prescribed fire*.	*Same as above.*

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat or connectivity loss resulting from widespread tree mortality, climate change and other stochastic events.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Forest Dependent, Large Tree/Snag Dependent, Old Forest Dependent, Complex Early Seral Habitat Dependent)*** **Guideline (MA-WHMA-GDL)** Before authorizing vegetation treatment following a large-scale, high-severity disturbance in an area that had large trees and high canopy cover prior to the disturbance: identify, retain, and promote the best available patches of remaining high quality nesting, foraging, and denning habitat (6, 5D, 5M, 4D, 4M in descending order of priority) to provide future habitat for old forest associated species. Desired conditions for amount, location, and configuration of retention should be informed by terrestrial vegetation desired conditions for the forest type. *Exceptions: Does not apply in community buffers.* **Desired Condition (TERR-FW-DC) 02** Vegetation structure and composition provide ecosystem resilience to climate change and other stressors, including altered fire regimes, drought, and flooding in riparian systems. **Desired Condition (TERR-FW-DC) 05** Ecological conditions contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and support the persistence of species of conservation concern. **Desired Condition (TERR-FW-DC) 06** The landscape contains a mosaic of vegetation types and structures that provide habitat and connectivity for a variety of species, including wide-ranging habitat generalists, such as black bear and mule deer; more localized, semi-specialists such as ground-nesting and cavity-nesting birds and mammals; and habitat specialists such as old forest and early seral associated species. **Desired Condition (TERR-MONT-DC) 01** At the landscape scale, the Sierra Nevada montane landscape is a heterogeneous mosaic of open and closed canopy forest patches, meadows, and riparian areas. These ecosystem types occur in a complex mosaic of different densities, sizes, and species mixed across large landscapes that vary with topography, soils, and snow accumulation. The composition, structure, and function of vegetation make these ecosystems resilient to fire, drought, insects, pathogens, and climate change. The mix of seral stage patches, and open versus closed canopied areas, varies by forest type, as described in the forest plan. Large and old trees are common in later seral stages throughout the landscape and in varying densities (see “Old Forest Habitats” section).	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, forest plan components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality. Species-specific components guide management towards conditions such that the spotted owl would have adequate habitat which is resilient to fire, drought, insects and diseases and trending toward desired conditions. Desired conditions emphasize resilience in spotted owl habitat and promote old forest habitat components such as larger trees, snags and coarse woody debris and structures for nesting. An adaptive approach to management would help maintain habitat under uncertain and changing conditions.
Habitat competition and hybridization with barred owls	**N/A**	There are no forest management activities that can alleviate competition and hybridization from barred owls. This threat would continue.
Pesticides	**Goal (SPEC-FW-GOAL) 05** Coordinate with local, state, and federal law enforcement and other agencies to remove and remediate poisonous substances and pesticides associated with marijuana cultivation in the wildland.	Remediation and enforcement on illegal marijuana plots to remove poisonous substances would benefit owl species by increasing prey and reducing inadvertent poisoning.

Loss of old forest habitat and key structural attributes, such as dense canopy and large trees for nesting and roosting, are key threats for California spotted owls. Most of these key threats for California spotted owl can be addressed through plan components that emphasize resilient, connected forests characterized by complex structural attributes such as closed canopy, large old trees, snags and coarse woody debris, which owls need for movement, foraging and reproduction. Species-specific plan components will provide additional protection to maintain and conserve protected activity centers and limit disturbance to breeding pairs. These species-specific plan components were added to focus on specific spotted owl habitat needs, like nesting and roosting habitat. These plan components are intended to maintain and improve the highest quality nesting and roosting spotted owl habitat within protected activity centers and guide management actions so that habitat remains well distributed throughout the landscape to provide for foraging, nesting, and roosting and promote movement across large landscapes.

Within protected activity centers, the highest quality habitat will be maintained for nesting and roosting including habitat with canopy cover that may be outside the natural range of variation. Standards and guidelines place constraints on operating periods for mechanical treatments and activities that might disturb nesting owls in protected activity centers during the breeding season unless the benefit to landscape resilience is high and the disturbance risk to breeding owls is low. In protected activity centers, the Forest Service would limit mechanical treatment of the highest quality nesting and roosting habitat; retain all known nest trees, the oldest and largest trees within protected activity centers, and all trees larger than 30 inches within territories, and maintain or improve overstory trees and trees greater than 24 inches in diameter during forest management activities. In addition, potential management approaches provide guidance when prioritizing owl protected activity centers for restoration, to consider the risk of large and severe wildfire, degree of departure from desired conditions as well as the history of spotted owl pair occupancy and reproductive status.

Threats Not Under Forest Service Control

- Habitat or connectivity loss resulting from widespread tree mortality, climate change and other stochastic events.
- Habitat competition and hybridization with barred owls

Barred owls have been an increasing risk factor for California spotted owls in the Sierra Nevada. Barred owls can hybridize and outcompete spotted owls. Barred owls were first recorded within the range of the California spotted owl in 1989 on the Tahoe National Forest. Barred owls were first recorded in the southern Sierra Nevada in 2004 (Steger et al. 2006, Seamans et al. 2004). Ongoing research has documented over 70 detections of barred or sparred owls in the Sierra Nevada to date, with the majority of records from the northern Sierra Nevada (Tahoe, Plumas, and Lassen National Forests). Five new records of barred owls were documented in the Stanislaus and Sierra National Forests in 2012, indicating further range expansion of barred owls in the southern Sierra Nevada. In 2017, confirmed barred owls were documented on the Sequoia National Forest. Barred owl numbers are likely higher than documented in the Sierra Nevada. This is because surveys have not been extensive and none have focused on barred owls in the Southern Sierra.

Based on the previously observed patterns, it is possible that barred owls could eventually colonize the entire Sierra Nevada. Experimental removals, conducted in 2018 to 2020 removed a total of 76 barred owls and hybrid sparred owls in the northern Sierra Nevada (Hofstadter et al. 2022). Initial results suggest that barred owl experimental removals can be effective in restoring occupancy of California spotted owls (Hofstadter et al. 2022). Barred owl surveys and experimental removals will be expanded to include the central Sierra Nevada in 2021. The aim is to include the vast majority of the entire barred owl population in the Sierra Nevada. Given that experimental removals have decreased the expanding barred owl population, the threat of barred owls to spotted owls in the southern Sierra in the near term has been

greatly reduced. Furthermore, the U.S. Fish and Wildlife Service is leading a multiagency effort to develop a barred owl management strategy. This is being done to address the potential threat of barred owls to both northern and California spotted owls.

- Past forest suppression policies have led to conditions that can result in large and severe wildfires that may be detrimental to old forest species such as the California spotted owl. Over the past two decades, the Sequoia and Sierra National Forests experienced increased levels of fire disturbance, including the 2020 Sequoia Complex Fire (174,000 acres) and Creek Fire (380,000 acres). There is some uncertainty about the effects of fire severity on old-forest-associated species (Keane 2014, Zielinski et al. 2013, Peery et al. 2017), however, current science suggests strategically placed landscape treatments can reduce fire severity and spread, and that combining these fuel treatments with prescribed and managed fire can effectively reduce the extent of high-intensity fires in the Sierra Nevada under most conditions (Gutiérrez et al. 2017, Jones et al. 2021). Spotted owls appear to respond well to low- to moderate-severity fire.
- The Sequoia and Sierra National Forests have experienced tree mortality from extreme drought and insects, such as bark beetles and fir engravers; this is expected to continue. Mortality has been consistent across all major conifer with the most dramatic effects on fir species and ponderosa and Jeffrey pine. Statewide trends in 2017 showed that many areas experienced mortality at higher elevations where it had not been mapped previously, compared to previous years where most of the extensive mortality was observed in lower elevation pine and mixed conifer forests.
- Climate change further exacerbates drought conditions and insect outbreaks, which can lead to uncharacteristically large wildfire. While the Forest Service cannot directly control climate change, ecosystem plan components provide conditions resilient to ecosystem stressors and the interrelated effects of climate change.

Overall, connectivity of old-forest associated species like spotted owl is high, but vulnerable to uniform, large and severe wildfire during more severe weather conditions. Weather conditions conducive to intense fire are already increasing with climate change and are expected to increase more in the near and distant future. Thorne and others (2016, 2017) evaluated future climate exposure to vegetation using downscaled climate projections for the southern Sierra Nevada, including the Sierra and Sequoia National Forests. Their results indicate a high proportion of all terrestrial ecosystems will be moderately, highly, or extremely vulnerable to future climate by the end of the century. A 2014 assessment of species-specific exposure and sensitivity to climate change using two models ranked California spotted owls as “presumed stable” (Siegel et al. 2014).

Sequoia – Spotted Owl

Information on Current Distribution of the Species in the Planning Unit

There are 2,352 records of California spotted owl in the NRIS database with 3,285 individuals recorded between 1900 and 2017. Many of these may be repeat observations of the same individuals from year to year. Within the administrative area of the Sequoia National Forest, there are 136 currently active spotted owl protected activity centers; 66 occur within the plan area and the remainder within Giant Sequoia National Monument. Population trends on the Sequoia National Forest are unknown. A recent synthesis by (Gutiérrez et al. 2017) found that California spotted owl populations in the Sierra Nevada were declining on most landscapes. An exception is the southernmost monitoring site, located within Sequoia National Park and Kings Canyon National Park.

Potential habitat (excluding private land) for California spotted owls on the Sequoia National Forest is demonstrated by the California Wildlife Habitat Relationships habitat types. Mature conifer forests (CWHR 4, 5, and 6) with canopy cover greater than 70 percent that include a large tree component are ecological conditions for California spotted owl. Approximately 278,800 acres of forest are

classified as having dense cover (60 to 100 percent closure) and 269,500 acres have moderated cover (40 to 59 percent) that could support species such as spotted owls. There are approximately 124,700 acres of forest containing California Wildlife Habitat Relationships size classes greater than 24 inches dbh that could support spotted owl (USDA Forest Service 2013b).

California spotted owl habitat on the Hume and Western Divide Ranger Districts of Sequoia National Forest is varied. The majority of nest and roost sites occur in mid slope regions between 4,000 and 7,500 feet in elevation in Sierra mixed conifer, montane hardwood conifer, and giant sequoia vegetation types, which support flying squirrels as a main prey source. At the lowest elevations in the oak woodland belt, owls can be found along canyon ravines within stringers of canyon live oak and most commonly consume woodrats.

The southernmost Kern River Ranger District on the Sequoia National Forest is a transition zone between the southern Sierra Nevada, desert environments to the east that do not support spotted owls and spotted owl populations that occupy small pockets of suitable habitat on isolated mountains in southern California and the coast range. Spotted owls in this transition zone nest from low elevation pockets of live oak at 1,000 feet up to successful nests at over 9,000 feet in elevation. However, the majority of known owl territories are in the black oak-conifer transition at 4,500 feet up to the mixed conifer- red fir transition near 8,500 feet. This district is comprised of a number of mountain ranges with unique characteristics, such as the Greenhorns, Breckenridge, and Piute Mountains, and the Kern Plateau.

The Greenhorn Mountains are an extension of the west side Sierra Nevada mixed conifer habitats. The Greenhorns are primarily dense, second-growth fir and cedar that resulted from pre-1900 timber harvest and fire exclusion. These habitats appear to support a full spotted owl population that is connected to the rest of the Sierra Nevada spotted owl population. Breckenridge Mountain and the Piute Mountains are isolated from the Greenhorn populations by gaps of several miles of unsuitable habitat. Both Breckenridge and the Piutes are further isolated by loss of habitat to large, stand replacing fires. These areas also have lower quality habitat that is closer to east-side Sierran pine due to poor site quality and lower mean annual precipitation. The owl territories on these mountains are few and widely separated due to habitat limitations.

Key Ecological Conditions in Plan Area

The mixed conifer habitat, and to a lesser extent montane hardwood forest types in this zone, provide the majority of habitat within California spotted owl protected activity centers on the Sequoia National Forest. Tree species typically include ponderosa pine, sugar pine, incense cedar, and white fir. Black oak is an important component of many mixed conifer stands, particularly at the lower elevations and on drier aspects (south and west). Dense canopy, snags and large down coarse woody debris are critical for spotted owl nesting and prey habitat.

Sequoia Summary

The best available science indicates declining population trends throughout the range of the California spotted owl as a result of low reproductive success, high juvenile mortality, and habitat specificity. These life history characteristics combined with relevant threats and stressors, including habitat loss resulting from large and severe wildfires and the expansion of barred owls, indicate substantial concern about the California spotted owl's capability to persist over the long term. Climate change and potential drought-related effects will likely continue to exert pressure on the key ecological conditions that this species depends upon.

Due to continuing primary threats such as habitat loss due to drought, widespread tree mortality, and large and severe wildfires – all of which are expected to increase due to climate change – it is unlikely that California spotted owls would experience substantial species recovery or expansion and it is likely that

populations will continue to decline. The final set of ecosystem-level plan components together with the additional species-specific plan components, which focus on retaining habitat features essential for survival and reproduction, would provide the necessary ecological conditions to contribute to maintaining a viable population of California spotted owls within the Sequoia National Forest.

Sierra – Spotted Owl

Information on Current Distribution of the Species in the Planning Unit
The Sierra National Forest has conducted surveys for spotted owl presence and reproductive status across the forest since the early 1980s. The Sierra National Forest has 240 designated California spotted owl protected activity centers and 240 home range core areas. There are 5,485 records of spotted owl in the NRIS database distributed across the forest with heavy concentrations south of Shaver Lake. On the Sierra National Forest, approximately 50 percent of the overall protected activity centers acreage is in the mixed conifer vegetation type. Analyses on population trends using data from 1990 to 2013 suggest the Sierra National Forest study populations may have declined (Gutiérrez et al. 2017).

Potentially available habitat as classified by the California Wildlife Habitat Relationships (acreages in parentheses) includes the following vegetation types: Ponderosa Pine (73,574), Montane Hardwood Conifer (77,455), Jeffrey Pine (28,585), Hardwood (148,049), Red fir (141,303), Sierra Mixed Conifer (269,921) and White fir (2,556).

According to recent mapping efforts, the largest habitat coverages which contain potential spotted owl habitat conditions on the Sierra National Forest are mid-seral coniferous forests (20 percent), hardwood and mixed hardwood/conifer forests (15 percent), and late seral closed canopy coniferous forests (12 percent).

Key Ecological Conditions in Plan Area
On the Sierra National Forest, the ecological conditions for spotted owl can be found in the mixed conifer dominated montane zone. Tree species typically include ponderosa pine, sugar pine, incense cedar, and white fir, and some Douglas-fir. Black oak is an important component of many mixed conifer stands, particularly at the lower elevations and on drier aspects (south and west).

Sierra Summary
The best available science indicates declining population trends throughout the range of the California spotted owl as a result of low fecundity, high juvenile mortality, and habitat specificity. These life history characteristics combined with relevant threats and stressors, including habitat loss resulting from large and severe wildfires and the expansion of barred owls, indicate substantial concern about the California spotted owl's capability to persist over the long term. Climate change and potential drought-related effects would likely continue to exert pressure on the key ecological conditions that this species depends upon.

Due to continuing primary threats such as habitat loss due to drought, widespread tree mortality, and large and severe wildfires—all of which are expected to increase due to climate change—it is unlikely that California spotted owls would experience substantial species recovery or expansion and it is likely that populations will continue to decline. The final set of ecosystem-level plan components together with the additional species-specific plan components, which focus on retaining habitat features essential for survival and reproduction, would provide the necessary ecological conditions to contribute to maintaining a viable population of California spotted owls within the Sierra National Forest.

Great Gray Owl – Sequoia/Sierra

Sequoia Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population

of the great gray owl in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra Determination: The ecosystem plan components may not provide the ecological conditions necessary to maintain a viable population of the great gray owl in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of the great gray owl in the plan area.

General Key Ecological Conditions: Ecological conditions necessary for great grey owls include meadows and early seral-stage openings adjacent to mature coniferous forests with canopy cover averaging 80 percent and containing large-diameter trees and snags (24 inches or greater) for nesting. Foraging habitats are meadows or large meadow complexes that support sufficient prey; these meadows are greater than 26 acres, are often between 100 and 1,120 acres (Sears 2006, Wu et al. 2015) and are within 600 feet of nesting habitat.

Table D-11. Key threats, plan components and expected effects on great gray owl

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of habitat (mature forest and meadows), along with loss of connectivity due to management activities such as vegetation treatments, livestock grazing, and timber harvest.	***(Refer to Table D-4 Crosswalk for Forest Dependent, Old Forest Dependent, Wet/Riparian Meadow Dependent, and Large Tree and Snag Dependent)*** ***Where overlap occurs, see also relevant plan content in Wildlife Habitat Management Area (WHMA) as well as plan content developed for fisher (SPEC-FSHR) and California spotted owl (SPEC-CSO)*** **Standard (RANG-FW-STD) 01** Manage livestock grazing to attain desired conditions in blue oak-interior live oak woodlands, annual grasslands, aspen, special habitats, great gray owl protected activity areas, occupied willow flycatcher habitat, and riparian conservation areas. Where livestock grazing is found to prevent or retard attainment of desired conditions, modify grazing practices (such as number of livestock, timing, scheduled rest, and range structures). If adjusting practices is not effective, remove livestock from the area using appropriate administrative authorities and procedures. **Desired Condition (SPEC-GGO-DC) 01** Habitat within great gray owl protected activity centers provide high quality habitat for nesting and roosting that contributes to their successful reproduction. The habitat has forested areas with high canopy cover, multiple layers, and many large trees and snags. Meadow habitat in a protected activity centers supports a sufficient prey species population to provide a food source for great gray owls through the reproductive period, and natural structures at the edges of meadows to provide opportunities for hunting perches. **Desired Condition (SPEC-GGO-DC) 02** Great gray owl territory habitat includes forested areas with upper natural range of variation target of large conifer snags or large live oaks.	Ecosystem-level plan components aim to make sure great gray owl would have adequate habitat for movement, dispersal, feeding, and reproduction and provide direction for maintaining key habitat elements such as large conifers in areas where management activities take place and consider that wildfires are allowed to burn within the natural range of variability and contribute to ecosystem function. Specific measurable objectives move meadow habitat toward desired conditions necessary to support adequate prey species. Management Area direction for backroad recreation promotes desired conditions for species diversity and movement corridors and large wild tracts of land in undeveloped landscapes. Species-specific guidance provides additional emphasis on retention of key habitat features such as nest trees and encourages the use of approved conservation strategies in project design. Vegetation treatment operating periods are generally limited during the breeding season near nesting areas to minimize disturbance to breeding birds.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above.	**Guideline (SPEC-GGO-GDL) 01** In meadow areas of great gray owl protected activity centers, manage to enhance habitat for prey species. **Guideline (SPEC-GGO-GDL) 02** To minimize disturbance that may lead to breeding failure, during the nesting and breeding season (February 15 to August 15, or follow current Pacific Southwest regional guidance), apply a limited operating period of an active great gray owl nest stand (that is, not during an in inactive nesting year) prohibiting: a. Road construction or extensive heavy mechanized equipment within approximately 0.25 mile of the nest or known roost site; b. Power equipment such as chainsaws or pole pruners within 300 feet, of the nest site or known roost site; c. Discretionary low-level helicopter flights over nests; d. Discretionary landing of helicopters within 0.25 mile of the nest; or e. Extensive hand tool activities, such as fire line construction for prescribed burning or trail construction, maintenance, or repair, within 300 feet of the nest site. Where the location of an active nest site within a protected activity center is unknown, apply the limited operating period to the protected activity center or determine the nest stand location. The limited operating period may be waived for projects of limited scope and duration, if a biologist determines chicks have fledged or that such projects are unlikely to result in breeding disturbance considering the intensity, duration, timing and specific location of the project. If a biologist concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the limited operating period buffer distance may be reduced. *Exceptions: Does not apply in community buffers where there is not overlap with the WHMA.* **Guideline (SPEC-GGO-GDL) 03** To provide habitat used by fledglings, retain or recruit pockets of dense canopy cover (greater than 65 percent) around nests and retain some low-hanging limbs, within 650 feet of a nest tree or activity center. *Exceptions: Does not apply to community buffers. Does not apply to CWPZ where there is no overlap with WHMA.*	*Same as above.*

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of quality meadow and other open habitat due to conifer encroachment	***(Refer to Table D-4 Crosswalk for Aquatic and Riparian Dependent)***	Ecosystem-level plan components guide management to retain adequate meadow and open habitat that supports sufficient prey species like gophers and voles. Conifer encroachment into meadows is minimized, and specific, measurable objectives move meadow conditions toward desired conditions.
Loss of early seral habitat	***(Refer to Table D-4 Crosswalk for Complex Early Seral Habitat Dependent)***	Ecosystem-level plan components support early seral habitat for prey species. Desired conditions aim to have complex early seral habitats distributed across the landscape and key habitat elements such as large diameter snags available for resting habitat. Guidelines require restoration projects to maintain ecosystem integrity and important wildlife habitat. After large and severe wildfires, harvest would be limited to provide areas of complex early seral habitat for great gray owl and other species that need them.
Recreation disturbance, vehicle strikes due and other human disturbance	***(Refer to Table D-4 Crosswalk for Disturbance Intolerant)***	Direction for sustainable recreation desired conditions limit adverse impacts due to recreation on great gray owl.
Small population size	***N/A***	There are no forest management activities that can directly increase population size. Plan components to improve habitat and protect breeding individuals would guide management so great gray owls reproductive success would not further be impaired by forest management activities.
Loss of quality habitat due to climate change or other stochastic events, which result in a reduction in snowpack and mature forest conditions.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	Ecosystem-level plan components guide management to retain adequate habitat for great gray owl movement, dispersal, feeding, and reproduction that may otherwise be lost due to climate change and other stochastic events. Desired conditions for terrestrial ecosystems support habitat that is complex and supports movement and connectivity for old forest specialists. Desired conditions emphasize resilience and promote old forest habitat components such as larger trees, snags and coarse woody debris and structures for nesting such as witches' brooms

Key Threats to Persistence

Small population size; meadow and adjacent forested habitat degradation or loss from fires and management practices including livestock grazing and timber harvest; vehicle strikes; climate change; and human disturbance.

Threats Under Forest Service Control

- Loss of habitat (mature forest and meadows), along with loss of connectivity due to management activities such as vegetation treatments, livestock grazing, and timber harvest.
- Loss of quality meadow and other open habitat due to conifer encroachment.
- Loss of early seral habitat
- Recreation disturbance, other human disturbance and vehicle strikes due to low perching behavior.

There are over 20,000 acres of plantations on the Sequoia National Forest in need of treatment that would allow the stands to develop old forest conditions. Treatments are needed to reduce fuel loading, reduce inter-tree competition, and improve the species mix within the stands. However, low timber profits and other factors limits the forests' ability to keep up with the pace and scale necessary to realize restoration benefits. Forestry practices that remove trees greater than 24 inches dbh and thinning nest stands (typically 50 acres in size) to below 65 percent canopy cover have the potential to degrade great gray owl nesting habitat.

Past fire suppression policies have led to conditions that can result in large and severe wildfires that may be detrimental to old forest species. The Sequoia and Sierra National Forests essentially abandoned even-aged reforestation management 20 years ago, in favor of stand maintenance thinning harvests intended to control density and growth of stands, generally for habitat maintenance. Current plan guidance requires protected activity centers of at least 50 acres of the highest quality nesting habitat be established around all known great gray owl nest stands to mitigate risk from forest management activities. These areas generally have a limited operating period during the nesting period (typically March 1 to August 15), prohibiting vegetation treatments and road construction within one-quarter mile of an active great gray owl nest stand.

Fire suppression and uncharacteristic wildfire can alter the structure and composition of the forest interface near meadows. Decreasing trends in early seral and complex early seral habitat, which can provide foraging opportunities, are most likely due to past fire suppression and salvage logging efforts. These past management practices can put forest edge habitat adjacent to meadows at particular risk.

Livestock grazing can affect the key ecological conditions of meadows and riparian areas by changing vegetation height over the summer and by affecting riparian vegetation. Current trends in the number of livestock grazing show a decrease in livestock numbers since the 1960s (USDA Forest Service 2013b). Lingering effects of past meadow impacts remain, especially where water tables have lowered. Some meadows have had active restoration projects.

Recreation and activity related disturbance can cause nest failure during the breeding season. Primary roads can also cause direct mortality due to low perching behavior of owls and foraging near roads. Public use of forest roads has grown steadily and driving for pleasure is the single largest recreation use of Forest Service managed lands. This poses a risk to great gray owls flying low over roadways in search of prey. There is no confirmed road related mortality on the Sequoia National Forest, however increasing population and recreational use would continue to be a risk factor. There is no road that crosses the mountains on the Sierra National Forest, however, State Highway 41 and State Highway 140 access the northern half of the forest and State Highway 168 access the southern portion. The forest has approximately 180 miles of double lane paved roads which are considered main line arterials. The forest

also has two Forest Service designated national scenic byways. Incidental mortalities can occur. Population growth in many of the counties is expected to increase demand for recreation opportunities on the Sequoia and Sierra National Forest and may increase human-wildlife interactions.

Threats Not Under Forest Service Control

- Small population size.
- Loss of quality habitat due to climate change or other stochastic events, which result in a reduction in snowpack and mature forest conditions.

The great gray owl population in California is at-risk because it is very small (Hull et al. 2010). Small populations are more susceptible to inbreeding, population bottleneck, and founder effects. Retention of defective genes or the loss of adaptive genes can lead to reduced genetic diversity (Shaffer 1981, Lande 1993) and small populations are less able to recover from losses due to environmental events such as large wildfires (Wu et al. 2016).

Great gray owl are one of 16 Sierra Nevada bird species considered moderately vulnerable to climate change due to their limited dispersal capability, restricted diet, and recent population bottleneck (Siegel et al. 2014). Climate change further exacerbates drought conditions, insect outbreaks, meadow drying and wildfire. Those conducting a post-fire study the 2013 Rim Fire in Yosemite National Park and Stanislaus National Forest, noted great gray owls appeared to be resilient to effects from this large-scale fire three years after the event. Great gray owls persisted in occupied meadows that were burned, but there was no significant increase in colonization rates (Siegel et al. 2019). This suggests suitable habitat for great gray owls remains after burning and post-fire forest management activities in occupied habitat may affect great gray owls. There are plan components including desired conditions that guide salvage and mechanical treatments to retain important wildlife elements, including large diameter trees and snags.

While the Sequoia and Sierra National Forests cannot directly control climate change, ecosystem plan components as mentioned above provide conditions resilient to ecosystem stressors and the interrelated effects of climate change.

Sequoia – Great Gray Owl

Information on Current Distribution of the Species in the Planning Unit

Great gray owls are thought to occur throughout the Sierra Nevada range though local distribution may be highly variable.

There is one 1986 CNDDB record for great gray owl reported on Sequoia National Forest plan area, located a little over a mile north of Fish Creek Campground on the Kern Plateau (California Department of Fish and Wildlife CNDDB 2017). There are no NRIS database occurrence records in the plan area and there have been no detections of great gray owl recorded as part of the Sierra Nevada Avian Monitoring Information Network surveys in the plan area.

There are two CNDDB records for the Giant Sequoia National Monument, and 18 NRIS database records with 27 individuals located in Giant Sequoia National Monument Plateau (California Department of Fish and Wildlife CNDDB 2017). Reproductive individuals have been observed in recent years on the Hume Lake Ranger District, in Giant Sequoia National Monument. The Giant Sequoia National Monument is not part of the planning area. There are three active great gray owl sites, and all are located in atypical habitat, in lower elevation areas of open pine stands, generally lacking large trees but with a large black oak component.

On the Sequoia National Forest, great gray owl habitat can be found in the montane, upper montane zone, and subalpine zones which includes a mosaic of conifer forest, meadows, and montane chaparral. On the western slopes red fir, Jeffrey pine, and lodgepole pine are the dominant forest species (Fites-Kaufman et al. 2007). This species is strongly associated with relatively large meadows (10 or more acres within 500 meters of each other). There are an estimated 556 meadows encompassing about 10,000 acres or 10 percent of the total acres of the Sequoia National Forest. These meadows are unevenly distributed across the landscape.

The same as the California spotted owl, potential habitat (excluding private land) available to great gray owl is approximately 278,800 acres classified as having dense cover (60 to 100 percent closure) while 269,500 acres have moderated cover (40 to 59 percent). There are approximately 124,700 acres of forest containing California Wildlife Habitat Relationship size classes greater than 24 inches (United States Department of Agriculture 2013a).

Key Ecological Conditions in Plan Area
Mature forests, typically more moist than dry, with dense canopy cover (greater than or equal to 65 percent) and with supporting features such as large-diameter trees and snags (greater than or equal to 24 inches in diameter) for nesting sites. Meadows and early seral-stage habitats that support sufficient prey (such as pocket gophers and voles); pine and fir forests adjacent to meadows between 3,500 and 7,000 feet (Wu et al. 2016). Two factors considered most important in determining habitat use by breeding great gray owls are availability of nest sites and availability of suitable adjacent foraging habitat such as meadows (Hayward and Verner 1994).

Sequoia Summary
There are few observations of great gray owl on the Sequoia National Forest, which is at the southern extent of the species range. There are three active great gray owl sites located on Hume Lake Ranger District, in the Giant Sequoia National Monument plan area, where nesting is suspected but unconfirmed in the Sequoia National Forest. Widespread loss of habitat from uncharacteristic stand replacing fire, and anticipated loss from climate change and reductions in groundwater run-off, are the biggest threats to this species on the Sequoia National Forest. The Sequoia National Forest has a number of ecosystem-level and species-specific plan components in place to mitigate risks within its management authority, but cannot mitigate all threats for persistence. Based upon this evaluation, the final set of ecosystem plan components and the additional species-specific plan components would provide the necessary ecological conditions to maintain a viable population of great gray owl within its range. However, due to uncertainty about the species current viability, the Sequoia being on the limit of the species' range, and potential future threats associated with climate change and wildfire, it is not within the inherent capability of the land to maintain or restore the ecological conditions to maintain a viable population of great gray owl within the Sequoia planning area.

Sierra – Great Gray Owl

Information on Current Distribution of the Species in the Sierra Planning Unit
There are 361 records of great gray owl on the Sierra National Forest in the NRIS database. Although the majority of sightings are concentrated on the western side of the forest, running north to south, there are several located along the eastern side of the forest, with many in wilderness areas. There are 14 protected activity centers.

On the Sierra National Forest, ecological conditions supporting great gray owl can be found in the mixed conifer forest-dominated montane zone and upper montane forests. These zones include large areas of varied mixtures of ponderosa pine or Jeffrey pine, black oak, sugar pine, incense cedar, white and red firs interspersed with meadows, rocky outcrops and lodge pole pine.

On the Sierra National Forest, the number of large meadows has not changed significantly in the last decade with the exception of a few stand-replacing fires that have removed potential nest stands adjacent to a large meadow or meadow complex habitat. In the previous 10 years, this has occurred in two instances on the Sierra National Forest when the Big Creek Fire removed the nest stand adjacent to Mushroom Rock and the Snake/Cargyle2 Fire in the wilderness removed a potential nest stand next to Cargyle meadow. More recently, the 2015 Willow Fire burned around Peckinpah Meadow, which is considered great gray owl habitat; however, recent surveys in 2012–2013 did not detect the species around that meadow. In some cases, wildfires may create more foraging habitat for great gray owls, depending on fire severity and effects on meadows and surrounding vegetation.

Key Ecological Conditions in Sierra Plan Area
Great gray owls are most commonly found near montane meadows surrounded by dense forest of medium to large mixed conifer and red fir tree species, and with early seral stage habitat that support abundant prey. Great gray owls are strongly associated with relatively large meadows (10 or more acres). However, more recent surveys have found multiple nests at lower elevations in mixed hardwood-conifer forests, sometimes miles from the nearest montane meadow. (Wu et al. 2015) found that 21 percent of the nest sites they visited were below elevations of 3,000 feet and over 0.4 mile from the nearest meadow. Almost one third of the nests were in oaks, rather than the typical broken-top fir snag.

Sierra Summary
The entire population is estimated at 79 pairs (Wu et al. 2016), making it highly vulnerable to extirpation, and likely suffering from a population bottleneck (Hull et al. 2010). As a result, the risk to this subspecies from inbreeding, climate change, as well as from habitat loss due to timber harvest, grazing, and land use conversion is high (Hull et al. 2010, Hull et al. 2014, Kalinowski et al. 2014). There are abundant observations of great gray owl on the Sierra National Forest, however, protected activity centers where breeding has occurred are limited to 14 protected activity centers. The biggest threats to this species on the Sierra National Forest are widespread loss of habitat from uncharacteristic stand replacing fire and anticipated loss of meadow habitat resulting from climate change, encroachment of conifers, and improper grazing practices in meadows.

The Sierra National Forest has a number of ecosystem-level and species-specific plan components in place to mitigate risks within its management authority, but cannot mitigate all threats for persistence of great gray owls. Plan desired conditions and objectives to improve meadows would protect great gray owl forage habitat. Based upon this evaluation, the ecosystem-level plan components may not provide the ecological conditions necessary to maintain a viable population of the great gray owl in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of the great gray owl in the plan area.

Kern Red-winged Blackbird – Sequoia

Determination: It is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the kern red-winged blackbird in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Marshy meadows and lagoons which support growths of cattails and sedges. This species needs emergent wetlands with freshwater cattail and tule marshes.

Table D-12. Key threats, plan components and expected effects on Kern red-winged blackbird

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation due to invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level plan components for invasive species control (INV) and reduction would minimize the occurrence and spread of invasive species to the extent possible, and thus would reduce threats to Kern red-winged blackbird.
Loss or degradation of habitat from forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent)*** **Desired Condition SQF (MA-SFW-DC) 01** Riparian woodlands are resilient and sustainable, containing mature cottonwoods, willows, and other associated riparian plants supporting native wildlife species. **Desired Condition SQF (MA-SFW-DC) 02** Ecological conditions within the South Fork Wildlife Area support occupancy and breeding of federally listed at-risk species such as the southwestern willow flycatcher, least Bell's vireo, and yellow-billed cuckoo; and species of conservation concern such Kern red-winged blackbird. **Desired Condition SQF (MA-SFW-DC) 03** Recreation activities are managed to minimize effects on at-risk wildlife.	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity. Expansion of hydropower development is unlikely on Sequoia National Forest due to being already fully developed. Management direction for South Fork Wildlife Area, where suitable red-winged blackbird habitat exists, would make sure at-risk species and their habitat would be prioritized.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events*)**	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, forest plan components designed to move toward desired conditions would aid in habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Stressors to watershed conditions and anything that negatively affects hydrologic flow; invasive species; fire; and climate change.

Threats under Forest Service Control

- Habitat loss or degradation due to invasive species

Tamarisk and other invasive plants moving into wetlands along the South Fork Kern River may threaten the foraging and nesting habitat of the Kern red-winged blackbird (Gallion 2008).

Threats Not Under Forest Service Control

- Loss or degradation of habitat from human water use
- Habitat loss or degradation due to climate change or stochastic events

Any loss of wetland habitat through climate change or human water uses would likely adversely affect this subspecies. Changes in water levels at Lake Isabella may also be a threat, but regulating those levels is outside the authority of the Forest Service.

Future changes in climate (that is, increasing temperatures) combined with a change from a snow-dominated to a rain-dominated system would impact meadows due to changes in the hydrologic regime. Total meadow area may decline and wet meadows may shift to dry meadows, especially small irregularly shaped meadows at low to mid elevations (Gross and Coppoletta 2013).

Information on Current Distribution of the Species in the Sequoia Planning Unit

The Kern red-winged blackbird has been known to inhabit east central Kern County, in Walker Basin and on the South Fork of the Kern River on the Sequoia National Forest (Mailliard 1915b, a). Within the Sequoia National Forest, breeding colonies have been recorded only in marshes around the east end of Lake Isabella adjacent the Kern River.

The breeding population in the South Fork Kern River Valley was previously estimated to number as many as 500 individuals, and a survey in the Walker Basin in 2001 found approximately 50 red-winged blackbirds believed to be this subspecies (Gallion 2008). It is unknown if the subspecies continues to persist in the Walker Basin.

Population trends for this species are currently unknown (Shuford and Gardali 2008). There are no records for Kern red-winged blackbird on the forest in the NRIS database, CNDDB, nor from the Sierra Nevada Avian Monitoring Information Network. However, there are numerous records for red-winged blackbird in eBird. It is assumed that red-winged blackbird observed in the Kern River Valley are the Kern subspecies, however, DNA analysis is needed to confirm the subspecies.

Key Ecological Conditions in Sequoia Plan Area

The ecological requirements of the Kern red-winged blackbird are largely undescribed; however, earlier descriptions note the subspecies preference for "marshy meadows and lagoons which support growths of cattails and sedges" (Gallion 2008). Similar to tri-colored blackbird, this species needs emergent wetlands with freshwater cattail and tule marshes.

Important nesting areas are protected on the Audubon Kern River Preserve (managed by the National Audubon Society), Canebrake Ecological Reserve (managed by California Department of Fish and Wildlife), and the South Fork Wildlife Area (managed by the Sequoia National Forest). South Fork Wildlife Area is a 1,271-acre unit of the Sequoia National Forest along the western edge of the South Fork of the Kern River between the western boundary of the privately owned Audubon Kern River Preserve and the eastern shore of the Isabella Reservoir. The area consists of Valley foothill riparian habitat dominated by cottonwood and willow trees.

Sequoia – Summary

Kern red-winged blackbird is endemic to California. This species is restricted in range to the Kern River Valley and Walker Basin in Kern County. Potential habitat for this species is limited to Lake Isabella and adjacent Kern River vicinity in the planning area. Due to the difficultly in subspecies identification it is unknown if a current viable population persists in the plan area, therefore, it is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population. However, plan components specific to the South Fork Wildlife Area would make sure this important red-winged blackbird habitat is maintained for at-risk species persistence and would contribute to maintaining a viable population of Kern red-winged blackbird where they occur.

Mount Pinos Sooty Grouse – Sequoia

Determination: It is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Mount Pinos sooty grouse in the plan area.

Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Relatively open coniferous and pine habitat with little understory cover. Woodlands and subalpine forests with large trees also provide habitat.

Table D-13. Key threats, plan components and expected effects on Mount Pinos sooty grouse

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of habitat due to management activities such as fuels reduction treatments, livestock grazing, and timber harvest.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Forest Dependent, Large Tree/Snag Dependent)***	Ecosystem-level plan components provide direction for maintaining key habitat elements such as large trees in areas where management activities take place. Species Direction components for at-risk species, including Mount Pinos sooty grouse, support intact ecosystems that contribute to sustainable populations.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events*)**	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, forest plan components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.
Direct mortality from hunting	**SPEC-FW-DC 04** The national forest provides high quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities.	Ecosystem-level recreational goals and guidelines would guide management to make sure disturbance to sooty grouse is minimized through public education, managing recreation activities and planning recreation facilities away from at-risk species breeding habitat. Hunting is regulated by the state and is in balance with Mount Pinos sooty grouse needs.

Key Threats to Persistence

Threats include hunting, incompatible timber harvest, fire suppression and altered fire regime, livestock grazing, land development, recreational use of habitat and climate change.

Threats Under Forest Service Control

- Habitat loss (especially loss of subalpine habitat) resulting from forest management activities such as fuels reduction treatments, livestock grazing, and timber harvest.

In addition to the forestwide plan components for Species-Specific and Terrestrial Ecosystems, (SPEC-FW-DC 01-03) specify that habitats for at-risk species support self-sustaining populations within the inherent capabilities of the plan area and that the ecosystems they depend upon would be resilient to uncharacteristic fire, climate change, and other stressors, threats are primarily addressed through ecosystem-level plan components.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or stochastic events
- Direct mortality from hunting

The Mount Pinos sooty grouse is a highly endemic (possibly relict) species with a restricted distribution in California. The subspecies is at-risk because it is very small and susceptible to inbreeding, population

bottleneck, and reduced genetic diversity. Sooty grouse hunting is authorized by California Department of Fish and Wildlife and Nevada Department of Wildlife. California Department of Fish and Wildlife allow hunting on sooty grouse within Tulare, Fresno, and Madera Counties with a daily take of two birds, and a maximum possession of six birds (California Department of Fish and Wildlife 2018). The species continues to be allowed for hunting use suggesting populations of sooty grouse are at least stable. However, accurately differentiating between sooty grouse and the Mount Pinos subspecies in the field could be a potential risk factor.

A primary threat to Mount Pinos sooty grouse is loss of subalpine habitat from climate change, which further exacerbates drought conditions, insect outbreaks, meadow drying and loss, and wildfire. Since this species also makes seasonal altitudinal migrations, a warming climate could affect how far they have to migrate, which could stress the birds. While the Sequoia National Forest cannot directly control climate change, ecosystem plan components provide conditions, which should be more resilient to ecosystem stressors and the interrelated effects of climate change. Desired conditions for the subalpine and alpine zone stress open woodlands with scattered trees to small, dense groves, infrequent small fires, and subalpine woodlands that are resilient to insects, diseases, fire, wind, and climate change. These components provide the key ecological conditions for persistence.

A standard for all terrestrial ecosystems further ensures large-diameter tress (greater than 30 inches in diameter) would generally be retained during management activities. A forestwide desired condition for hunting (SPEC-FW-DC 04) provides direction for high-quality hunting and fishing opportunities in locations that do not pose substantial risk to native species. However, ultimately sooty grouse hunting is authorized by California Department of Fish and Wildlife and Nevada Department of Wildlife.

Information on Current Distribution of the Species in the Planning Unit
Currently, the southernmost known breeding locations are at Sunday Peak in south-central Tulare County and Sherman Peak in southeastern Tulare County (Bland 2008). There is a 2004 CNDDB record of six Mount Pinos Sooty Grouse on Sequoia National Forest plan area, on the northwest side of Cherry Hill. There are 5 observations labeled as *D. f. sierrae* in the NRIS database, all labeled as being on the Sequoia National Forest, with 1 observation from June 2012, 2 observations from August 2013, and 2 in July of 2016. However, these all fall within the boundary of Giant Sequoia National Monument outside the planning area. None of the 71 NRIS observations labeled as *Dendragapus fuliginosus*, sooty grouse,are reported in Sequoia National Forest plan area. Twelve of 398 observations in California that are mislabeled as *Dendragapus obscurus* (dusky grouse) occur on the Sequoia National Forest plan area.

In eBird there are numerous sightings of sooty grouse across the forest, particularly in Tulare County in the vicinities of Boone Meadow, Bald Mountain, Quaking Aspen Meadows and the Greenhorn Mountains in Kern County (eBird 2018).

Key Ecological Conditions in Plan Area
On the Sequoia National Forest, key ecological conditions for this species can be found in the Montane, Upper Montane Zone, Subalpine Zones and Alpine Zones, which include a mosaic of conifer forest, meadows, and montane chaparral. On the western slopes red fir, Jeffrey pine, and lodgepole pine are the dominant forest species (Fites-Kaufman et al. 2007). Alpine environments on the Kern Plateau may be among the most threatened.

Sequoia – Summary

Mount Pinos sooty grouse is currently found in a geographically restricted area and may be a relict population of a once more widespread species that occurred in the southern Sierra Nevada. Therefore, it is unknown if a viable population of this subspecies currently exist in the Sequoia National Forest planning area. Due to limited distribution and a moderate population decline throughout its range, the Sequoia

National Forest may provide important refugia habitat if the subspecies occurs. Taxonomic uncertainty about the species may be a potential barrier for conservation action and hunting pressure could be a factor if the subspecies is misidentified in the field. In addition, sooty grouse habitat, particularly in the subalpine forest, may be especially at-risk from climate change and interrelated effects of wildfire and drought, further increasing viability risk. Species viability of Mount Pinos sooty grouse is currently uncertain; however, proposed plan components are designed to move habitat conditions to a more desired ecological state than what currently exists. Based upon this evaluation, the final set of ecosystem plan components would provide the necessary ecological conditions to maintain a viable population of Mount Pinos sooty grouse within its range if the subspecies occurs. However, due to uncertainty about the species current viability and potential future threats associated with climate change, it is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of Mount Pinos sooty grouse within the plan area.

Northern Goshawk – Sequoia/Sierra

Determination: The ecosystem-level plan components should provide the ecological conditions necessary to maintain a viable population of the northern goshawk in the plan areas. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

General Key Ecological Conditions: Dense mature mixed conifer to lodgepole pine and deciduous forests interspersed with meadows, other openings and riparian areas that support prey populations. Large trees and snags for nesting.

Table D-14. Key threats, plan components and expected effects on northern goshawk

Key Threats to Persistence	Specific Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation or loss of connectivity due to management activities such as fuels reduction, vegetation treatments, and timber harvest.	***(Refer to Table D-4 Crosswalk for Forest Dependent; Wet/Riparian Meadow Dependent, and Large Tree and Snag Dependent)*** ***Where overlap occurs, see also relevant plan content in Wildlife Habitat Management Area (WHMA) as well as plan content developed for fisher (SPEC-FSHR) and California spotted owl (SPEC-CSO)*** **Desired Condition (SPEC-NG-DC) 01** Northern goshawk protected activity centers provide habitat conditions that support nesting and successful reproduction, including high canopy cover, with large trees and old forest characteristics. **Guideline (SPEC-NG-GDL) 01** To minimize disturbance that may lead to breeding failure, during the nesting and breeding season (February 15 to September 15 or follow current regional guidance), apply a limited operating period of an active nest site prohibiting: a. Road construction or extensive heavy mechanized equipment within approximately 0.25 mile of the nest site, unless northern goshawks are not nesting	Ecosystem-level plan components for Terrestrial Ecosystems (TERR), Watersheds (WTR), Management Areas (MA), Designated Areas (DA), Fire Management (FIRE), Species Direction (SPEC), Rangeland Management (RANG), and Timber Management (TIMB) guide management to make sure goshawks would have adequate habitat for movement, dispersal, feeding, and reproduction and provide direction for maintaining key habitat elements such as large trees in areas where management activities take place and to consider wildfires are allowed to burn within the natural range of variability and contribute to ecosystem function. Desired conditions, standards, and guidelines promote ecological restoration practices that would improve forest resilience. Species-specific desired conditions and guidelines guide management to make sure protected activity centers and nest site conditions are provided for during vegetation and fuels treatments, high-severity fire effects are minimized, and operating periods are limited during the breeding season. Land management activities support conditions for survival and reproduction of goshawk.

Key Threats to Persistence	Specific Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above.	b. Power equipment such as chainsaws or pole pruners within 300 feet of the nest site or known roost site; c. Discretionary low-level helicopter flights or hovering over nests; d .Discretionary landing of helicopters within 0.25 mile of the nest; or e. Extensive hand tool activities, such as fireline construction for prescribed burning or trail construction, maintenance, or repair, within 300 feet of the nest site Where the location of an active nest site within a protected activity center is unknown, apply the limited operating period to the protected activity center, or determine the nest stand location. A limited operating period may be waived for projects of limited scope and duration, if a biologist determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. If a biologist concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the limited operating period buffer distance may be modified. Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of any northern goshawk protected activity centers per year on a national forest. *Exceptions: Does not apply in community buffers where they do not overlap with WHMA.* **Guideline (SPEC-NG-GDL) 02** Use information on occupancy and resiliency (or departure from the natural range of variation) when prioritizing protected activity centers for treatment where treatment is deemed necessary. Priority based on resilience: 1. Least resilient. 2. Moderately resilient but putting neighboring high quality areas at risk. 3. Most resilient. Priority based on occupancy: 1. Currently unoccupied and historically occupied by territorial singles only. 2. Currently unoccupied and historically occupied by pairs. 3. Currently occupied by territorial singles. 4. Currently occupied by pairs. 5. Currently or historically reproductive. *Exceptions:* • *Does not apply to community buffers.* • *Does not apply to CWPZ where there is no overlap the WHMA.*	*Same as above.*

Key Threats to Persistence	Specific Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Human recreation and related disturbance.	***(Refer to Table D-4 Crosswalk for Disturbance Intolerant)***	Ecosystem-level desired conditions minimize disturbance from recreation related activities and human activities on sensitive resources. Guidelines constrain impacts on resources including at-risk species breeding habitat in recreation areas and consider the needs of at-risk species, including goshawk, would be accounted for during recreation design.
Loss of roosting and nesting trees.	***(Refer to Table D-4 Crosswalk for Forest Dependent, Large Tree/Snag Dependent)*** **Guideline (SPEC-FW-GDL) 02** Known nest, roost, or den trees used by at-risk species, including surrounding trees that provide beneficial thermal or predatory protection, should not be purposefully removed, except for the reasonably unavoidable removal of hazard trees and as required to meet other State or Federal regulatory requirements.	Ecosystem-level plan components guide management to make sure that forest trees and canopy cover necessary for nesting, roosting and perching would be retained during project implementation and that forest habitats are resilient to natural disturbance such as fire, insects and disease. Plan components also help to make sure that a supply of trees in the larger size classes is distributed across the forest at levels that would provide sustainable nest/roost habitat for northern goshawk cross the landscape. A species-specific guideline further reinforces the retention of known nest and roost trees used by any at-risk species.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events*)**	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, forest plan components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality and can provide the foraging habitat and prey species necessary for northern goshawk.

Key Threats to Persistence

Loss of habitat due to large and severe wildfires, human disturbance, and climate change pose a risk to northern goshawk persistence.

Threats under Forest Service Control

- Habitat loss or degradation or loss of connectivity due to management activities such as fuels reduction, vegetation treatments, and timber harvest.
- Human recreation and related disturbance.
- Loss of nesting and roosting trees

A study conducted by (Morrison et al. 2011) in the Lake Tahoe Basin indicated that northern goshawks are susceptible to human disturbance; human activity was twice as high within infrequently occupied territories as compared to frequently occupied territories. Many kinds of human activities have been documented to affect raptors by altering habitats, physically harming or killing eggs, harming young, killing or stressing adults, or by disrupting normal behavior (Morrison et al. 2011). A recent study on nesting northern goshawk response to logging truck noise found that while goshawks alerted (turned their head in the direction of the noise) to the noise they did not flush, and response was inversely proportional to the distance of the nest from the road (Grubb et al. 2012).

Threats under the control of Forest Service for goshawk on the Sequoia National Forest can be addressed in the form of desired conditions that emphasize sustainable recreation and that minimize human disturbance.

In addition to ecosystem-level components, several species-specific plan guidelines were added to further emphasize that the retention of key habitat components such as roosting and nesting trees for raptors are considered during project implementation. A forestwide guideline SPEC-FW-GDL 02 places additional emphasis on the protection of at-risk species habitat by ensuring appropriate design features, mitigation, and project timing considerations are incorporated into projects that may affect their habitat.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or stochastic events

It is unclear how goshawk populations would respond to climate change. One potential threat from climate change is an increasing rate of fire in higher elevation forest stands (Schwartz et al. 2015), areas that contain old-growth forest that have largely been spared from harvest. However, the effects of fire in these stands is largely dependent on fire severity, as lower fire severity can maintain or benefit goshawk habitat. Based on the Climate Change Vulnerability index, a risk assessment tool developed by NatureServe to predict a species vulnerability to climate change, northern goshawk in the Sierra Nevada was rated as Moderately Vulnerable, which is defined as "abundance and/or range extent within geographical area assessed likely to decrease by 2050" (Siegel et al. 2014). Across their range, northern goshawks display population-specific demographic relationships with local weather and regional climates. Based solely on projections of climate change, this population-specific variation is anticipated to result in population-specific responses to future climate scenarios, which could range from little effect on potentially significant effects (Long et al. 2014, Araújo et al. 2005, Dickson et al. 2014). The impact that climate change may have on goshawk nesting and foraging habitat and prey populations in the future is unclear. It is also unclear what if any effect climate change would have on goshawk populations, as these changes would likely very depending on population-specific conditions.

In the southern Sierra Nevada, large and severe wildfires and large areas of tree cover loss from drought, insects and disease especially over the last five years has substantially reduced the amount of suitable nesting habitat within closed canopy forests. Habitat occupancy rates for northern goshawk decrease in areas of tree cover loss.

Goshawks require a minimum threshold amount of nesting habitat in mature forest condition to maintain occupancy. For example, in mixed ownership areas on the Stanislaus National Forest, occupancy monitoring suggests that at least two northern goshawk territories were abandoned immediately following harvest activities, despite the maintenance of nearby suitable nesting habitat on National Forest System land. Alteration of goshawk habitat on private lands adjacent to the plan area may increase the importance of habitat condition within the plan area for continued goshawk occupancy.

Sequoia – Northern Goshawk

Information on Current Distribution of the Species in the Sequoia Planning Unit

Northern goshawks in California are well-distributed and relatively abundant in most forested areas across their core breeding range, and populations have remained stable over the past 50 years. Goshawks use a broad range of vegetation types, and habitat on national forests in California is widespread and well distributed. Goshawks possess excellent dispersal capabilities, and there are no identified barriers to dispersal

There are 357 detections of northern goshawk in the NRIS database reported as occurring on the Sequoia National Forest, which does not separate those that have occurred in the forest plan revision area from

those occurring within the boundary of the Giant Sequoia National Monument. The observations occurred between 1991 to present. Of those observations, there are 27 northern goshawk protected activity centers in total, with 13 protected activity centers occurring within the forest plan revision area and the others occur within the Giant Sequoia National Monument boundary. The number of active territories is unknown.

Key Ecological Conditions in Sequoia Plan Area
Northern goshawks are found in dense mature mixed conifer to lodgepole pine and deciduous forests interspersed with meadows, other openings and riparian areas (2,000 to 8,000 feet). Goshawks are foraging generalists but have more specialized habitat requirements for breeding and prefer higher canopy closure and larger trees in the nest stand. Nest sites comprise less than 1 percent of the total goshawk home range and have relatively low vegetative structural diversity compared to forest conditions in their large home ranges, which is used for foraging, roosting, and by juvenile hawks post-fledging (Miller et al. 2013, Reynolds, Graham, et al. 2006, Reynolds, Wiens, et al. 2006).

Sequoia – Summary
There are 13 northern goshawk protected activity centers within the plan area, the active territories are unknown. Recent population estimates for goshawk in California suggest a stable to increasing trend, but recent widespread bark beetle-related tree mortality in the Sequoia National Forest plan area put this species primary ecological conditions at-risk. Climate change and potential drought related effects will apply additional pressure on the key ecological conditions that this species depends. Ecosystem-level plan components would move mature forests towards desired conditions which would provide resilient quality habitat for goshawk persistence. In addition, goshawk-specific plan components would guide management to make sure the protection of breeding hawks through avoidance and limited operating periods and retention of key ecological elements such as nest trees.

Sierra – Northern Goshawk

Information on Current Distribution of the Species in the Sierra Planning Unit
Northern goshawks in California are well-distributed and relatively abundant in most forested areas across their core breeding range, and populations have remained stable over the past 50 years. Goshawks use a broad range of vegetation types, and habitat on national Forests in California is widespread and well distributed. Goshawks possess excellent dispersal capabilities, and there are no identified barriers to dispersal

There are 591 northern goshawk records with 824 individuals in the NRIS database within the forest boundary, and 630 records with 895 individuals within the forest and a 5-mile buffer. There are 50 eBird records and 53 total individuals for the Sierra National Forest, and 125 records with 143 individuals within the forest plus a 5-mile buffer. There are 4 CNDDB records within the forest and 15 within the forest and a 5-mile buffer. An early report of the distribution of birds in California (Grinnell and Miller 1944) include observations of northern goshawk in the Sierra Nevada, with 12 sightings on the Sierra National Forest.

Northern goshawk territories are managed on the Sierra National Forest as protected activity centers as prescribed by the Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004b). There are 66 protected activity centers documented in NRIS in the Sierra National Forest. The number of current active territories is not known. The protected activity centers are 200 acres in size and are delineated based on all known and newly breeding territories detected on Forest. The goshawk territories, which are approximately 175 acres, are based on historical information so a current nest site maybe unknown. As areas are surveyed and nests are located the status may change from a territory to protected activity center delineation.

Key Ecological Conditions in Sierra Plan Area
Sierra National Forest vegetation types as defined by California Wildlife Habitat Relationship system indicate the following acreages rounded to the nearest hundred in the Sierra National Forest as potential habitat for goshawk: Jeffrey Pine (28,600 acres), Lodgepole Pine (32,200 acres), Red fir (141,300 acres), Sierran Mixed Conifer (269,900 acres), Subalpine Conifer (179,300 acres), Montane Riparian (3,800 acres), Wet meadow (19,400 acres), Montane-Hardwood-conifer (77,500 acres), White fir (2,600 acres) and Aspen (600 acres).

Northern goshawk protected activity centers encompass over 13,700 acres on the Sierra National Forest. The Bass Lake Ranger District has 28 protected activity centers, and High Sierra Ranger District has 38. Using the draft 2016 existing vegetation layer for the forest, there were over 353,000 acres of goshawk high quality nesting habitat on the forest, with over 154,000 acres of suitable habitat on the Bass Lake Ranger District. Before the recent tree mortality event, there was 65,590 acres of suitable goshawk high nesting habitat on the Sierra National Forest as defined by California Wildlife Habitat Relationship types. However, due to widespread tree mortality it is anticipated there is less suitable habitat currently available.

Sierra – Summary
Population estimates for northern goshawk on the Sierra National Forest suggest a stable trend due to the number of protected activity center locations, although the number of active goshawk territories on the Sierra National Forest is unknown. Although recent population estimates for goshawk in California suggest a stable to increasing trend, recent widespread bark beetle related tree mortality in the Sierra National Forest plan area put this species primary ecological conditions at-risk. The recent large-scale drought and bark beetle related tree mortality event poses a considerable risk to availability of the large live tree component. In addition, current and future warming and drying climate trends increase vulnerability to large and severe wildfires and further fragmentation of old forest habitat. Ecosystem-level plan components would move mature forests towards desired conditions which would provide resilient quality habitat for goshawk persistence. In addition, goshawk-specific plan components would guide management to make sure the protection of breeding hawks through avoidance and limited operating periods and retention of key ecological elements such as nest trees. The plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Tricolored Blackbird – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the tricolored blackbird in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range

General Key Ecological Conditions: Freshwater marshes and emergent wetlands with dense tules and cattails. During migration and winter, these blackbirds inhabit open cultivated lands and pastures as well as marshes.

Table D-15. Key threats, plan components and expected effects on tricolored blackbird

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss of breeding habitat to invasive species.	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level plan components to control and reduce invasive species would minimize this threat to tricolored blackbirds. Desired conditions for aquatic and riparian resources, terrestrial vegetation, and riparian conservation areas would move marsh habitat toward natural range of variation.
Loss of habitat due to human activities and changes in water levels	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent)***	The greatest threat is habitat loss and alteration by agriculture and urbanization conversion. However, this does not occur on National Forests. Plan components would not contribute additional effects and this threat would persist outside the capabilities of the Forest Service. Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic ecosystem integrity. Expansion of hydropower development is unlikely on Sequoia National Forest due to being already fully developed. Changes in water levels at Lake Isabella is outside the authority of the Forest Service.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, forest plan components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Loss and degradation of wetland breeding habitats due to agricultural and urbanization conversion, loss of habitat due to invasive species, and changes in water levels pose threats to tricolored blackbird persistence.

Threats Under Forest Service Control

- Loss of breeding habitat to invasive species.

In the limited habitat for this species on the Sequoia National Forest, loss of tules or cattails to invasive species like tamarisk is a major threat. Changes in water levels at Lake Isabella may also be a threat, but regulating those levels is outside the authority of the Forest Service. Water use from expanding population pressure and human demands, coupled with increasing temperatures and temporal changes in precipitation and runoff events related to climate change, as well habitat loss from nonnative invasive species would continue to put this species and its associated habitat components at-risk in the future.

Threats Not Under Forest Service Control

- Loss of habitat due to human activities and changes in water levels
- Habitat loss or degradation due to climate change or stochastic events

Loss and degradation of wetland breeding habitats caused by human activities represent the greatest threat to populations of tricolored blackbird (Meese et al. 2014). Draining and conversion of wetlands for agriculture; conversion of upland habitat (especially Himalayan blackberry thickets within open pastures) used by some nesting colonies; application of insecticides, nest destruction and associated egg and nestling mortality during agricultural crop harvests; and collateral killing along with the red-winged

blackbirds are all threats that occur on private lands in California, but do not affect birds on National Forest lands (Meese et al. 2014).

Climate change, however, is a threat to the species across all land ownerships. There is a higher probability that California will experience warmer and dryer conditions in the future (Diffenbaugh et al. 2015). The impact that climate change may have on marsh habitats in the future is unclear. It is also unclear what if any effect climate change would have on tricolored blackbird populations, as many colonies now use upland habitats for nesting.

Changes in water levels at Lake Isabella may also be a threat, but regulating those levels is outside the authority of the Forest Service.

Information on Current Distribution of the Species in the Sequoia Planning Unit
Within the Sequoia National Forest, breeding colonies have been recorded only in marshes around Lake Isabella and the Kern River.

In eBird, there are 77 sighting of 1,186 tricolored blackbirds within the forest administrative boundary, with nearly all occurring in the plan area, in the Lake Isabella area and east of Lake Isabella along the Kern River and Kern River Preserve and State route 178 (eBird 2018). CNDDB data includes three records of tricolored blackbird in the vicinity of Lake Isabella on the Kern River Ranger District, with possible nesting attempts as recent as 2015. There are no records in the NRIS database.

Statewide, the population of tricolored blackbirds declined 35 percent, from approximately 395,000 to 258,000 birds between 2008 and 2011 (Kyle and Kelsey 2011). From 2011 to 2014 the number of tricolored blackbirds dropped another 44 percent, from 258,000 to 145,000 birds (Meese et al. 2014). The eBird sightings in the plan area include many from 2014 through 2017 (eBird 2018).

Key Ecological Conditions in Sequoia Plan Area
The species' basic requirements for selecting breeding sites are open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999). Historically they used freshwater marshes and emergent wetlands with dense vegetation including aquatic sedges (tules) and cattails for nesting.

Sequoia – Summary
This species occurs on the Sequoia National Forest in extremely low numbers and statewide populations are in decline. Suitable habitat on the Sequoia National Forest is limited to the shores of Lake Isabella and surrounding vicinity. Water use from expanding population pressure and human demands, coupled with increasing temperatures and temporal changes in precipitation and runoff events related to climate change, as well habitat loss from nonnative invasive species would continue to put this species and its associated habitat components at-risk in the future. Plan components to address watershed protection and climate change effects would aid in the persistence of the species within the plan are but would not entirely alleviate threats to tricolored blackbird throughout its range. Six hydroelectric projects are located on the forest, four on the Kern River, and two on the Tule River. These hydroelectric projects are run off of the rivers, but do influence the flows and timing of flows of the rivers. The Forest Service does not have the capacity to eliminate key threats such as wetland conversion, water use regulation, or climate change which pose the greatest threats to persistence. Therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the tricolored blackbird in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Willow Flycatcher – Sierra/Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the willow flycatcher in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Dense riparian willow or other shrub thickets within large wet meadows. Meadows with standing or running water are needed for breeding (40 percent cover of surface water) (Loffland et al. 2014).

Table D-16. Key threats, plan components and expected effects on willow flycatcher

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Loss and degradation of riparian and wet meadow habitat from management practices such as livestock grazing.	***(Refer to Table D-4 Crosswalk for Riparian/ Water Dependent, and Wet/ Riparian Meadow Dependent)*** **Desired Condition SQF (MA-SFW-DC) 02** Ecological conditions within the South Fork Wildlife Area support occupancy and breeding of federally-listed at-risk species such as the southwestern willow flycatcher, least Bell's vireo, and yellow-billed cuckoo; and species of conservation concern such Kern red-winged blackbird. **Standard (SPEC-WF-STD) 01** In willow flycatcher occupied sites receiving late season grazing, if habitat conditions are not supporting the willow flycatcher or are trending downward, modify or suspend grazing at those sites. **Standard (SPEC-WF-STD) 02** During allotment management planning (AMP) or when authorizing livestock or pack stock use, determine occupancy of willow flycatcher in affected meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component capable of providing willow flycatcher habitat, utilizing established protocols. **Standard (SPEC-WF-STD) 03** In meadows with occupied willow flycatcher sites, allow only late-season grazing (after August 15) in the entire meadow. This standard may be waived if an interdisciplinary team together with the affected grazing permittee has developed and implemented a site-specific meadow management strategy. The strategy must focus on protecting the nest site and associated habitat during the breeding season and the long-term sustainability of suitable habitat at breeding sites. It may use a mix of management tools, including grazing systems, structural improvements, and other exclusion by management techniques to protect willow flycatcher habitat.	Management for aquatic and riparian ecosystems guide management to make sure these habitats are fully functioning or trending toward fully functioning and resilient, and that infrastructure has minimal adverse effects on riparian and aquatic resources. Species-specific standards and rangeland forestwide standard 01 would minimize impacts from grazing in meadow and riparian areas so it is compatible with willow flycatcher habitat needs such as species composition and intact hydrologic function and water flow. Habitat restoration would further reduce this threat by increasing available habitat for willow flycatchers. On Sequoia National Forest desired condition for the South Fork Wildlife Area would support occupancy and breeding for southwestern willow flycatcher and provide persistence for all willow flycatchers.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Same as above	**Standard (RANG-FW-STD) 01** Manage livestock grazing to attain desired conditions in blue oak-interior live oak woodlands, annual grasslands, aspen, special habitats, great gray owl protected activity areas, occupied willow flycatcher habitat, and riparian conservation areas. Where livestock grazing is found to prevent or retard attainment of desired conditions, modify grazing practices (such as number of livestock, timing, scheduled rest, and range structures). If adjusting practices is not effective, remove livestock from the area using appropriate administrative authorities and procedures.	*Same as above*
Nest predation/ parasitism	**N/A**	There are no forest components to limit this threat, but educational activities may help mitigate this issue by increasing public awareness
Loss and degradation of riparian and wet meadow habitat from human water use, drought, and climate change	***(Refer to Table D-4 Crosswalk for Riparian/Water Dependent and Wet/Riparian Meadow Dependent)***	Ecosystem-level desired conditions and goals provide for ecological integrity of aquatic and riparian resource so that they are resilient to climate change and other stressors. Standards make sure that exempt hydroelectric facilities would not interfere with adequate in-stream flow or favorable ecological conditions for local riparian- and aquatic-dependent species such as willow flycatcher.

Key Threats to Persistence

Nest predation and nest parasitism, loss and degradation of breeding habitat due to management practices such as livestock grazing, road construction, and water diversion; climate change.

Threats Under Forest Service Control

- Loss and degradation of riparian and wet meadow habitat from management practices such as livestock grazing.

Loss and degradation of riparian and meadow habitat is considered the most significant threat to the persistence of willow flycatchers in the plan area. Degradation of habitat from management practices including livestock grazing (historic and present), road construction, and water diversion have resulted in a reduction of willow habitat, as well as compaction and drying of meadows. Water diversions that result in a reduction of riparian vegetation, particularly willows, from either reduced water availability or inundation of riparian areas effectively degrade habitat quality for willow flycatchers.

Loss of meadow and riparian habitat is a primary risk factor and a number of ecosystem-level plan components mitigate this threat, within Forest Service authority. This is achieved primarily through desired conditions, standards, guidelines and objectives for watersheds and riparian conservation areas as mentioned above.

There are currently no occupied willow flycatcher sites that overlap with livestock grazing on the forests, and efforts to improve riparian areas, primarily springs and relatively small portions of streams within annual grass systems are the result of positive mitigations resulting from ongoing allotment analyses on the forest. As a result of analyzing range condition through the NEPA process, eight allotments required riparian area fence protection totaling 24 specific riparian areas. All of the sites required fencing to reduce livestock impacts and move the area to an acceptable standard. Sixteen of the sites have been constructed and the remaining seven are pending (NEPA completed in September 2011 for 8 sites, one of which was completed in 2012). Four additional riparian exclosures were constructed on Greenhorn Mountain to rectify resource concerns. All the sites fenced thus far have shown improvement and upward trends in the riparian component of the sites.

Current livestock numbers on the Sequoia National Forest are approximately 60 percent of those permitted in the 1960s. Conditions in meadows and riparian areas have generally been improving and most measures of rangeland condition indicate an upward trend. Livestock grazing is likely to be sustained within the planning area over the next 20 years. The amount of livestock grazing may decline to some degree due to reduced forage capacity (declining condition of upland browse, lack of fire, and timber canopy closure) and tighter administrative constraints for protection and enhancement of threatened, endangered, sensitive species habitat and other resource concerns such as water quality.

Threats Not Under Forest Service Control

- Nest predation/ parasitism
- Loss and degradation of riparian and wet meadow habitat from human water use, drought and climate change

Outside the national forest, water diversions have impacted willow flycatcher habitat. As stated in (Green et al. 2003), riparian vegetation in the Owens Valley located downstream of the intake to the Los Angeles aqueduct has dramatically changed to a drier condition due to the lack of water, and no longer provides habitat for nesting willow flycatchers. Increased water demands coupled with more frequent drought events and drying conditions, will continue to act as negative stressors on flycatcher habitat. Water resource management activities, including maintaining perennial water quality, quantity, and timing of flows play a critical role in overall ecological function and sustainability and most of these activities are regulated outside the boundary of the national forest.

Nest predation is common and is considered a likely factor most affecting population viability in the Sierra Nevada (Bombay, Morrison, et al. 2003, Cain et al. 2003). Predators include milk snakes, common king snakes, red tailed hawks, weasels, chipmunks, and squirrels. Standing water around nests is considered a deterrent to mammalian predators and nests farther from trees exhibit higher nest success (Cain et al. 2003). Brood parasitism from brown-headed cowbirds is also identified as a threat to willow flycatchers. Brown-headed cow birds have a commensal relationship with domestic livestock. Rates of parasitism are variable and may affect flycatcher productivity at the local level (Green et al. 2003). Placement of bird feeders in residential areas off the national forest is known to attract brown-headed cowbirds, which in turn leads to nest parasitism of willow flycatchers. Several goals focused on educational outreach and community stewardship may help mitigate this issue by increasing public awareness through the partnerships, volunteers, interpretation, and stewardship programs and by working with State and Federal wildlife agencies to reduce impacts of invasive species that are adversely affecting the persistence of native species populations in riparian conservation areas.

Drought and climate change are known to influence long-term patterns in meadow condition such as reductions in willow habitat; however, the recent declines in willow flycatcher population numbers and degradation of suitable breeding habitat have likely been accelerated due to anthropogenic factors (Green et al. 2003).

Sequoia – Willow Flycatcher

Information on Current Distribution of the Species in the Sequoia Planning Unit
There are 64 records of 82 individual willow flycatchers in eBird for the Sequoia National Forest, but this also includes those on the Giant Sequoia National Monument (eBird 2018). There are recent willow flycatcher reports scattered throughout the forest: in Tulare County there are records from the Greenhorn Mountains and meadows on the Kern Plateau; and in Kern County there are records south of Kern Peak at Kern Flat and Lloyd Meadow, and in the vicinity of Lake Isabella and along the Kern River (Kern River Preserve, South Fork Wildlife Area). The sightings in Lake Isabella area are presumed to be the endangered *extimus* subspecies, and willow flycatchers detected outside of this area and in the montane forests may be *brewsteri*, but identity has not been confirmed. A third subspecies, *E. t. adastus*, was known on the east side of Sierra Nevada and may or may not have occurred on the Sequoia National Forest.

There were six sites considered "occupied" on Sequoia National Forest under the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004b). Five of those sites are within Giant Sequoia National Monument and one is in the Sequoia National Forest plan area. Although willow flycatcher was detected during monitoring in the Monument in 2009, the last detection during monitoring in the plan area was in 2001, despite repeated surveys. Flycatcher surveys are conducted using standardized protocol (Bombay, Benson, et al. 2003). The willow flycatcher site in the plan area, Troy Meadow, has not been occupied since 1997. Follow-up visits for detections at other sites listed as occupied in the 2004 have been negative, with no evidence of birds persisting through the breeding season.

To summarize, there have been no detections in the plan area since 2001. The status of willow flycatcher subspecies on the Sequoia National Forest is not well understood because they are difficult to differentiate from the federally listed southwestern willow flycatcher species in the field.

Key Ecological Conditions in Sequoia Plan Area
Willow flycatcher is found in western Sierra Nevada's willow dominated riparian areas, including moist meadows with perennial streams and smaller spring-fed or boggy areas (2,000 to 8,000 feet). Potential habitat (excluding private land) acreage rounded to the nearest hundred, as defined by the California Wildlife Habitat Relationships, includes wet meadow (4,400 acres), montane riparian (6,000 acres), and valley foothill riparian (500 acres). This provides a total of 10,900 acres available to willow flycatcher on the Sequoia National Forest.

Sequoia Summary
Water use from expanding population pressure and human demands, coupled with increasing temperatures and temporal changes in precipitation and runoff events related to climate change, along with small declining populations that are subject to nest parasitism by brown-headed cowbirds will continue to put this species and its associated habitat components at-risk on the Sequoia National Forest. Riparian habitat is currently departed from historic conditions due in large part to growing population demands for water that result in stream diversions and impoundments. The Forest Service has little control over water management outside national forest boundaries. For this reason, it would be difficult for managers to fully restore riparian habitat to reference conditions. Proposed ecosystem-level plan components are designed to move habitat conditions to a more desired ecological state than what currently exists. This would move willow riparian habitats to a more resilient condition and provide for the ecological needs of willow flycatcher. Furthermore, specific plan components to address management of the South Fork Wildlife Area, an important area for willow flycatchers, would guide forest management activities to protect and improve willow flycatcher habitat.

There is no current documentation of breeding of willow flycatchers in the plan area and key risk factors including climate change, ground water pumping and water diversions not within Forest Service management authority make it beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the willow flycatcher. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra – Willow Flycatcher

Information on Current Distribution of the Species in the Sierra Planning Unit
On the Sierra National Forest, there are 117 records of 421 individuals of willow flycatcher in the NRIS database. The majority of those records are from the 1980s and 4 records are within the last 15 years. There are 20 records of 37 individuals in eBird and 8 records in CNDDB (eBird 2018).

There were 9 known occupied flycatcher sites reported on the Forest in 2004 (USDA Forest Service 2004b). However, the Sierra National Forest has no currently occupied sites based on consistent survey and reporting for historically occupied sites. Two sites, Markwood Meadow and Long Meadow were occupied on two occasions, each between 2000 and 2008, but these two sites have not been occupied since 2008. Follow-up visits for detections at other sites listed as occupied in the 2004 have been negative, with no evidence of birds persisting through the breeding season. Similarly, long-term annual monitoring at MAPS stations in Yosemite National Park occasionally detects one or more willow flycatchers in late June or July. However, the breeding condition of captured birds and subsequent follow-up surveys indicate that willow flycatchers have not bred at these sites for many years (Loffland et al. 2014).

Key Ecological Conditions in Sierra Plan Area
Potentially available habitat (excluding private land) as classified by the California Wildlife Habitat Relationship (acreages rounded to nearest hundred) includes the following vegetation types: 3,800 acres montane riparian, 300 acres valley foothill riparian, and 19,400 acres wet meadow.

Sierra – Summary
In the past 15 years, there have been few detections for willow flycatcher on the Sierra National Forest and there are currently no occupied sites. Although there have been no recent documented willow flycatcher breeding in the plan there have been numerous sightings of individuals during spring and summer months (eBird 2018). Flycatcher surveys are limited and it is possible that willow flycatcher breeding occurs in isolated patches of riparian habitat in the plan area. There is approximately 23,400 acres of potential willow flycatcher habitat in the Sierra National Forest. Water quality and quantity are at present well within the natural range of variability in most areas of the forest. However, climate change is a stressor which may limit water quality and quantity in the future. Watersheds are overall in good condition. A few are impaired due to water withdrawals or impoundments. Water use from expanding population pressure and human demands, coupled with increasing temperatures and temporal changes in precipitation and runoff events related to climate change would continue to put this species and its associated habitat at risk in the future

Based upon this evaluation, the final set of ecosystem-level plan components and the additional species-specific plan components would provide the necessary ecological conditions to maintain a viable population of willow flycatcher within the plan area, if one exists, over the duration of the forest plan. However, there is no current documentation of breeding of willow flycatchers in the plan area and key risk factors including climate change, ground water pumping and water diversions not within Forest Service management authority make it beyond the authority of the Forest Service or not within the

inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the willow flycatcher.

Amphibians

Fairview Slender Salamander – Sequoia

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the Fairview slender salamander in the plan area.

General Key Ecological Conditions: Oak woodlands, chaparral habitat, riparian corridors, forest litter, rocks, down logs and woody debris. This species is known to inhabit drier habitats than most slender salamanders, such as talus slopes and uplifted ridges of metamorphic rocks paralleling the Kern River (Jockusch et al. 2012, Jockusch and Wake 2002). This species is active when conditions are moist in fall, winter, and spring months.

Table D-17. Key threats, plan components, and expected effects on Fairview slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition (SPEC-FW-DC) 03** The structure and function of the vegetation, aquatic and riparian system, and associated microclimate and smaller scale elements of special habitats (like carbonate rock outcrops) exist in adequate quantities within the capability of the plan area to provide habitat and refugia for at-risk species with restricted distributions. **Standard (WTR-RCA-STD) 08** Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species from aquatic habitats, including juvenile fish, amphibian egg masses, and tadpoles.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians including the Fairview slender salamander. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Disease/ natural predators	**Desired Condition (SPEC-FW-DC) 02** Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impact from such threats as disease and other site-specific threats. Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern.	Species-specific desired conditions would minimize impacts from threats such as increased predator populations and improve conditions for at-risk salamanders.
Habitat loss or degradation due to climate change or other stochastic events.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to these effects.

Key Threats to Persistence

Degradation or loss of habitat and microsite conditions due to ground disturbance, fire suppression equipment, and road maintenance; disease and natural predators. Effects from climate change.

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities

For terrestrial salamander species, ground disturbance from a variety of sources could directly impact individuals on the surface cover substrate, such as rocks, logs or forest vegetation litter. Fire suppression, vegetation management, and other activities using heavy equipment could degrade slender salamander habitat by disturbing microsite conditions such as woody debris and forest litter. Additionally, the close proximity of some populations to Mountain Highway 99 (Kernville-Johnsondale) means that roadwork has the potential to affect their habitat.

Forestwide **Guideline (SPEC-FW-GDL) 01** to minimize impacts of projects on at-risk species habitat along with desired conditions that maintain microclimate and smaller scale elements of special habitats would alleviate this threat by ensuring that habitat exists to the best of the Forest's ability.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change, widespread tree mortality, or other stochastic events.
- Disease and natural predators

This species is vulnerable to stochastic events such as fire. Large-scale fire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris. Habitat may be maintained or improved with the restoration of periodic low-severity fire.

Climate change effects, such as warmer temperatures and longer drought, would intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. Warmer temperatures and drought would dry the ground and wood and other cover for salamanders. This would restrict their movements further. Invasive plant species are also expected to increase, especially in the surrounding foothills. Once an invasive species dominates a site, fire patterns are expected to change and become more frequent. Warmer temperatures would also dry the ground, wood, litter, and other cover for salamanders, further restricting the movement of this species and the time that they are active each year.

Additional threats to this species include disease and natural predators. Chytridiomycosis *(Batrachochytrium dendrobatidis)* has been documented for the California slender salamander (*Batrachoseps attenuatus*), however, the actual impacts of chytridiomycosis on the Fairview slender salamander is unknown. Natural predators of this species likely include: spotted and striped skunks, ringtails, raccoons, gray foxes, ring-necked snakes, and various skinks, moles and shrews (Krueger 2016).

Information on Current Distribution of the Species in the Planning Unit
There are 13 sites are documented for the Sequoia National Forest in CNDDB. All sites are located in the plan area, occurring on the eastern side of the Greenhorn Mountains, from just south of Sherman Peak to Isabella Lake along the Kern Canyon corridor. There are no records in the NRIS database for the Fairview slender salamander on the Sequoia National Forest.

Key Ecological Conditions in Plan Area
The Fairview slender salamander is endemic to California and is found only in the Upper Kern River Canyon along the west side of Lake Isabella, on the east and west sides of the river, from Wofford Heights north to 1 kilometer north of where South Falls Creek flows into the Kern River (Jockusch and Wake 2002, Jockusch et al. 2012).

Sequoia – Summary
The Fairview slender salamander is found only in the Upper Kern River Canyon along the west side of Lake Isabella in oak woodlands, chaparral habitat, riparian corridors, forest litter, rocks, down logs and woody debris. This species is considered relatively common and not known to be declining. The biggest threats to this species on the Sequoia National Forest are degradation or loss of habitat from ground-disturbing activities and fire. These factors combined with direct mortality due to predation, disease, and increased stochastic events including large and severe wilfires, puts slender salamanders at significant risk. Forest-plan components to minimize impacts of projects on at-risk species habitat and maintain microclimate and smaller scale elements of special habitats would guide management to make sure that habitat for the species exists to the best of the Forest's ability. Although the effects of natural disturbances cannot be controlled, forest management activities such as vegetation and fire management would help maintain and protect habitat. Ecosystem-level components should maintain or restore ecological conditions to contribute to maintaining a viable population in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Foothill Yellow-legged Frog – Sequoia/Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the foothill yellow-legged frog in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Shaded rocky streams within a variety of habitats, including blue oak woodland, chaparral/live oak, black oak/ponderosa pine, montane and wet meadows. Dependent on water for all life stages.

Key Threats to Persistence

Altered flow regimes in streams and rivers for hydroelectric power, water storage and water delivery; degradation of riparian habitat; disease; invasive species; pesticides; large and severe wildfires; drought and climate change.

Table D-18. Key threats, plan components and expected effects on foothill yellow-legged frog

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation due to forest management activities.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining populations of aquatic species such as the yellow-legged frog.
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level plan components would minimize the occurrence and spread of invasive species, and thus would reduce threats to yellow-legged frogs.
Inadvertent poisoning from pesticides	**Standard (WTR-RCA-STD) 02** Limit pesticide applications to cases where project-level analysis indicates pesticide applications are consistent with riparian conservation area desired conditions.	Species-specific plan components would regulate pesticide application near yellow-legged frog occupied sites and alleviate this threat.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat degradation due to alterations to the natural flow regime in rivers and streams from hydroelectric dams	(***Refer to Table D-4 Crosswalk or Open Water Dependent, Riparian/Water Dependent***)	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they are high quality and provide adequate habitat for yellow-legged frog. Specific guidelines for at-risk species promotes design features to protect all species at-risk during project implementation. Control of impacts from dams and hydroelectric use is beyond forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help reduce threats to foothill yellow-legged frogs. Expansion of hydropower development is unlikely on Sequoia National Forest due to being already fully developed.

Threats under Forest Service Control

- Habitat degradation due to alterations to the natural flow regime in rivers and streams from forest management activities
- Competition and predation from invasive species
- Inadvertent poisoning from pesticides

Changes in stream temperature or morphology can cause high mortality during the species' egg and larval life stages. Research has repeatedly shown that foothill yellow-legged frogs are adversely affected by seasonal pulse flows, which create stressful or fatal velocity conditions for early life stages. The main causes of mortality in eggs are hydrologic in nature. Eggs are usually killed by either desiccation or scour (Lind et al. 2003, Davidson and Knapp 2007). Tadpole mortality can also occur as a result of irregular stream flows.

Fish stocking in rivers, streams, reservoirs, and previously fishless lakes have reduced native fish and amphibians, such as yellow-legged frogs. On the Sequoia, many species of warm water nonnative fishes have been introduced into lower elevations on the Kern, Tule and Kings Rivers associated with reservoirs. Nonnative and hatchery trout were introduced into formerly fishless streams on the Tule, White and Deer watersheds and above natural barriers on the Kings and Kern Rivers. These nonnative fish outcompete and feed on the native species in these lakes, including insects, frogs, and fish. Nonnative bullfrogs have become widely dispersed across the forest at elevations less than 5,500 feet and pose a competition and predation risk to yellow-legged frogs. Other aquatic invasive species, such as quagga mussel and New Zealand mudsnails, have spread throughout California on boats, fishing equipment, and other water sports gear (Moyle et al. 2015). However, this invasive has not be identified on the forests yet.

Threats Not Under Forest Service Control

- Habitat degradation due to alterations to the natural flow regime in rivers and streams from hydroelectric dams
- Habitat loss or degradation due to climate change or stochastic events

Stream morphology, flows, and temperatures may be affected by hydroelectric use on the Sequoia and Sierra National Forests. Dams and diversions also contribute to aquatic habitat alteration by blocking aquatic species movement or migration, and contribute to species isolation. Water quantity and quality may be affected in the future as hydroelectric use continues and increases. Population growth has led to increased competition for water among various uses which can negatively impact foothill yellow-legged frogs. Dams and diversions on and around both Forests have impacts on watershed conditions within the Forests. While controlling impacts from dams and hydroelectric use is beyond Forest control, ecosystem-level plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

The current distribution of foothill yellow-legged frog is strongly correlated with climate variables, which suggests that this species would be sensitive to climate changes that affect stream hydrology (Thomson et al. 2016). In the Sierra Nevada, snowpack losses of 50-90 percent are predicted by the turn of the twenty-first century resulting in earlier runoff and reduced spring and summer stream flows (Dettinger et al. 2004, Maurer et al. 2007). How frogs would respond to these changes is unknown, but reduced water availability in the Sierra Nevada would likely lead to more conflict with human use of water and affect how regulated reaches are managed, likely to the detriment of this species (Thomson et al. 2016). Drought can impact foothill yellow-legged frogs by causing drying of normally perennial streams resulting in the stranding of tadpoles and recently metamorphosed frogs.

Parasites pose an additional threat to foothill yellow-legged frogs. The parasite, *Ribeiroia* has been shown to cause severe limb deformities in other frog species and has been found in the vicinity of foothill yellow-legged frogs. Another parasite, Anchor Worm (*Lernaea cyprinacea*), is nonnative and typically infects fish but can infect larval foothill yellow-legged frogs which can cause deformities or mortality (Kupferberg et al. 2009). In addition, the most significant parasite that impacts this species is *Batrachochytrium dendrobatidis* which causes amphibian chytridiomycosis.

The proliferation of trespass cannabis grow sites can damage aquatic habitat quality by diverting water and adding detrimental toxicants to headwater (Bauer et al. 2015). Kerby and Sih (2015) found that a nonlethal concentration of the pesticide carbaryl interacts with other stressors, such as the presence of nonnative crayfish, to reduce survival of foothill yellow-legged frog tadpoles by 50 percent. Pesticides can impact these frogs in both original and derived forms. Chloroxon (the oxon derivative of chlorpyrifos) killed all tadpoles exposed to it and was at least 100 times more lethal than the parent chemical (Fellers et al. 2004). Air-borne pesticides are implicated as the most significant threat to this species, especially for Sierra Nevada populations which are directly impacted by pesticide drift from the central valley (Fellers et al. 2004).

Sequoia – Foothill Yellow-legged Frog

Information on Current Distribution of the Species in the Sequoia Planning Unit
Although the species was found to be absent from many historic locations on the forest during surveys occurring from 1990 through 2000, positive detections were made after 2000. The two most recently occupied localities on the Sequoia National Forest consist of unnamed tributaries of the North Fork Kern River, given the names Ash and Jywood Creeks (Hayes et al. 2016). However, foothill yellow-legged frogs may have been extirpated from Ash Creek (Lind et al. 2003). In Jywood Creek, at least two adult foothill yellow-legged frogs were observed during every survey between 1998 and September 2002 (Lind et al. 2003). The known foothill yellow-legged frogs on the Sequoia National Forest appear to be very few and limited in distribution, and may be near extirpation in the region.

Key Ecological Conditions in the Sequoia Planning Unit

Key ecological conditions for the foothill yellow-legged frog are water quality and quantity. This species is found in partially shaded rocky streams in a variety of habitats, including blue oak woodland, chaparral/live oak, black oak/ponderosa pine, montane and wet meadows and appear to be highly dependent on free water for all life stages (Morey 2000).

Surface water resources for the Sequoia National Forest are predominately in the Kern and Tule Rivers. Flows from Sequoia National Forest streams have been highly variable over the span of several decades. Natural variation in flow is due to the long- and short-term climate cycles that influence precipitation. Timing of peak flows from snow melt is earlier than it was 10 years ago, and reflects warmer than normal spring temperatures (Stewart 2009, Hunsaker et al. 2014).

Major dams and their reservoirs are found just off the forest on the Kings, Tule and Kern Rivers and block the movement of warm water native fishes. Smaller dams and diversions that are run off of the facilities on the Kern and Tule Rivers block the movement of warm and cold-water species, and have encouraged conditions for bass or brown trout, both nonnatives (USDI Fish and Wildlife Service 2014).

Sequoia – Summary

The biggest threats to this species on the Sequoia National Forest are the loss of water quality and quantity due to hydroelectric use and large and severe wildfires. These factors combined with the loss of genetic diversity, habitat loss, pesticide use, nonnative fish and aquatic species competition, and direct mortality due to predation or disease, puts the foothill yellow-legged frog at significant risk. There is substantial concern about this species ability to persist in the planning area. In the Sequoia National Forest this species distribution is limited and may be close to extirpation. However, ecosystem-level plan components to improve watersheds and other aquatic habitats would provide for species persistence to the extent of Forest Service management authority. The Forest Service cannot eliminate all threats, including human water use, disease, and environmental toxins, but nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra – Foothill Yellow-legged Frog

Information on Current Distribution of the Species in the Sierra Planning Unit

The foothill yellow-legged frog was historically located in six locations on the Sierra National Forest. The most recent surveys found the only drainage with confirmed yellow-legged frogs is Jose Creek, a tributary of the San Joaquin River that is isolated by the presence of upper Redinger Lake at its mouth (Lind et al. 2003). Surveys of Jose Creek have been conducted with varying degrees of intensity since the confirmed population there in 1994. Surveys between 1994 and 2003 detected some adults, juveniles or tadpoles every year; the maximum number of adults found was 19 in 1994, and numbers of adults did not exceed seven after 1994. Surveys of historical sites downstream of Sierra National Forest since 1995 have failed to detect foothill yellow-legged frogs (Hayes et al. 2016). Foothill yellow-legged frogs on the Sierra National Forest appear to be rare and limited in distribution, and may be near extirpation in the region.

The 2020 Creek Fire was the largest high-severity wildfire to occur on the forest, and the impacts are still being assessed. However, the risk to foothill yellow-legged frog is considered high. It is very likely that there was damage from increased flow and debris flow during winter hibernation, sediment deposition on egg masses, and degradation of breeding habitat. Foothill yellow-legged frogs are present in Jose, Musick, and Mill Creek drainages within the Creek Fire perimeter. These are the only documented extant populations of foothill yellow-legged frog in the Sierra National Forest. Suitable habitat is present in the lower reaches of the San Joaquin River and tributary streams, but no extant occurrences are known. Soil burn severity and abundance of ash, combined with steep slopes in the watershed, indicate high likelihood

of increased flow, sediment impacts on breeding and pool habitats, egg masses being susceptible to scour, and risk of debris flows in stream sections with overwintering in pool habitats.

Key Ecological Conditions in the Sierra Planning Unit
Key ecological conditions for the foothill yellow-legged frog are water quality and quantity. This species is found in partially shaded rocky streams in a variety of habitats including: valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral and wet meadows and appear to be highly dependent on flowing water for all life stages (Morey 2000). This is a stream-breeding frog, often associated with larger streams with coarse substrates. However, they also have been found in smaller tributaries, and in areas with finer substrates or bedrock.

Stream morphology and temperatures may be affected by hydroelectric use on the Sierra National Forest. There are 50 dams and diversions on the Sierra National Forest, which affect flow over approximately 220 miles of streams. Dams and diversions may contribute to aquatic habitat alteration by blocking aquatic species movement or migration, and may contribute to species isolation. There are approximately 155 stream miles on the forest which are subject to flow regulation under licenses from the Federal Energy Regulatory Commission. Streams under Federal Energy Regulatory Commission licenses have conditions for providing minimum in-stream flows. Water temperatures downstream of dams are affected by volume of flow and temperature of the upstream reservoir. Warming temperatures can further limit distributions of native fishes and other aquatic dependent species, like the foothill yellow-legged frog (USDI Fish and Wildlife Service 2014).

Water quantity and quality, including stream morphology and temperatures, may be affected in the future as hydroelectric use continues and increases. The Forest completed a Settlement Agreement with Southern California Edison in 2008 regarding future operations of several of its hydroelectric facilities. Among the conditions on the new licenses would be increases in minimum instream flow, along with channel and riparian maintenance flows. Increases in flow would support the amount of habitat available, and possibly reduce water temperatures in some stream segments, providing additional cold water habitat. This would affect approximately 90 miles of streams when the new Federal Energy Regulatory Commission license is issued (USDI Fish and Wildlife Service 2014).

Sierra – Summary
The biggest threats to foothill yellow-legged frog in the Sierra National Forest are the impacts on habitat following large and severe wildfires. There are also threats from illegal marijuana grows, nonnative fish, and disease and loss of water quality and quantity due to hydroelectric use. These factors combined with the loss of genetic diversity due to habitat loss, pesticide use, and invasive species competition for habitat and direct mortality puts the foothill yellow-legged frog at significant risk. Climate change is expected to bring warmer temperatures, along with more variability in precipitation and less snow to slowly fill the streams over the season. Given that a main threat—loss of water quality and quantity due to hydroelectric use—is outside of Forest control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of foothill yellow-legged frog within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Gregarious Slender Salamander – Sierra

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the gregarious slender salamander in the plan area.

General Key Ecological Conditions: In general, slender salamanders do not need standing or flowing water for breeding or any other part of the life cycle. During wet season conditions, slender salamanders

can be near the surface and as conditions dry out, this species will retreat to microsite areas where moisture can be found. Microhabitat may include surface cover such as down wood (in or under logs, under bark or boards), rocks, and litter. In general, *Batrachoseps* salamanders demonstrate high site fidelity and rarely move more than 5-10 meters over their lifetime (Cunningham 1960, Olson and Kluber 2014).

Key Threats to Persistence

Ground disturbance to microsite conditions, degradation or loss of habitat due to ground disturbance or fire, disease, and natural predators.

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities

For terrestrial salamander species, ground disturbance from a variety of sources could directly impact individuals on the surface cover substrate, such as rocks, logs or forest vegetation litter. Fire suppression, vegetation management, and other activities using heavy equipment could degrade slender salamander habitat by disturbing microsite conditions such as woody debris and forest litter.

Forest-wide guidelines to minimize impacts of projects on at-risk species habitat along with desired conditions that maintain microclimate and smaller scale elements of special habitats would alleviate this threat by ensuring that habitat exists to the best of the forest's ability.

Table D-19. Key threats, plan components and expected effects on gregarious slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians including gregarious slender salamander. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats when possible.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Disease/ natural predators	**Desired Condition (SPEC-FW-DC) 02** Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impact from such threats as disease and other site-specific threats. Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern.	Species-specific desired conditions would minimize impacts from threats such as increased predator populations and improve conditions for at-risk salamanders.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or stochastic events
- Disease and natural predators

Large-scale wildfire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris. Fire suppression and past vegetation management have led to increased forest density and fuel loads. Consequently, fires are more intense and can be larger, and forests are more vulnerable to insect and disease outbreaks and drought-related tree mortality. As fire severity and intervals increase with climate change, degradation and loss of habitat for this species would also increase. Large scale fire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris.

Additional threats to this species include disease and natural predators. *Batrachochytrium dendrobatidis* has been documented for the California slender salamander (*Batrachoseps attenuatus*). However, the actual impacts of chytridiomycosis on this species is unknown. Natural predators of this species likely include: spotted and striped skunks, ringtails, raccoons, gray foxes, ring-necked snakes, and various skinks, moles and shrews (Krueger 2016).

Information on Current Distribution of the Species in the Planning Unit

The gregarious slender salamander is endemic to California and occurs along the west slope of the central and southern Sierra Nevada Mountains from the southern boundary of Yosemite National Park almost to the Kern River (Jockusch et al. 1998). It also occurs along the northwestern and western portion of the Sierra National Forest.

Approximately 26 gregarious slender salamander locations occur on the Sierra National Forest and are recorded in NRIS. The locations span from the northwestern portion of the Sierra National Forest, near Hogan Mountain and run along the western portion of the Forest, with the most site locations occurring in the Blue Canyon area.

Key Ecological Conditions in Plan Area
Key ecological conditions for the gregarious slender salamander include oak woodlands, riparian corridors, forest litter, rocks, down logs and woody debris.

Sierra – Summary
The gregarious slender salamander occurs along the northwestern and western portion of the Sierra National Forest in oak woodlands and the foothills. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities and fire. These factors combined with direct mortality due to predation, disease, and increased stochastic events including large and severe wildfires, puts the gregarious slender salamander at significant risk. Forest-plan components to minimize impacts of projects on at-risk species habitat and maintain microclimate and smaller scale elements of special habitats would guide management to make sure that habitat for the species exists to the best of the Forest Service's ability. Although the effects of natural disturbances cannot be controlled, forest management activities such as vegetation and fire management would help maintain and protect habitat. Ecosystem-level components should maintain or restore ecological conditions to contribute to maintaining a viable population in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Hell Hollow Slender Salamander – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Hell Hollow slender salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: In general, slender salamanders do not need standing or flowing water for breeding or any other part of the life cycle. During wet season conditions, slender salamanders can be near the surface and as conditions dry out. Microhabitat may include surface cover such as down wood (in or under logs, under bark or boards), rocks, and litter.

Key Threats to Persistence

Ground disturbance to microsite conditions, degradation or loss of habitat due to ground disturbance, fire or drought. Disease, predators, and invasive species also are threats to this species.

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities
- Competition and predation from invasive species

For terrestrial salamander species, ground disturbance from a variety of sources could directly impact individuals on the surface cover substrate, such as rocks, logs or forest vegetation litter. Fire suppression, vegetation management, and other activities using heavy equipment could degrade slender salamander habitat by disturbing microsite conditions such as woody debris and forest litter.

Forestwide guidelines to minimize impacts of projects on at-risk species habitat along with desired conditions that maintain microclimate and smaller scale elements of special habitats would alleviate this threat by ensuring that habitat exists to the best of the forest's ability.

Table D-20. Key threats, plan components and expected effects on Hell Hollow slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians including Hell Hollow slender salamander. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats when possible.
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level components would minimize the occurrence and spread of invasive species, and thus would reduce threats to at-risk salamanders
Disease/ natural predators	**Desired Condition (SPEC-FW-DC) 02** Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impact from such threats as disease and other site-specific threats. Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern.	Species-specific desired conditions would minimize impacts from threats such as disease and improve conditions for Hell Hollow slender salamander.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk or Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events
- Disease or natural predators

Large-scale wildfire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris. Fire suppression and past vegetation management have led to increased forest density and fuel loads. Consequently, fires are more intense and can be larger, and forests are more vulnerable to insect and disease outbreaks and drought-related tree mortality. As fire severity and intervals increase, degradation and loss of habitat for this species would also increase. Large-scale fire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris.

Increasing temperatures due to climate change are expected to result in fewer snow events. This change would intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. Invasive plant species are also expected to increase, especially in the foothills. Once an invasive species dominates a site, fire patterns are expected to change and become more frequent. Warmer temperatures would also dry the ground, wood, litter, and other cover for salamanders, further restricting the movement of this species and the time that they are active each year.

Additional threats to this species include disease and natural and invasive predators. *Batrachochytrium dendrobatidis* has been documented for the California slender salamander (*Batrachoseps attenuatus*), however, the actual impacts of chytridiomycosis on this species is unknown. Natural predators of this species likely include: spotted and striped skunks, ringtails, raccoons, gray foxes, ring-necked snakes, and various skinks, moles and shrews (Krueger 2016).

Information on Current Distribution of the Species in the Planning Unit

The Hell Hollow slender salamander is endemic to the foothills of the western slopes of the Sierra Nevada in California, from the north bank of the north fork of the American River, Placer County, to the lower Merced River canyon, Mariposa County (Jockusch et al. 1998, Hansen and Wake 2005, Evelyn and Sweet 2018a).

A single record exists for the Hell Hollow slender salamander on the Sierra National Forest. This NRIS record is located near Merced River in Mariposa County, which is the southern extent of the known range for this species. No locations are recorded in CNDDB for the Sierra at this time.

Key Ecological Conditions in Plan Area

Key ecological conditions for the Hell Hollow slender salamander include pine-oak woodlands and chaparral habitat, along riparian zones near large rivers and streams. North-facing slopes are preferred,

and individuals are usually found beneath rock talus and large stones and other surface cover shaded by oak trees that dominate the region. Summer temperatures are extreme with little to no rainfall.

Sierra – Summary
A single record exists for the Hell Hollow slender salamander on the Sierra National Forest along the Merced River in the northwest portion of the Sierra National Forest. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities, climate change and fire. These factors combined with direct mortality due to predation, disease and increased stochastic events including large and severe wildfires, puts the Hell Hollow slender salamander at significant risk. Given the limited occurrence of the species on the Forest, a single disturbance event could eliminate the Forest population. Therefore, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Hell hollow slender salamander within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Kern Canyon Slender Salamander – Sequoia

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the Kern Canyon slender salamander in the plan area.

General Key Ecological Conditions: North-facing riparian zones in narrow canyons shaded with willows and cottonwoods, wooded hillsides supporting oaks and pines, including wet creek margins, seeps, talus, and exposed chaparral.

Key Threats to Persistence

Ground disturbance to microsite conditions, degradation or loss of habitat due to ground disturbance, fuels reduction, and road construction and maintenance. Other activities that may pose a threat include water storage or diversion projects, disease, natural predators, timber harvest, surface mining, and climate change.

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities

For terrestrial salamander species such as the Kern Canyon slender salamander, ground disturbance from a variety of sources could directly impact individuals on the surface cover substrate, such as rocks, logs or forest vegetation litter. Fire suppression, vegetation management, and other activities using heavy equipment could degrade slender salamander habitat by disturbing microsite conditions such as woody debris and forest litter. Evidence of human disturbance such as roads and trails along the banks of the Kern River is depicted in many areas within the Kern River Canyon. Recreational sites such as picnic areas and boat pullouts are concentrated along the Kern River and may directly impact habitat for the Kern River slender salamander.

Table D-21. Key threats, plan components and expected effects on Kern Canyon slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk or Susceptible to Stochastic Events, and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF(WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians, including Kern Canyon slender salamander. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats.
Habitat loss and degradation from altered flow regimes and temperatures in streams and rivers due to dams.	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining populations of aquatic and semi-aquatic species such as Kern Canyon slender salamander. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help reduce effects.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Disease/ natural predators	**Desired Condition (SPEC-FW-DC) 02** Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impact from such threats as disease and other site-specific threats. Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern.	Species-specific desired conditions would minimize impacts from threats such as increased predator populations and improve conditions for at-risk salamanders.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Forestwide guidelines to minimize impacts of projects on at-risk species habitat along with desired conditions that maintain microclimate and smaller scale elements of special habitats would alleviate this threat by ensuring that habitat exists to the best of the Forest's ability.

Threats Not Under Forest Service Control

- Habitat loss and degradation from altered flow regimes and temperatures in streams and rivers due to dams
- Disease or natural predators
- Habitat loss or degradation due to climate change or other stochastic events

California State Route 178 occurs in Kern Canyon and its construction likely removed habitat for the Kern Canyon slender salamander. Roads of other ownership such as the Old Kern River Canyon Road are likely to have removed habitat for this species as well. The maintenance of roads may also present a threat to this species as asphalt, gravel, and other materials may be placed in potential habitat. Grazing occurs along the banks of the Kern River in Kern Canyon and may be disturbing habitat for the Kern Canyon slender salamander. Grasslands are widespread along both sides of the Kern River and likely support cattle grazing most years.

There is potential for wildfire in Kern Canyon to adversely affect habitat for this species. Depending on conditions, wildfires can directly remove vegetation and create non-habitat. Vegetation loss may also lead to soil erosion which could impact habitat for this species.

Currently, while there are water diversion structures in Kern Canyon there are no water storage projects that are planned to be located in the Kern Canyon. Lake Isabella is located upstream of Kern Canyon and there is potential for flows from Lake Isabella to impact habitat by altering the hydrology of the Kern River and adversely affecting habitat for this species. Water use and water diversion projects are outside the authority of the Forest Service.

Increasing temperatures due to climate change are expected to result in fewer snow events. This change would intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. Invasive

plant species are also expected to increase, especially in the foothills. Once an invasive species dominates a site, fire patterns are expected to change and become more frequent. Warmer temperatures would also dry the ground, wood, litter, and other cover for salamanders, further restricting the movement of this species and the time that they are active each year. Additional threats to this species include disease and natural predators.

Information on Current Distribution of the Species in the Planning Unit
There are 11 sites documented for the Sequoia National Forest in CNDDB. All sites occur on the eastern side of the Greenhorn Mountains, from just south of Isabella Lake, along the Kern River corridor (Jockusch and Wake 2002, Jockusch et al. 2012, USDA Forest Service 2013a). There are no records in the NRIS database for the Kern Canyon slender salamander on the Sequoia National Forest.

Key Ecological Conditions in Plan Area
This species is endemic to the Sequoia National Forest and is known only from the lower Kern River Canyon. All occurrence records are from the north-facing (south) side of the canyon. Occurrences within the Kern River Canyon are shaded with willows and cottonwoods. Occurrences are also found along wooded hillsides supporting oaks and pines.

Sequoia – Summary
The Kern Canyon slender salamander is endemic to the Sequoia National Forest. This species is restricted to a small area along the Kern River corridor, in the Kern River Canyon, on the Sequoia National Forest. The biggest threats to this species on the Sequoia National Forest are degradation or loss of habitat from ground-disturbing activities, such as recreation, road construction, user-created trails, and wildfire. These factors combined with direct mortality due to cattle grazing, predation, disease, and climate change, put the Kern Canyon slender salamander at significant risk. Forest-plan components to minimize impacts of projects on at-risk species habitat and maintain microclimate and smaller scale elements of special habitats would guide management to make sure that habitat for the species exists to the best of the Forest's ability. Although the effects of natural disturbances cannot be controlled, forest management activities such as vegetation and fire management would help maintain and protect habitat. Ecosystem-level components should maintain or restore ecological conditions to contribute to maintaining a viable population in the plan area.

Kern Plateau Salamander – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Kern Plateau salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Perennially wet and moist habitat, usually associated with rocky outcrops or rock substrate, along the eastern escarpment of the Sierra Nevada Mountains. Wet meadows surrounded by mixed conifer.

Table D-22. Key threats, plan components and expected effects on Kern Plateau salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF(WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians including Kern Plateau salamander if present. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to microsite habitat for Kern Plateau salamander.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Endemic species with very restricted range size found only on the Kern Plateau. Threats include off-highway vehicle travel, climate change effects, and ground disturbance to habitat from road construction and maintenance, timber harvesting, and vegetation treatments (that is, fuels reductions, prescribed burning, and hazard tree removal).

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities

In the drier portions of its range, the spring and riparian habitats these species occupy are fragile and vulnerable to damage. Off-road vehicle use is a threat for populations that are in heavily used recreation areas for off road vehicles, and areas with logging roads and high to moderate road density. Timber harvesting and hazard tree removal on the Kern Plateau are currently planned and may contribute to the degradation of habitat. Vegetation management and fire suppression activities also contribute to degradation of habitat.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Wildfire risk is moderate to high on the Kern Plateau, at the lower elevations of its range and wildfire has impacted the Scodie Mountain populations. Water diversions are a threat on the Kern Plateau where the salamanders use springs and moist areas; water diversions from the occupied springs would likely reduce the extent of the wetted in-channel and riparian areas. Water resource management activities, including maintaining perennial water quality, quantity, and timing of flows from water storage areas play a critical role in overall ecological function and sustainability of groundwater-dependent ecosystems and most of these activities are regulated outside the national forest boundary. Water diversions are a threat on the Kern Plateau where the salamanders use springs and moist areas. Water diversions from the occupied springs would likely reduce the extent of the wetted in-channel and riparian habitats. Aquatic habitats are vulnerable to degradation through capping of springs by humans or other alterations due to drought (Adkins Giese et al. 2012).

Climate change has the potential to impact all populations if snowpack and runoff conditions are significantly altered. Reductions in snowpack, and changes in infiltration that reduce spring flow and riparian development could affect the Kern Plateau and Scodie Mountains populations. The climate change modeling completed by Wright and others (2013) indicated a slight reduction (up to 20 percent) in habitat suitability by the year 2050. However, recent drought goes beyond the changes envisioned in 2013 and may expedite the loss of suitable habitat beyond 20 percent.

Information on Current Distribution of the Species in the Planning Unit

The Kern Plateau salamander has been detected at 36 sites, mainly from the Kern Plateau in the Sierra Nevada, but including a few isolated populations from the Owens Valley and the Scodie Mountains in eastern California. It is abundant on the Kern Plateau especially in mesic areas, and found in nearly every drainage in the eastern Sierra from Walker Creek (east of Olancha) to Nine Mile Creek. Information on population status and trend is not available, but the species is considered to be common in most of its range and populations stable (Wake et al. 2002).

Key Ecological Conditions in Plan Area

The species is in mid- to high elevations, ranging from 4,690 to 9,190 feet. Typical habitats are variable depending on the locality, ranging from mesic red fir/lodgepole pine at mid- to upper elevations of the Plateau, to subalpine (wet meadow) habitats at high elevations in the Sierra Nevada, to springs located in desert scrub (Wake et al. 2002). Surface activity for salamanders present at elevations below 6,562 feet is restricted to late winter and early spring, before surfaces heat up and lose their moisture. At high elevations, their activity is restricted to between the months of May or June to October, when temperatures are warmer and snow levels have dropped enough to provide conditions for courtship and egg-laying (Adkins Giese et al. 2012).

Sequoia – Summary

The Kern Plateau salamander on the Sequoia National Forest plan area is restricted to areas on the Kern Plateau, Sherman Peak and Scodie Mountains. The biggest threats to this species on the Sequoia National Forest are ground-disturbing activities that degrades habitat through capping of springs or alterations of spring water, such as unauthorized off-highway vehicle travel, road construction, surface mining and vegetation treatments. These factors combined with increased stochastic events including large and severe wildfires, along with climate change, put the Kern Plateau slender salamander at significant risk. The forest has a number of ecosystem-level plan components in place to mitigate risks within its management authority. However, risk factors including climate change, groundwater pumping and water diversions that occur outside the national forest are not within Forest Service management authority. These factors would continue to impact spring habitat making it difficult to maintain viability over the long-term. Therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Kern Plateau salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

King's River Slender Salamander – Sierra

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the King's River slender salamander in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

General Key Ecological Conditions: Kings River slender salamanders are found along streams and moist canyons, in valley foothill riparian habitat, blue oak woodland and mixed conifer woodland (Kucera 2005). This type of habitat for this species is well-shaded, mixed chaparral and tends to occur on north-facing slopes.

Key Threats to Persistence

Ground disturbance to microsite conditions, degradation or loss of habitat due to ground disturbance or fire. Water quantity and quality, including stream morphology and temperatures.

Threats under Forest Service Control

- Degradation or loss of habitat and microsite conditions due to forest management activities

Ground disturbance that alters or removes ground cover, including woody debris and forest litter can directly impact this salamander.

Water quality and quantity are at present well within the natural range of variability in most areas of the forest. However, climate change is a stressor which may limit water quality and quantity in the future. Watersheds are overall in good condition, and most can recover from most stressors imposed by human influence or are within the natural range of variability. However, invasive species, fire, and climate change remain stressors on watershed condition for the Sierra National Forest (USDA Forest Service 2013b).

Ecosystem-level plan components to maintain and improve riparian, oak woodland, foothill, and aquatic habitats would provide for King's River slender salamander persistence. Forest-wide guidelines to minimize impacts of projects on at-risk species habitat along with desired conditions that maintain

microclimate and smaller scale elements of special habitats would alleviate forest management activity threats by ensuring that habitat exists to the best of the Forest's ability.

Table D-23. Key threats, plan components and expected effects on King's River slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF(WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians, including King's River slender salamander. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to salamander microsites when possible.
Habitat loss and degradation due to altered flow regimes, temperatures, water quality and quantity in streams and rivers due to dams and water use	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Seeps/Springs Dependent, Wet/Riparian Meadow Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining populations of aquatic species including at-risk salamanders. Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians, including King's River slender salamander. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk or Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events.

As fire severity and intervals increase, degradation and loss of habitat for this species would also increase. More climate change is expected and warmer temperatures, along with more rain than snow are occurring. This change will intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. Invasive plant species are also expected to increase, especially in the foothills. Once an invasive species dominates a site, fire patterns are expected to change and become more frequent. Land management activities that degrade or remove ground cover or forest litter can also further impact this species (USDA Forest Service 2013b). Warmer temperatures will also dry the ground, wood, litter, and other cover for salamanders, further restricting the movement of this species and the time that they are active each year. Additional threats to this species include disease and natural predators as described for other slender salamanders.

Information on Current Distribution of the Species in the Planning Unit

The Kings River slender salamander is endemic to California. This species is found on the western slopes of the Sierra Nevada in Fresno County on the south and east sides of the North Fork of the Kings River, and from Summit Meadow in the drainage of the South Fork of the Kings River. It is also found on the middle fork of the Kaweah River drainage in Tulare County (Jockusch et al. 1998).

Records exist for this species on the Sierra National Forest and are restricted to the Kings River area. Location data is recorded in both NRIS and CNDDB.

Key Ecological Conditions in Plan Area

Key ecological conditions for the Kings River slender salamander include pine-oak woodlands and chaparral habitat, along riparian zones near large rivers and streams. Individuals are usually found beneath rock talus and large stones and other surface cover shaded by oak trees that dominate the region.

Sierra – Summary

The Kings River slender salamander is restricted to the Kings River area on the Sierra National Forest. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities and fire. Forest-plan components to minimize impacts of projects on at-risk species habitat and maintain microclimate and smaller scale elements of special habitats would guide management to make sure that habitat for the species exists to the best of the Forest's ability. Ecosystem-level components should maintain or restore ecological conditions to contribute to maintaining a viable population in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Limestone Salamander – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the limestone salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: These salamanders are typically found in association with limestone. They can also be found under slate slabs, irregularly shaped limestone pieces, moss-covered and barren talus, in rock crevices and in abandoned mine tunnels.

Table D-24. Key threats, plan components and expected effects on limestone salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat to microsite conditions due to recreation or mining.	***(Refer to Table D-4 Crosswalk for Disturb Intolerant)***	Ecosystem-level plan components would protect sensitive habitats, including caves and mines, and manage recreation opportunities to limit disturbance to sensitive species such as limestone salamander.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in habitats being more resilient to stochastic events.

Key Threats to Persistence

Disturbance, degradation or loss of habitat to microsite conditions due to recreation or mining activities. Loss of habitat due to fire or climate change.

Threats under Forest Service Control

- Degradation or loss of habitat to microsite conditions due to recreation or mining activities

Habitat alteration such as development for mining, road widening or construction, limestone quarrying and dam building likely pose the greatest threat to this species. As few studies have investigated this species, additional research needs to be conducted to determine what threats are most significant for this species.

As fire severity and intervals increase, degradation and loss of habitat for this species will also increase. Habitat loss and degradation from mining, vegetation management, road construction, water development, or other forest management activities may occur in the foreseeable future.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or stochastic events

As with other species with a limited range, stochastic events are a significant threat to the persistence of this species. Events such as fire, flood, disease, habitat alteration, or climate change can significantly impact a restricted range animal. Fire likely has only minimal impact on this species; however, fire suppression activities may disturb habitat. No studies have investigated the impact of *Batrachochytrium dendrobatidis* on this species; however, its highly terrestrial lifecycle puts it less at-risk for serious impact.

Habitat changes associated with climate change such as warmer temperatures and drought are also expected. This change will intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. As a result, microsite conditions on rocky steep slopes that include high humidity and moisture will be impacted (USDA Forest Service 2013b).

Information on Current Distribution of the Species in the Planning Unit
Limestone salamanders are an endemic salamander species found in a small area in Mariposa County, California (Evelyn and Sweet 2018b, Basey and Sinclear 1980). The total known extent of this species range is approximately 16 to 17 kilometers in length along the Merced River. Specifically, this salamander occurs from the vicinity of the type locality on state route 140 west to Hell Hollow and slightly up the North Fork of the Merced River (Wake and Papenfuss 2005).

Records exist for this species on the Sierra National Forest and are restricted to the Hell Hollow and Merced River area. Location data is recorded in both NRIS and CNDDB.

Key Ecological Conditions in Plan Area
Key ecological conditions for this species included mossy limestone crevices and talus, typically on steep slopes where moisture and high humidity are retained. Caves and abandoned mines can also provide these ecological conditions. Although this species has a restricted habitat, limestone habitat on the Sierra National Forest is not limited.

Sierra – Summary
The limestone salamander is restricted to a small area along the Merced River on the Sierra National Forest. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities, such as mining and heavy recreation use. These factors combined with direct mortality due to predation, disease and increased stochastic events including large and severe wildfires, along with climate change, puts the limestone salamander at significant risk. Given the limited occurrence of the species in the plan area, a single disturbance event could eliminate the population. Therefore, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of limestone salamander within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Relictual Slender Salamander – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the relictual slender salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Seeps and springs in rocky areas with sparse tree cover consisting mostly of oaks, along with scattered pines, buckeyes and sycamores in creek bottoms (Thomson et al. 2016). This species is rarely found far from surface water (Jockusch et al. 2012).

Table D-25. Key threats, plan components and expected effects on relictual slender salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians, including relictual slender salamander, if present. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats when possible.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Any direct or indirect ground or water disturbing impacts on habitat such as fire, timber harvest, unauthorized off-road vehicle travel, road construction, and livestock grazing.

Threats under Forest Service Control

- Degradation or loss of habitat due to forest management activities.

Surface mining and timber harvest can contribute to habitat degradation by direct removal of vegetation, ground-disturbing activities, and by contributing to erosion. However, these activities have decreased

substantially over the past 20 years, and as a result, ground disturbance from these activities has also decreased.

For this salamander species, degradation of habitat, particularly sensitive spring and seep habitat has been responsible for extirpation from a significant portion of its range. Ground-based disturbance from a variety of sources in or near these sensitive aquatic habitats directly impact individuals on the surface or under rocks, logs or forest litter. This species is most threatened by degradation or loss of habitat. Ground disturbance such as temporary roads or user-created roads that alter or remove ground cover, including woody debris and forest litter, can directly impact this species.

Road construction associated with timber harvest has been identified as a threat to *B. relictus* habitat. Previous road construction on Breckenridge Mountain apparently eliminated a portion of the suitable microhabitat at Squirrel Meadow (Jennings and Hayes 1994, Jockusch et al. 2012). When the road was built, the seep where *B. relictus* had been found was graded over, destroying the original site and altering the flow of the seep by filling it with road fill.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events.

The potential for fire on the landscape is high. As fire severity and intervals increase, degradation and loss of habitat for this species would also increase. Large scale fire can directly eliminate individuals and localized populations if the severity is high enough to remove forest litter and woody debris. Fire suppression has impacted riparian habitat by increasing conifer density and decreasing riparian hardwood and herbaceous vegetation.

Decreased snowpack resulting from climate change may influence seeps and streams used by this species (Thomson et al. 2016). This species is rarely found far from surface water and changes in stream morphology could impact micro-site conditions. The California Department of Fish and Wildlife rated this species as being highly vulnerable to climate change (California Department of Fish and Wildlife 2015). An assessment conducted in 2015 identified *B. relictus* as a "Priority I" taxa that were identified as being the most at-risk from drought related conditions (California Department of Fish and Wildlife 2015). Additional threats to this species include disease and natural predators as described for other slender salamanders.

Information on Current Distribution of the Species in the Planning Unit

This species is endemic to the Sequoia National Forest and has the most restrictive range of all slender salamanders. The two locations on Breckenridge Mountain that are separated by 3.1 miles. There are seven CNDDB records for this species in the Breckenridge Mountains, and records in the NRIS database. The entire known distribution for *B. relictus* is along the Lower Kern River (believed extirpated) and two other locations on Breckenridge Mountain. All currently known populations of relictual slender salamander are above 1,700 meters in elevation, including two along Lucas Creek and one in the vicinity of Squirrel Meadow (Jockusch et al. 2012).

Key Ecological Conditions in Plan Area

Key ecological conditions for this species include seeps and springs in rocky areas with sparse tree cover consisting mostly of oaks, along with scattered pines, buckeyes and sycamores in creek bottoms (Thomson et al. 2016). On Breckenridge Mountain, the dominant vegetation is pine-fir forest and embedded seeps in upland areas or along streams is where these salamanders were found (Jockusch et al. 2012).

Sequoia – Summary

The relictual slender salamander is restricted to the Breckenridge Mountain area on the Sequoia National Forest. The key threats to this species are degradation or loss of habitat from ground-disturbing activities, user created routes, temporary roads going through seeps, fire suppression activities and changes in stream morphology that may impact riparian micro-site conditions. Habitat degradation or destruction, unauthorized user-created routes, local extirpations, endemism, and climate change put the relictual slender salamander at significant risk. There is substantial concern about this species ability to persist on the planning unit. Due to the limited distribution and threats outside the authority of the Forest Service it is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Yellow-blotched Salamander – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the yellow-blotched salamander in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Coniferous forest, deciduous forest, oak woodland, coastal sage scrub, and chaparral with microsites under logs, bark, moss, leaf litter, and talus or in animal burrows, often near streams and creeks.

Key Threats to Persistence

Ground disturbance to microsite conditions, degradation, or loss of habitat due to ground disturbance or fire. Water quantity and quality, including stream morphology and temperatures. Climate change and associated changes in rainfall and temperature.

Threats under Forest Service Control

- Habitat loss or disturbance due to forest management activities.

Habitat disturbance from roads, temporary roads, motorized trails, or user created routes in riparian areas could directly impact individuals on the surface or under rocks, logs, or forest litter. Ground disturbance that alters or removes ground cover, including woody debris and forest litter can directly impact this species. Recreational use of the forest is projected to increase (USDA Forest Service 2013a). Land management activities that disturb soils or block connectivity; degrade or remove ground cover or forest litter can also further impact this species.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events.

This species is vulnerable to stochastic events such as fire or climate change. Large-scale fire can result in mortalities to individuals and decrease or eliminate local populations if a large and severe wildfire burns riparian cover, soils, and litter and woody debris. As climate change reduces the snowpack, seeps and other moist areas along streams and rivers may dry affecting connectivity for this species. Warmer temperatures may also contribute to drying of riparian habitats. Direct mortality to individuals of this species may occur from traffic along riparian areas during collisions with salamanders as they move during spring wet events. Motor vehicle trails within riparian areas, temporary road construction in

riparian areas, and roads in narrow canyons can all cause direct mortality and effect habitat connectivity. Additional threats to this species include disease and natural predators as described for other salamanders.

Information on Current Distribution of the Species in the Planning Unit

This species is endemic to California and has one of the most restrictive ranges of all *Ensatina* salamanders. There are six CNDDB records for this species on the Sequoia National Forest plan area, located on the eastern side of the Breckenridge Mountains, from just south of Isabella Lake, along southern side of the Kern River corridor and on Piute Peak (Kuchta et al. 2009). Germano (2006) also found this species to be common in tributaries to the lower Kern Canyon. There are no NRIS records on the Sequoia National Forest.

Table D-26. Key threats, plan components and expected effects on yellow-blotched salamander

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)*** **Desired Condition SQF (WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat. Habitat conditions support self-sustaining populations. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species. **Desired Condition SNF(WTR-RCA-DC) 04** Native fish, amphibians, and other native aquatic species are present within their historic distribution, where supported by associated habitat conditions, support self-sustaining populations, except where distributions are altered by areas managed for desirable nonnative fish species. Streams and rivers provide a variety of habitats for aquatic species, including deep pools and overhanging banks, structure provided by large wood, off-channel areas, and cover within their natural range of variation. Woody and herbaceous overstory and understory regulate stream temperatures. Aquatic and upland components are linked, providing access to food, water, cover, nesting areas, and protected pathways for aquatic, riparian, and upland species.	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians, including yellow-blotched salamanders. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats when possible.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss and degradation due to altered flow regimes, temperatures, water quality and quantity in streams and rivers due to dams and water use	***(Refer to Table D-4 Crosswalk or Susceptible to Stochastic Events, Riparian/Water Dependent, Seeps/Springs Dependent, Wet/Riparian Meadow Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining populations of aquatic species. Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species and historic distributions of amphibians. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects. Expansion of hydropower development is unlikely on Sequoia National Forest due to being already fully developed.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Ecological Conditions in Plan Area

Yellow-blotched salamanders are positively associated with canyon live oak, and negatively associated with blue oak. The salamanders were found under rocks and logs at an average elevation of about 1,800 feet. Occasionally this species is found under rocks and logs often in moist canyons on northerly-facing slopes (Germano 2006). Flat or gently sloping shelves above flood level combined with forest edge habitats support the highest abundances of yellow-blotched salamanders (Kuchta and Parks 2005).

Sequoia – Summary

The yellow-blotched salamander on the Sequoia National Forest is restricted to the southern side of the Kern River corridor and Piute Peak area. The biggest threats to this species on the Sequoia National Forest are degradation or loss of habitat from ground-disturbing activities, fire suppression activities and changes in moisture levels that may impact riparian micro-site conditions. These factors combined with direct mortality due to predation, disease, roads, motor vehicle trails, user created routes, and drought, put the yellow-blotched salamander at significant risk. Due to the limited distribution and low occurrence records it is unknown if the plan area supports a current viable population. Furthermore, threats outside the authority of the Forest Service puts this species at-risk. Based on this evaluation it is not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions to contribute to maintaining a viable population of the species within its range.

Fish

California Golden Trout – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the California golden trout in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Key ecological conditions for California golden trout include clear and cold water, although summer temperatures can fluctuate from 3 to 20 degrees Celsius. California golden trout generally prefer pool habitat and congregate near emergent sedges and undercut banks. Shading of streams by willows and other shrubs keep the daytime summer temperatures less than 21 degrees (Matthews 2016).

Table D-27. Key threats, plan components and expected effects on California golden trout

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Hybridization with rainbow trout; Competition and predation from nonnative trout	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)*** **Goal (SPEC-GT-GOAL) 01** Continue to coordinate and collaborate with CDFW to implement and renew the California Golden Trout Conservation Assessment and Strategy.	Ecosystem-level components would minimize the occurrence and spread of invasive species to the extent possible, and thus would reduce threats to California golden trout. Species-specific goal would partner with CDFW to incorporate California golden trout conservation strategies.
Habitat loss or degradation from forest management activities including grazing and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Open Water Dependent)***	Ecosystem-level plan components for Terrestrial Ecosystems (TERR), Watersheds (WTR), Riparian Conservation Areas (RCA), Management Areas (MA), Designated Areas (DA), Fire Management (FIRE), Species Direction (SPEC), Rangeland Management (RANG), and Timber Management (TIMB) guide management to make sure at-risk fish species would have adequate habitat for movement, dispersal, feeding, and reproduction and provide direction for maintaining key habitat elements. Forest plan components for grazing and recreation would avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components would reduce the threat of fish habitat degradation, and may even improve previously impaired conditions.
Recreational fishing	**Desired Condition (SPEC-FW-DC) 04** The forest provides high-quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities **Goal (SPEC-GT-GOAL) 01** Continue to coordinate and collaborate with CDFW to implement and renew the California Golden Trout Conservation Assessment and Strategy.	The threat of overfishing is addressed by the Conservation Assessment and Strategy for the California Golden Trout. Forest goal (SPEC-GT-GOAL) 01 would work with CDFW to use these documents to protect golden trout,

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Limited distribution	***(Refer to Table D-4 Crosswalk for Special Habitats and Limited Distributions)***	The Forest Service cannot directly control the effects of a limited distribution; however, ecosystem-level components designed to improve conditions in existing habitat would make increase the capability of these areas to support populations
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

The main threats to California golden trout are hybridization with rainbow trout, competition and predation from nonnative trout, grazing, recreation, limited distribution, and climate change.

Threats under Forest Service Control

- Habitat loss or degradation due to forest management activities
- Hybridization with rainbow trout
- Competition and predation from nonnative trout

The primary threat to California golden trout is hybridization with rainbow trout and competition and predation by brown trout (Moyle 2002, Stephens et al. 2004). Hybridization undermines the unique genetic integrity of the golden trout, which results in a loss to the gene pool of the species (Stephens et al. 2004). Loss of genetic integrity may make the species more vulnerable to changes in the environment. CDFW and the Forest Service have worked cooperatively to improve conditions for golden trout including removal of obviously hybrid fish, the establishment of barriers to prevent the upstream movement of fish other than golden trout, and the stocking of sterile rainbow trout in popular recreational fisheries in close proximity to occupied golden trout waters (Stephens et al. 2004). The proposed action to *Maintain the native-fish-only status of Little Kern River and upper North Fork Kern River through remedial actions to remove invasive species, increase public education, provide signage, and provide law enforcement* along with ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

Overfishing and heavy grazing were primary stressors in the 19th and first half of the 20th century. Generally, livestock impacts from overgrazing include a reduction in deep water habitats, detrimental sedimentation, reduced stream shading, loss of instream and riparian cover, and alterations in food resources; however, current cattle management on the forest focuses on restoring the hydrologic and vegetative function of meadows in golden trout habitat. Managing grazing to reduce impacts on riparian areas would prevent further degradation. Forest-wide components would guide management to make sure watershed conditions are fully functioning and support self-sustaining populations. Fishing opportunities and recreation uses are expected to continue, and impacts from those activities would continue to occur. Angling opportunities on the Forest do include the chance to catch California Golden Trout in their native habitat of the South Fork Kern River and Golden Trout Creek. A hatchery exists in the Cottonwood Lakes drainage, which is used to transplant the Golden Trout into other lakes within the Sierra Nevada Mountains. The California Department of Wildlife is expected to continue this fish stocking program, to help augment populations. Furthermore, achieving the Desired Condition (SPEC-FW-DC) 04 *The forest*

provides high-quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities would limit the risk of overfishing.

Potential threats are all addressed by the Conservation Assessment and Strategy for the California Golden Trout (Stephens et al. 2004). Additionally, a Comprehensive Management Plan for the North Fork and South Forks of the Kern Wild and Scenic River was completed in September 1994 (USDA Forest Service 1994) and provides overall management direction for the Wild and Scenic River.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events.
- Limited distribution

CDFW's state wildlife action plan listed the California golden trout as vulnerable to climate change. Climate change has the potential to further reduce the range of the California golden trout, primarily through increased water temperatures. Based on recent water temperature monitoring, daily maximum temperatures currently approach the upper thermal limit commonly recognized for rainbow trout. Climate change modeling predicts water temperature increases of 1 to 7 degrees Centigrade (Nusslé et al. 2015). Temperature increases of this magnitude could exceed the thermal maximum for rainbow trout in some streams and reach physiologically stressful levels in other occupied streams.

Other commonly acknowledged outcomes of climate change include reduced snowpack and earlier snowmelt (California Department of Fish and Wildlife 2015). These impacts, in conjunction with extended drought, may result in less abundance and reliable streamflow, and therefore make the species more vulnerable to water temperature increases because of reduced volume and duration. Hydroelectric use may exacerbate these effects as water temperatures downstream of dams are affected by volume of flow and temperature of the upstream reservoir. Although the forest is unable to directly control for climate changes or water use, forestwide components designed to increase the resilience of watersheds to the effects of climate changes would help maintain viable trout habitat over the life of this plan.

California golden trout is restricted in range to two headwater stream systems in the upper Kern River. In many areas in the South Fork Kern River, habitat occurs in degraded meadows characterized by poor riparian and streambank conditions and widened, shallow channels. Although the Forest is unable to control the species range, Forest-wide components to generally improve watershed conditions would increase the ability of current habitat to support self-sustaining populations.

Information on Current Distribution of the Species in the Planning Unit

The distribution of the California golden trout is restricted to the South Fork Kern River system on the Sequoia National Forest and is downstream from the falls into Golden Trout Creek on the North Fork Kern River.

Key Ecological Conditions in Plan Area

Key ecological conditions for California golden trout include clear and cold water. On the Sequoia National Forest, 43 percent of watersheds were considered to be properly functioning, and these are the watersheds that contain habitat for golden trout in the South Fork Kern River (USDA Forest Service 2013a).

Sequoia – Summary

The California golden trout is an endemic fish species, limited to a small portion of suitable habitat on the Sequoia National Forest. The ecological conditions the trout appear generally stable and or trending in a positive direction based on current management, but there is still substantial concern for the species persistence due to its rarity coupled with the potential for genetic loss and competition from nonnative

fish species. Uncertainty about climate change related effects pose an additional long-term threat, and temperatures are already approaching the species' upper thermal limit. Drought, dams, and water use exacerbate this threat.

As a result of its rarity and limited distribution, this species is highly susceptible to stochastic events and drying conditions that may result from increasing temperatures and other climate change related disturbance in the future. Its isolated populations put it at further risk for localized extinctions. Ecosystem-level components to manage invasive species, improve riparian ecosystems, and protect at-risk species would alleviate but not fully eliminate threats to this species. Daily maximum temperatures currently approach the upper thermal limit commonly recognized for rainbow trout (Nusslé et al. 2015), and water temperatures are predicted to increase. Given that this main threat is outside of Forest Service control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of California golden trout within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area.

Central Valley Hitch – Sequoia/Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Central Valley hitch in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Habitat requirements for this species include warm, lowland, waters, clear streams, turbid sloughs, lakes and reservoirs.

Table D-28. Key threats, plan components and expected effects on Central Valley hitch

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level components would minimize the occurrence and spread of invasive species, and thus would reduce threats to the Central Valley hitch.
Habitat loss and changes in water quantity or quality due to forest management activities; Fragmented watershed conditions and altered flow regimes and temperatures in streams and rivers due to dams	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining fish populations. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects on fish habitat.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality

Key Threats to Persistence

The main threats to this species are fragmented watershed conditions due to dams, altered flow regimes and temperatures in streams and rivers for hydroelectric power, changes in water quantity or quality, habitat loss, competition and predation from invasive species, drought and climate change.

Threats under Forest Service Control

- Habitat loss of degradation due to forest management activities
- Competition and predation from invasive species

Predation by nonnative, introduced fishes are a major threat to this species, and nonnative fishes have been introduced or have invaded most waters of the range. These waters include extensive areas that were once fishless at high elevations. Sierra Nevada fisheries have largely shifted from native fishes, especially salmon and other migratory fishes, to introduced fishes (USDA Forest Service 2013a, b). The proposed action to *Maintain the native-fish-only status of Little Kern River and upper North Fork Kern River through remedial actions to remove invasive species, increase public education, provide signage, and provide law enforcement* along with ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

The upper San Joaquin River and other areas where habitat exists may be at-risk as recreational use increases (USDA Forest Service 2013a, b). Existing conditions of habitat and fisheries on both Forests have been influenced by a variety of drivers, including recreation and grazing. Ecosystem-level components to reduce impacts of forest management activities to riparian areas would prevent further degradation. Ecosystem-level components for watersheds, waterbodies and aquatic and riparian areas would guide management to make sure habitat conditions, including water quantity and quality, are fully functioning and support self-sustaining populations.

Threats Not Under Forest Service Control

- Fragmented watershed conditions and altered flow regimes and temperatures in streams and rivers due to dams
- Habitat loss or degradation due to climate change or other stochastic events.

Dams and diversions may contribute to aquatic habitat alteration by blocking aquatic fish movement or migration and may contribute to species isolation (Moyle et al. 2015). In addition, dams and diversions can alter water quantity, stream morphology, and water temperatures. Dams and diversions on and around both Forests have impacts on watershed conditions within the Forests. While controlling impacts from dams and hydroelectric use is beyond Forest control, ecosystem-level plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

The Sequoia Forest manages the lands around Lake Isabella. Four hydroelectric projects are located on the Kern River. These hydroelectric projects are run off of the rivers and influence the connectivity of flows. Lake Isabella is a reservoir that was created by the earthen Isabella Dam that alters connectivity of habitat for native warm water species, alters timing and temperature of flows in the river, and is a point of introduction for nonnatives into the river systems (USDA Forest Service 2013a).

Native fish species in the Lower Kern River are influenced by Isabella Reservoir releases. Warm water native fishes are still present in the Lower Kern River due to the clean, sediment free water that flows through the Lower Kern Canyon.

Stream morphology and temperatures may be affected by hydroelectric use on the Sierra National Forest. There are 50 dams and diversions on the Sierra National Forest, which affect flow over approximately

220 miles of streams. Dams and diversions may contribute to aquatic habitat alteration by blocking aquatic species movement or migration, and may contribute to species isolation (Moyle et al. 2015).

Impacts from changes in climate, such as extended drought, has further decreased water in the river. Warming temperatures can also influence quality of habitat. In addition, limited dispersal ability of this species and fragmented populations due to low head dams put it at further risk for localized extinctions. Although the Forest Service cannot control for these impacts, maintaining or improving watershed conditions would increase existing habitat resilience and the capability of these areas to support populations.

Sequoia – Central Valley Hitch

Information on Current Distribution of the Species in the Sequoia Planning Unit
Central valley hitch does occur on the Sequoia National Forest in the Lower Kern River near Lake Isabella (Santos et al. 2014); population numbers and trend are not known. Much of the historic habitat for this species was to the north outside of the plan area.

Key Ecological Conditions in Sequoia Plan Area
Key ecological conditions for this species include warm, lowland, waters, clear streams, turbid sloughs, lakes and reservoirs.

Sequoia – Summary
The abundance and distribution of the Central Valley hitch is poorly documented, although evidence suggests that they are much less abundant than they were historically. Their distribution is also fragmented, with largely isolated populations scattered among various streams, lakes, and reservoirs. The biggest threats to this species on the Sequoia National Forest are the loss of water quality and quantity due to Lake Isabella Reservoir water management, and hydroelectric use. These factors combined with direct mortality due to predation, recreation use, stochastic events and climate change that affect water temperatures, put the Central Valley hitch at significant risk. Ecosystem-level components to manage invasive species, improve riparian ecosystems, and protect at-risk species would alleviate but not fully eliminate threats to this species. However, as the species current abundance and distribution is unknown and water use associated with hydroelectric dams is beyond Forest control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Central Valley Hitch within the plan area. Nonetheless, ecosystem-level components would help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Sierra – Central Valley Hitch

Information on Current Distribution of the Species in the Sierra Planning Unit
On the Sierra National Forest, Central Valley hitch occurs at Bass Lake to Millerton Reservoir (Santos et al. 2014); however, population numbers and full range extent are not known.

Key Ecological Conditions in Sierra Plan Area
Key ecological conditions for this species include warm, lowland, waters, clear streams, turbid sloughs, lakes and reservoirs

Sierra – Summary
The biggest threats to this species on the Sierra National Forest are the loss of water quality and quantity due to hydroelectric use. Their distribution is also fragmented, with largely isolated populations scattered among various streams, lakes, and reservoirs. These factors combined with direct mortality due to predation, recreation use, stochastic events and climate change that affect water temperatures, put the

Central Valley hitch at significant risk. Given that the species current abundance and distribution is unknown and water use associated with hydroelectric dams is beyond Forest control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Central Valley Hitch within the plan area. Nonetheless, ecosystem-level components would help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Hardhead – Sequoia/Sierra

Determination: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the hardhead in the plan area.

General Key Ecological Conditions: Hardhead are typically found in small to large streams in a low to mid-elevation environment. Hardhead may also inhabit lakes or reservoirs. Within a stream, hardhead tend to prefer warmer temperatures.

Table D-29. Key threats, plan components and expected effects on hardhead

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level components would minimize the occurrence and spread of invasive species, and thus will reduce threats to the hardhead.
Habitat loss and changes in water quantity or quality due to forest management activities; Fragmented watershed conditions and altered flow regimes and temperatures in streams and rivers due to dams	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining fish populations. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality
Small population size and limited distribution.	***(Refer to Table D-4 Crosswalk for Special Habitats and Limited Distributions)***	The Forest Service cannot directly control the effects of small populations size; however, ecosystem-level components designed to improve habitat conditions would make existing populations more resilient.

Key Threats to Persistence

The main threats to this species are small populations, fragmented watershed conditions due to dams, altered flow regimes and temperatures in streams, habitat loss, habitat diversion, decline in water quality, and invasive species.

Threats under Forest Service Control

- Habitat loss, habitat diversion, and decline in water quality due to forest management activities
- Invasive species

Predation by nonnative, introduced fishes such as smallmouth bass is a major threat to this species, as nonnative fishes have been introduced or have invaded most waters of the range. These waters include extensive areas that were once fishless at high elevations. Sierra Nevada fisheries have largely shifted from native fishes, especially salmon and other migratory fishes, to introduced fishes (USDA Forest Service 2013a, b). Additionally, predation from introduced American bullfrogs likely impact this species. The proposed action to *Maintain the native-fish-only status of Little Kern River and upper North Fork Kern River through remedial actions to remove invasive species, increase public education, provide signage, and provide law enforcement* along with ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

Activities that reduce water flow or degrade water quality may impact this species. Existing conditions of habitat and fisheries on both Forests have been influenced by a variety of drivers, including recreation and grazing. Ecosystem-level components to reduce impacts of forest management activities to riparian areas would prevent further degradation. Ecosystem-level components for watersheds, waterbodies and aquatic and riparian areas would guide management to make sure habitat conditions, including water quantity and quality, are fully functioning and support self-sustaining populations.

Threats Not Under Forest Service Control

- Small populations and limited distribution
- Fragmented watershed conditions and altered flow regimes and temperatures in streams due to dams

Stream morphology and temperatures and water quantity may be affected by dams on or off Forest lands. Water impoundments, which block fish access to streams, together with degraded conditions above dams, lead to habitat loss and changes in the aquatic food chain. While controlling impacts from dams and hydroelectric use is beyond Forest control, ecosystem-level plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

Four hydroelectric projects are located on the Kern River. These hydroelectric projects are run off of the rivers, and do not influence timing of flows of the rivers. Outside the forest, Pine Flat Reservoir eliminates connectivity of habitat for native cool water species, Lake Isabella, is on the forest but not managed by the Forest Service, was built on top of previous habitat for this species, blocks connectivity, and have introduced nonnatives into the river systems (USDA Forest Service 2013b).

Hardhead are still fairly widespread in the foothill streams, but their specialized habitat requirements, combined with widespread alteration of downstream habitats, has resulted in most populations being localized and isolated and more vulnerable to localized extinctions (Moyle 2002). Although the Forest Service cannot control for these impacts, maintaining or improving watershed conditions would increase existing the capability of these areas to support populations and the resilience of existing populations.

Stream morphology and temperatures may be affected by hydroelectric use on the Sierra National Forest. There are 50 dams and diversions on the Sierra National Forest, which affect flow over approximately 220 miles of streams. Dams and diversions may contribute to aquatic habitat alteration by blocking aquatic species movement or migration, and may contribute to species isolation.

Major dams and associated reservoirs are located nearby or on the Sequoia National Forest, on the Kings and Kern Rivers, which block the movement of cool water native fishes. Smaller dams and diversions that are run off of the river facilities on the Kern River block the movement of this species, as it is not a good jumper over low-head dams, and have encouraged conditions for bass, a predatory nonnative species. These water impoundments, which block fish access to streams, together with degraded conditions above dams, have led to loss of about 90 percent of the historic habitat in the Sierra Nevada. Local degradation of habitats has led to significant impacts on aquatic invertebrates, which make up the vast majority of

aquatic species in the Sierra Nevada. Impacts on invertebrates have significant cascading effects on the food chain, carbon pathways, and energy pathways in the aquatic ecosystem. Predation by bass, a nonnative fish, significantly degrades habitat for this the hardhead.

Sequoia – Hardhead

Information on Current Distribution of the Species in the Sequoia Planning Unit
Within the Sequoia National Forest plan area this species is found in the lower Kings River and lower Kern River (Moyle et al. 2015).

Key Ecological Conditions in Sequoia Plan Area
Small to large streams in a low to mid-elevation environment; clear deep streams with a slow but present flow; occasionally clean cool lakes or reservoirs; and gravel and rocky substrate for spawning. These are the areas with hydroelectric projects such as the dam at Lake Isabella. While their historic habitats are widely altered by large, mid-elevation reservoirs that isolate populations, hardhead are able to use these habitats provided they are not heavily invaded by nonnative predatory fishes such as bass.

Sequoia – Summary
The abundance and distribution of the hardhead is relatively well documented, and evidence suggests that they are much less abundant than they were historically. Their distribution is also fragmented, with largely isolated populations scattered among various streams, lakes, and reservoirs on the Sequoia National Forest and throughtout the range. The biggest threats to this species on the Sequoia National Forest are the loss of water quality and quantity due to hydroelectric use. These factors combined with direct mortality due to predation, recreation use, stochastic events and climate change that affect water temperatures, put the hardhead at significant risk.

Although the Forest cannot control water use associated with hydroelectric dams, plan components to maintain aquatic ecosystem integrity, control invasive species, and reduce impacts of forest management activities to aquatic habitats would maintain or improve conditions for the species. It is within the inherent capability of the plan areas to maintain or restore the ecological conditions to maintain a viable population of the hardhead in the plan areas. Ecosystem-level plan components should maintain or restore ecological conditions within the plan areas to contribute to maintaining a viable population of the species within its range. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Sierra – Hardhead

Information on Current Distribution of the Species in the Sierra Planning Unit
This species occurs on the San Joaquin River, Willow Creek, and Kings River, with the only stable population located within a stream reach between two dams that provide stable aquatic conditions and protections from nonnative fish predators, such as sunfish and bass.

Key Ecological Conditions in Sierra Plan Area
Key ecological conditions for this species include small to large streams in a low to mid-elevation environment; clear deep streams with a slow but present flow; occasionally clean cool lakes or reservoirs; and gravel and rocky substrate for spawning.

Sierra – Summary
The abundance and distribution of the hardhead minnow hitch is relatively well documented, and evidence suggests that they are much less abundant than they were historically. Their distribution is also fragmented, with largely isolated populations scattered among various streams, lakes, and reservoirs on Forest. The biggest threats to this species on the Sierra National Forest are the loss of water quality and

quantity due to hydroelectric use. These factors combined with direct mortality due to predation, recreation use, and stochastic events put the hardhead minnow at significant risk. Although the Forest cannot control water use associated with hydroelectric dams, plan components to maintain aquatic ecosystem integrity, control invasive species, and reduce impacts of forest management activities to aquatic habitats would maintain or improve conditions for the species. Ecosystem-level plan components should maintain or restore ecological conditions within the plan areas to contribute to maintaining a viable population of the species within its range. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Kern River rainbow trout – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Kern River rainbow trout in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range**.**

General Key Ecological Conditions: Key ecological conditions for Kern River rainbow trout include sufficient water quality and quantity, which includes cold water less than 24 degrees Celsius, with pooling habitat, undercut banks, and emergent vegetation. Connectivity of habitat is required with no nonnative trout present.

Table D-30. Key threats, plan components and expected effects on Kern River rainbow trout

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Hybridization with rainbow trout; Competition and predation from nonnative trout	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level components would minimize the occurrence and spread of Rainbow trout or nonnative trout to the extent possible, and thus would reduce threats to the Kern River rainbow trout.
Habitat loss or degradation from forest management activities including grazing and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Open Water Dependent)***	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity, which would help restore previous damage from grazing. Ecosystem-level components for grazing and recreation avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components would reduce the threat of fish habitat degradation, and may even improve previously impaired conditions.
Recreational fishing	**Desired Condition (SPEC-FW-DC) 04** The forest provides high-quality hunting and fishing opportunities. Habitat for nonnative fish and game species is managed in locations and ways that do not pose substantial risk to native species, while still contributing to economies of local communities **Goal (SPEC-GT-GOAL) 01** Continue to coordinate and collaborate with CDFW to implement and renew the California Golden Trout Conservation Assessment and Strategy.	The threat of overfishing is addressed by the Conservation Assessment and Strategy for the California Golden Trout which would also benefit Kern River rainbow trout.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Limited distribution	***(Refer to Table D-4 Crosswalk for Special Habitats and Limited Distributions)***	The Forest Service cannot directly control the effects of a limited distribution; however, ecosystem-level components designed to improve conditions in existing habitat would increase the capability of these areas to support populations
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Hybridization with coastal rainbow trout. In plan area, competition and predation from nonnative trout, grazing, recreation, limited distribution, and climate change.

Threats under Forest Service Control

- Competition and predation from nonnative trout
- Habitat degradation due to forest management activities

The primary threats to remaining populations of Kern River rainbow trout include past hybridization with hatchery rainbow trout, and further introductions of hatchery rainbow, brown, or brook trout by anglers into small, isolated streams. The proposed action to *Maintain the native-fish-only status of Little Kern River and upper North Fork Kern River through remedial actions to remove invasive species, increase public education, provide signage, and provide law enforcement* along with ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

Continued grazing in riparian areas and heavy recreational use of the basin, including angling, can degrade the trout's fragile habitat. Ecosystem-level components to reduce impacts of forest management activities to riparian areas would prevent further degradation. Generally, livestock impacts from overgrazing include a reduction in deep water habitats, detrimental sedimentation, reduced stream shading, loss of instream and riparian cover, and alterations in food resources; however, current cattle management on the forest focuses on restoring the hydrologic and vegetative function of meadows in trout habitat. Managing grazing to reduce impacts on riparian areas would prevent further degradation. Forest-wide components would guide management to make sure watershed conditions are fully functioning and support self-sustaining populations. Recreation uses, which can also degrade habitat conditions, are expected to continue. Ecosystem-level components for watersheds, waterbodies and aquatic and riparian areas would guide management to make sure habitat conditions, including water quantity and quality, are fully functioning and support self-sustaining populations.

Threats Not Under Forest Service Control

- Limited distribution
- Habitat loss or degradation due to climate change or other stochastic events

As a result of its rarity and limited distribution, this species is highly susceptible to stochastic events and drying conditions that may result from increasing temperatures and other climate change related

disturbance in the future. Its isolated populations put it at further risk for localized extinctions. Random natural events, such as floods, drought, and fire, can also exacerbate problems associated with habitat degradation (California Trout 2017), especially in combination with rain-on-snow flooding associated with climate change (Herbst and Cooper 2010). Although the Forest Service cannot control for these impacts, maintaining or improving watershed conditions would increase existing habitat resilience and the capability of these areas to support populations.

Information on Current Distribution of the Species in the Planning Unit
The Kern River rainbow trout is a subspecies endemic to the Kern River and tributaries in Tulare County and occurs on the Sequoia National Forest plan area (Moyle et al. 2015). Most populations in the section of the North Fork Kern River from Johnsondale to Fork of the Kern are of mixed genetic origin. However, a number of populations in the upper Kern River basin still largely represent the native genotype, and these are on the Sequoia National Park (Erickson 2013).

Key Ecological Conditions in Plan Area
Key ecological conditions for Kern River rainbow trout include sufficient water quality and quantity, which includes cold water less than 24 degrees Celsius, with pooling habitat, undercut banks, and emergent vegetation. Connectivity of habitat is required with no nonnative trout present.

On the Sequoia National Forest, the watersheds in areas where native trout should be able to persist are generally in the "functioning at-risk" category. Little competition for water uses exists above Johnsondale on the North Fork Kern River on the Sequoia National Forest. This species requires cold water, which is influenced by warming nighttime temperatures and prolonged drought.

Sequoia – Summary
The Kern River rainbow trout is an endemic fish species, restricted to the Kern River system and occurs on the Sequoia National Forest. There is substantial concern for the species persistence due to its rarity coupled with the potential for genetic introgression and competition from nonnative fish species. Uncertainty with regard to climate change related effects poses an additional longer-term threat. As a result of its rarity and limited distribution, this species is highly susceptible to stochastic events and drying conditions that may result from increasing temperatures and other climate change related disturbance in the future. Its isolated populations put it at further risk for localized extinctions.

Daily maximum temperatures currently approach the upper thermal limit commonly recognized for rainbow trout (Nusslé et al. 2015), and water temperatures are predicted to increase. Several main threats, including increasing water temperatures due to climate change, are outside of Forest Service control. Given that main threats are outside of Forest control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Kern River rainbow trout within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Kern Brook Lamprey – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Kern brook lamprey in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Cool lowland waters, clear streams and silty backwaters of large rivers.

Key Threats to Persistence

Main threats are fragmented watershed conditions due to dams, altered flow regimes and temperatures in streams and rivers for hydroelectric power, agriculture and mining activities; changes in water quantity or quality; habitat loss, competition and predation from invasive species, drought and climate change.

Threats under Forest Service Control

- Habitat loss and changes in water quantity or quality due to forest management activities
- Competition and predation from invasive species

Lampreys are greatly affected by loss of wetlands, side channels, back eddies, and beaver ponds. Channelization, floodplain filling, and destruction of riparian vegetation is widespread in low-gradient stream areas favored by lamprey for spawning and rearing. River channelization negatively impacts larval lamprey habitat by increasing stream velocity, thereby reducing depositional areas favored by larval lamprey (Close et al. 2002). High stream temperatures resulting from the destruction of riparian vegetation are a likely limiting factor because lampreys prefer temperatures below 20 degrees Celsius (BioAnalysts, Inc. 2000). Forest management activities such as grazing and recreation may contribute to these habitat alterations. Generally, livestock impacts from overgrazing include a reduction in deep water habitats, detrimental sedimentation, reduced stream shading, loss of instream and riparian cover, and alterations in food resources; however, current cattle management on the forest focuses on restoring the hydrologic and vegetative function of riparian habitat. Ecosystem-level plan components related to grazing would reduce impacts on riparian areas and prevent further degradation. Water plays a major role in providing a diverse set of recreation opportunities on the Sierra National Forest, and recreation use may also pose a risk to the Kern brook lamprey and its habitat. Most areas that are accessible to camping or off-road vehicles and other use may affect ammocoetes habitat or disrupt spawning (Santos et al. 2014). Ecosystem-level components for aquatic and riparian ecosystems would reduce impacts from recreation and guide management to make sure watershed conditions are fully functioning and support self-sustaining populations.

Table D-31. Key threats, plan components and expected effects on Kern brook lamprey

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level components would minimize the occurrence and spread of nonnative fish, and thus will reduce threats to the Kern Brook lamprey.
Habitat loss and changes in water quantity or quality due to forest management activities; Fragmented watershed conditions and altered flow regimes and temperatures in streams and rivers due to dams	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining fish populations. Control of impacts from dams and hydroelectric use is beyond Forest control, but plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events*)**	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Predation by nonnative, introduced fishes, such as smallmouth bass, is a major threat to this species. Nonnative fishes have been introduced or have invaded most waters of the range. These waters include extensive areas that were once fishless at high elevations. Sierra Nevada fisheries have largely shifted from native fishes, especially salmon and other migratory fishes, to introduced fishes (USDA Forest Service 2013b). The actual impact from these threats on population trends of Kern brook lamprey is not known. The proposed action to *Maintain the native-fish-only status of Little Kern River and upper North Fork Kern River through remedial actions to remove invasive species, increase public education, provide signage, and provide law enforcement* along with ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

Threats Not Under Forest Service Control

- Fragmented watershed conditions and altered flow regimes and temperatures in streams and rivers due to dams
- Habitat loss or degradation due to climate change or other stochastic events

Dams and diversions may cause aquatic habitat alteration by blocking aquatic species movement or migration and may contribute to species isolation (Moyle et al. 2015). In addition, dams and diversions can alter water quantity, stream morphology, and water temperatures. Limited dispersal ability of this species and fragmented populations due to dams put it at-risk for localized extinctions. Similar to dams, culverts that pass adult salmonids are often barriers to lamprey. A systematic survey of lamprey in the Alsea Basin, Oregon found lampreys were often absent above road culverts (Kostow 2002). Stream diversions can kill juvenile and adult lamprey by stranding due to artificial lowering of the water level, or because the diversions are unscreened, or the lamprey can get under or through the screens (BioAnalysts, Inc. 2000, Kostow 2002). Kostow (2002) reports that most lamprey die after passing through dredges. While controlling impacts from dams and hydroelectric use is beyond Forest control, ecosystem-level plan components to maintain adequate timing and quantity of water flows and sustain water quality would help mitigate effects.

Water quantity and quality, including stream morphology and temperatures, may be affected in the future as hydroelectric use continues and increases. The Forest completed a Settlement Agreement with Southern California Edison in 2008 regarding future operations of several of its hydroelectric facilities. Among the conditions on the new licenses would be increases in minimum instream flow, along with channel and riparian maintenance flows. Increases in flow would augment the amount of habitat available, and possibly reduce water temperatures in some stream segments, providing additional cold-water habitat.

Climate predictions for the Central Valley and the southern Sierra Nevada include increased warming, less snowpack, and earlier spring snowmelt. These changes would influence the amount of water supply that can originate from forest lands and from precipitation, and warming temperatures can further limit distributions of native fishes, other aquatic-dependent species like Kern brook lamprey (USDA Forest Service 2013b, Santos et al. 2014).

Although the Forest Service cannot control for these impacts, maintaining or improving watershed conditions would increase existing habitat resilience and the capability of these areas to support populations.

Information on Current Distribution of the Species in the Planning Unit

The Kern brook lamprey occurs in the Kings, Merced, and San Joaquin River systems on the Sierra National Forest in extremely isolated population segments.

Key Ecological Conditions in Plan Area
Key ecological conditions for this species include cool lowland waters, clear streams and silty backwaters of large rivers.

Sierra – Summary
The abundance and distribution of the Kern brook lamprey is relatively well documented, and evidence suggests that they are much less abundant than they were historically. Their distribution is also fragmented, with largely isolated populations scattered among several river systems on the Sierra National Forest and throughtout the range. The biggest threats to this species on the Sierra National Forest are the loss of connectivity and water quality and quantity due to hydroelectric use. These factors combined with direct mortality due to predation, recreation use, along with stochastic events and climate change that affect water temperatures, put the Kern brook lamprey at significant risk. Given that the main threat to this species, water use for dams, is outside of Forest Service control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of Kern brook lamprey within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Terrestrial Invertebrates

Behr's Metalmark – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Behr's metalmark in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Shrub, chaparral, woodland and mixed forest habitats. Several kinds of arid habitats occupied by stands of suitable caterpillar host plants, primarily fasciculate buckwheat (*Eriogonum fasciculatum)*, but also Wright's buckwheat (*E. wrightii*), in open mixed deciduous conifer forest.

Table D-32. Key threats, plan components and expected effects on Behr's metalmark

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat degradation due to invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species and Special Habitats and Limited Distributions)***	Ecosystem-level plan components would minimize the occurrence and spread of invasive species, and thus reduce threats to the Behr's metalmark. Desired conditions for terrestrial vegetation would move habitats towards natural range of variation.
Habitat loss or degradation from forest management activities including grazing and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity, which will help restore previous damage from grazing. Ecosystem-level components for grazing and recreation avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components would reduce the threat of butterfly habitat degradation, and may even improve previously impaired conditions.

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Habitat loss due to urbanization at lower elevations, invasive species, conifer encroachment, climate change, and fire events.

Threats under Forest Service Control

- Invasive plant species

Cheatgrass in lower elevation areas may threaten the buckwheat host plants for this species. This would reduce connectivity of habitat up the Kern canyon and into the Southern Greenhorn Mountains.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Drying of the habitat from drought may eliminate the host species required for this species. Drought can reduce numbers of butterflies substantially (Ehrlich and Murphy 1987). Warming temperatures can advance the timing of spring flight of butterflies (Forister et al. 2010); the risk is that host plant phenology will not develop at the same rate; causing a decline in the species. Loss of habitat at lower elevations, due to climate change and habitat destruction puts the species at-risk. Habitat destruction and shifting climatic regimes put this species at-risk. Increasingly warm temperatures along with cheatgrass invasions may contribute to wildfires occurring more frequently.

The biology of this species contributes to the specie's vulnerability as this species is narrowly endemic and is a habitat specialist, relying only on a few species of buckwheat for forage. Stochastic events within the narrow range of this species could adversely impact populations.

Information on Current Distribution of the Species in the Planning Unit

Behr's metalmark is a rare species known from the southern Sierra Nevada. A 1964 collection of subspecies from Sequoia National Forest was verified by Davenport in 2009 (K. Davenport, personal communication. March 2016). The subspecies is found along the Kern River in Tulare County and extends into the Southern Greenhorn Mountains, and Piute Mountains in Kern County. It is found at elevations between 4,000 to 6,000 feet (Davenport 2004, 2007).

Distribution is reported as: "Very spotty and local, but often common where found. In Kern County Behr's metalmark has populations south of Lamont Peak (Chimney Peak Road at the south end of Kern Plateau), on the east side of the Greenhorns, both west and east slopes of the Piutes (South of Bodfish and Piute Mountain Rd.), west of Sageland/Kelso Valley, Walker Pass south (including Bird Spring Pass) to Butterbredt Peak and Kelso Valley. It ranges at least as far southwest as Sand Canyon in the Tehachapi's. In Tulare County, it occurs along upper Kern River (Calkin's Flat) up Sherman Pass Rd. to about 5,000 feet, and in Lamont Peak area at south end of Kern Plateau area along Chimney Peak Road" (Davenport 2014).

Key Ecological Conditions in Plan Area
Key ecological conditions for this species in the plan area include arid woodlands supporting buckwheat between 4,000 and 6,000 feet. Fasciculate buckwheat is found throughout the area near Lake Isabella, and the Southern Greenhorns. Wright's Buckwheat is found up in the Kern Canyon and the Greenhorn Mountains.

Sequoia – Summary
This butterfly is rare and localized, known from relatively few populations in the Greenhorn and Piute Mountains. Habitat is threatened by invasive species, warming temperatures, drought, and other disturbance. It is unknown if a current viable population exists within the Sequoia National Forest planning area and therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Behr's metalmark in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Evius Blue – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Evius blue in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Key ecological conditions include forest clearings and edges, prairie, sagebrush, chaparral, coastal dunes, fields with lupines.

Table D-33. Key threats, plan components and expected effects on Evius blue

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat degradation due to invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species and Special Habitats and Limited Distributions)***	Ecosystem-level plan components will minimize the occurrence and spread of invasive species, and thus will reduce threats to Evius blue. Desired conditions for terrestrial vegetation will move habitats towards natural range of variation.
Habitat loss or degradation from forest management activities including grazing and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity, which will help restore previous damage from grazing. Ecosystem-level components for grazing and recreation avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components will reduce the threat of habitat degradation, and may even improve previously impaired conditions for at-risk butterflies.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions will aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Conifer encroachment of meadows, drought, and invasion of nonnative grass may restrict this species along with overstocked stand conditions which lead to high fire severity. Climate changes such as warmer temperatures, less snowpack, earlier snowpack melting, and drought.

Threats under Forest Service Control

- Habitat loss or degradation due to forest management activities including grazing, vegetation treatments, and recreation
- Invasive plant species

Invasive plant species such as cheatgrass can increase the fire return interval in habitat for this species resulting in an altered vegetation community with a reduced capacity to support the forage needs of the Evisus blue. Conifer density may threaten the persistence of this specie due to increased risk of wildfire. Fire suppression over the past century has led to risk of extreme fires in some areas.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Forest clearings, meadows, stream margins, and edges currently may be influenced by drought and warming temperatures. Warmer and dried conditions may contribute to wildfire. Climate changes such as warmer temperatures, less snowpack, earlier snowpack melting, and drought may influence butterfly emergence and flight timing, and numbers of generations per year. The flowering phenology responds to temperature increase and earlier snowmelt due to climate change. The long-term risk for this butterfly is that asynchronies in their host plant availability, and their emergence timing put this species at-risk (Dunne et al. 2003).

Information on Current Distribution of the Species in the Planning Unit

Evisius blue is not recognized in NatureServe, although other subspecies of *P. icarioides* are recognized. Very little is known about this subspecies; the subspecies is generally distributed in montane areas of southern California, usually at intermediate elevations, and almost always closely associated with a lupine foodplant; occurring in Greenhorn, Piute and Tehachapi Mountains, Frazier Park, Mount Pinos, and Sageland-Kelso Valley (Davenport 2014).

Forest clearings, meadows, stream margins, and edges are abundant up on the southern Greenhorn Mountains, giving a longer season than the streams in the Piute Mountains. However, Erskine Creek is perennial and provides habitat for butterflies along its margins.

Key Ecological Conditions in Plan Area

Generally distributed in montane areas at intermediate elevations, and closely associated with a lupine foodplant. Forest clearings, meadows, stream margins, and edges with buckwheat and lupines present. Caterpillars feed on lupine leaves, then flowers and seedpods.

Sequoia – Summary

Evius blue is at the northern end of its range on the Sequoia National Forest plan area; constrained to a small range with highly patchy distribution. As a result of its rarity and limited distribution, this species is highly susceptible to stochastic events and drying conditions that may result from increasing temperatures and other climate change related disturbance. Its isolated populations put it at further risk for localized extinctions. It is unknown if a current viable population exists within the planning area and therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Greenish Blue – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the greenish blue in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Wet meadows, riparian habitats, and open forests that support clovers.

Table D-34. Key threats, plan components and expected effects on greenish blue

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat degradation due to invasive species and conifer encroachment of meadows	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species and Special Habitats and Limited Distributions)***	Ecosystem-level plan components would minimize the occurrence and spread of invasive species, and thus would reduce threats to greenish blue. Desired conditions for terrestrial vegetation would move habitats toward natural range of variation.
Habitat loss or degradation from forest management activities vegetation treatments and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Riparian/Water Dependent, Wet/Riparian Meadow Dependent Seeps/Springs Dependent)***	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity, which would help restore previous damage from grazing. Ecosystem-level components for grazing and recreation avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components would reduce the threat of aquatic habitat degradation, and may even improve previously impaired conditions.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Threats to persistence include habitat loss, conifer encroachment of meadows, climate change, wildfire, drought, and invasive nonnative species.

Threats under Forest Service Control

- Habitat loss or degradation due to forest management activities
- Invasive plant species

Habitat loss from the degradation of wet meadows on the Kern Plateau may threaten the persistence of this subspecies. The spread of invasive plant species may degrade habitat as native plants which serve as food sources for greenish blue are outcompeted by invasive plant species.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Climate changes such as warmer temperatures, less snowpack, earlier snowpack melting, and drought may influence butterfly emergence and flight timing, and numbers of generations per year. The flowering phenology of host plants may respond to temperature increase and earlier snowmelt due to climate change. The long-term outlook for this butterfly is that asynchronies in their host plant availability (Dunne et al. 2003), and their emergence timing put this species at-risk. Wildfire may also become more frequent as a result of climate change and historical fire suppression which has led to overstocked stands.

Information on Current Distribution of the Species in the Planning Unit
Occurrences of *Plebejus saepiolus* have been documented in Kern, Madera, Mono, Tulare, and Tuolumne Counties. The type specimen is from Tioga Pass, Mono County. Distribution records for Kern and Tulare Counties include collected material from Sequoia National Park and Kings Canyon National Park that is probably not a typical *P. saepiolus* ssp. *aehaja* (Davenport 2014). From there this subspecies ranges south in wet meadows and riparian streambed habitats to the south end of the Kern Plateau at Pine Flat, the Greenhorn Mountains south to Black Mountain saddle and isolated points in the Piute Mountains. Some individuals from populations (as at Marshall Meadow in the Greenhorns and at the south end of the Kern Plateau) are very large and suggestive of southern California subspecies *P. saepiolus* ssp. *hilda*.

There are more than 20 occurrence records for Kern and Tulare Counties. Several occurrences are within the boundaries of Sequoia National Forest plan area, including in the Piute Mountains, Greenhorn Mountains, Sherman Pass area, Big Meadow and Pine Flat (Davenport 2014). However, a large sized population may be a different subspecies and it is unknown if the plan area supports an existing viable population without further studies. Several records have repeated sightings for different years.

Key Ecological Conditions in Plan Area
Key ecological conditions consist of wet meadows and riparian streambed habitats. Caterpillars and adults feed on clovers of the genus *Trifolium*.

Sequoia – Summary
Greenish blue is an endemic butterfly subspecies of California. As a result of its rarity, limited distribution, and difficulty to identify, this subspecies is highly susceptible to stochastic events and drying conditions that may result from increasing temperatures and other climate change related disturbance in the future. It is unknown if a current viable population exists within the planning area and therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Indian Yosemite Snail – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Indian Yosemite snail in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Key ecological conditions for this species include mossy limestone crevices and talus, typically on steep slopes where moisture and high humidity are retained. Caves and abandoned mines may also provide these ecological conditions.

Table D-35. Key threats, plan components and expected effects on Indian Yosemite snail

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or disturbance due to recreation or mining	***(Refer to Table D-4 Crosswalk for Disturb Intolerant)***	Ecosystem-level plan components would protect sensitive habitats, including caves and mines, and manage recreation opportunities to limit disturbance to sensitive species such as Indian Yosemite snail.
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)***	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats, including snail microsite habitat, when possible.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, and climate change.

Key Threats to Persistence

Disturbance, degradation or loss of habitat to microsite conditions due to recreation or mining activities. Loss of habitat due to fire, drought conditions, and climate change.

Threats under Forest Service Control

- Habitat loss and degradation due to construction, vegetation treatments, wildfire fuels reduction, timber harvest, and recreation.

Habitat alteration from forest management activities can threaten this sedentary species. Habitat alteration such as development for mining, road widening, or construction and limestone quarrying likely pose the greatest threat to this species. As few studies have investigated this species, additional research needs to be conducted to determine what threats are most significant for this species. In addition, habitat can be impacted by invasive plant species, habitat fragmentation, surface mining, intensive grazing, illegal marijuana cultivation, and climate change.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

As with other species with a limited range, stochastic events are a significant threat to the persistence of this species. Events such as fire, flood, drought, habitat alteration or climate change can significantly impact a restricted range animal. Connectivity of habitat is important because this species has minimal movement capability and is restricted to limited times of the year for movement.

As fire severity and intervals increase, degradation, connectivity and loss of habitat for this species will also increase. Since land snails have limited mobility, poor active dispersal ability, and are very sensitive to desiccation, they are highly vulnerable to fire itself and to subsequent habitat destruction (Burke 1999). In consequence, post-fire return of this group is expected to be slow. According to (Burke 1999), intense fire events can result in the persistence of only a small fraction of mollusk fauna for many years (possibly a century or more). Less-severe fires leaving numerous large, minimally charred logs in the stand result in a greater portion of mollusk survival (Burke 1999).

Warming temperatures and longer droughts associated with climate change is expected. This change would intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. As a result, microsite conditions on rocky steep slopes that include high humidity and moisture would be impacted (USDA Forest Service 2013b).

Information on Current Distribution of the Species in the Planning Unit
This species is found only in Mariposa County, at the boundary of Yosemite National Park and Sierra National Forest, along the Merced River near the South Fork confluence. There are 7 occurrences recorded in CNDDB, with 2 occurrences on the Sierra National Forest: one along the Merced River about a mile from the confluence with the South Fork of the Merced River; and the other along the South Fork of the Merced River about a quarter mile from Hite Cove.

Key Ecological Conditions in Plan Area
Key ecological conditions for this species include mossy limestone crevices and talus, typically on steep slopes where moisture and high humidity are retained. Caves and abandoned mines may also provide these ecological conditions.

Sierra – Summary
The Indian Yosemite snail is restricted to limestone and rocky outcrop habitat on the Sierra National Forest. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities, such as mining, heavy recreation use and drought. These factors combined with direct mortality due to predation, increased stochastic events including large and severe wildfires, along with climate change, puts the Indian Yosemite snail at significant risk. As a result of its rarity and limited distribution it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Merced Canyon Shoulderband – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Merced Canyon shoulderband in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Key ecological conditions for this species include talus deposits and outcrops, typically on steep slopes where moisture and high humidity are retained. Other ecological conditions include rocks, logs, vegetation, leaf litter and woody debris in forest habitats.

Table D-36. Key threats, plan components and expected effects on Merced Canyon shoulderband

Key Threats to Persistence	Plan Components That Alleviate or Eliminate Key Threats	Effects Summary
Habitat loss or disturbance due to recreation or mining	***(Refer to Table D-4 Crosswalk for Disturbance Intolerant)***	Ecosystem-level plan components would protect sensitive habitats, including caves and mines, and manage recreation opportunities to limit disturbance to sensitive species such as Merced Canyon shoulderband.
Degradation or loss of habitat and microsite conditions due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Special Habitats and Limited Distributions)***	Desired conditions for wildlife habitat include maintaining adequate habitat features for at-risk species. Ecosystem-level guidelines for fire management and recreation would minimize disturbance to special habitats when possible.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Disturbance, degradation or loss of habitat to microsite conditions due to recreation or mining activities. Loss of habitat due to high-intensity fire, drought conditions and climate change.

Threats under Forest Service Control

- Habitat loss and degradation due to construction, vegetation treatments, wildfire fuels reduction, timber harvest, and recreation.
- Road construction and maintenance can adversely impact the rock habitat for this species. Heavy recreation use may also impact habitat for this species.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

As with other species with a limited range, stochastic events are a significant threat to the persistence of this species. Events such as fire, flood, habitat alteration, or climate change can significantly impact a limited range animal. Connectivity of habitat is important because this species has limited movement capability and is restricted to limited times of the year for movement. The degree of connectivity for dispersal within and between occupied areas depends on the density and arrangement of shaded down wood and other cover objects which provide daily refugia during the wet season (Jordan and Black 2015). As fire severity and intervals increase, degradation and loss of habitat for this species will also increase.

Since land snails have limited mobility, poor active dispersal ability, and are very sensitive to desiccation, they are highly vulnerable to fire itself and to subsequent habitat destruction (Burke 1999). In consequence, post-fire return of this group is expected to be slow. Intense fire events can result in the persistence of only a small fraction of mollusk fauna for many years (possibly a century or more). Less-severe fires leaving numerous large, minimally charred logs in the stand result in a greater portion of mollusk survival (Burke 1999).

Warming temperatures and longer droughts associated with climate change is expected. This change will intensify trends in fire, insect and disease outbreaks, and drought-related tree mortality. As a result,

microsite conditions on rocky steep slopes that include high humidity and moisture will be impacted (USDA Forest Service 2013b).

Information on Current Distribution of the Species in the Planning Unit
This species is found on the Sierra National Forest in the Merced Canyon area, just south of Portal. Four locations are recorded in CNDDB.

Mollusks which inhabit rocky habitats also utilize the surrounding forest areas for foraging and dispersal during moist, cool conditions. Seasonal deep refugia include talus deposits and outcrops, are used for up to half the year (Jordan and Black 2015). These seasonal refugia also provide protection from fire and predation during inactive periods (Jordan and Black 2014).

Key Ecological Conditions in Plan Area
The Merced Canyon shoulderband occurs on talus deposits, outcrops and steep slopes where moisture and high humidity are retained on the western foothills of the Sierra Nevada. Forested and woodland habitat with rocks, logs and woody debris are also preferred habitat. This area experiences dry, xeric conditions with less than six inches precipitation annually and as a result, limited moisture that is available is essential for respiration and often hatching of eggs. This species has very little capability to disperse and even relatively small barriers are limiting.

Sierra – Summary
The Merced Canyon shoulderband is primarily restricted to rocky outcrop habitat on the Merced River within Sierra National Forest. The biggest threats to this species on the Sierra National Forest are degradation or loss of habitat from ground-disturbing activities, such as mining, heavy recreation use, and drought. These factors combined with increased stochastic events including large and severe wildfires, along with climate change, puts the Merced Canyon shoulderband at significant risk. As a result of its rarity and limited distribution it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Tehachapi Fritillary – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the Tehachapi fritillary in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Tehachapi fritillary occurs in mountains meadows, forest openings and rocky outcrops where the larval host plant species of Viola occur (Lotts and Naberhaus 2017), perhaps a subspecies of *Viola purpurea*.

Table D-37. Key threats, plan components and expected effects on Tehachapi fritillary

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat degradation due to invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species and Special Habitats and Limited Distributions)***	Ecosystem-level plan components would minimize the occurrence and spread of invasive species, and thus would reduce threats to the species. Desired conditions for terrestrial vegetation would move habitats towards natural range of variation.
Habitat loss or degradation from forest management activities including vegetation treatments and recreation	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events and Riparian/Water Dependent, Wet/Riparian Meadow Dependent Seeps/Springs Dependent)***	Ecosystem-level direction for water, watersheds, aquatic, and riparian areas emphasize conservation, maintenance, and restoration of aquatic and riparian ecosystem integrity, which will help restore previous damage from grazing. Ecosystem-level components for grazing and recreation avoid or limit disturbance to riparian areas and sensitive species. Together, these plan components will reduce the threat of habitat degradation, and may even improve previously impaired conditions for fritillary.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Habitat loss and degradation due to fire suppression and conifer encroachment, invasive annual grasses, grazing, loss of habitat from fire events, and climate change.

Threats under Forest Service Control

- Habitat loss and degradation due to forest management activities

The total area of meadows in the Sierra Nevada has decreased due to past and current land use practices such as dams, diversions, and recreation; upland vegetation encroachment from conifers and sagebrush as a result of fire suppression; or from drying due to stream channel incision (Gross and Coppoletta 2013).

Livestock grazing poses a risk to butterflies through removal of host plants, disturbance to larval phases, and spread of invasive species. Livestock grazing is likely to be sustained within the planning area over the next 20 years. The amount of livestock grazing may decline to some degree due to reduced forage capacity and tighter administrative constraints for protection and enhancement of threatened, endangered, sensitive species habitat and other resource concerns such as water quality.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Future changes in climate (that is, increasing temperatures) combined with a change from a snow-dominated to a rain-dominated system will impact meadows due to changes in the hydrologic regime. Total meadow area may decline and wet meadows may shift to dry meadows, especially small irregularly shaped meadows at low to mid elevations (Gross and Coppoletta 2013).

Past suppression policies have led to conditions that can result in large areas of large and severe wildfires that may be detrimental to meadow habitat. The Sequoia National Forest essentially abandoned even-aged

reforestation management 20 years ago, in favor of stand maintenance thinning harvests intended to control density and growth of stands, generally for habitat maintenance. High fire severity can impact meadow habitat adjacent to these stands.

Information on Current Distribution of the Species in the Planning Unit
This species is restricted to the Piute Mountains on the Sequoia National Forest and Tehachapi Mountain, with few location records in CNDDB. (Davenport 2014, 2018) states the species has not been reported in either mountain ranges since 1998. Davenport (2018) added that with loss of habitat due to recent warming trends and long-term drought, this fritillary may be extinct, but there is possible habitat in the Piute Mountains, which is less accessible and not yet explored for butterflies.

Davenport (2018) considers this rare subspecies appears to be in a serious decline and indicates that there have been no records for the butterfly in the Tehachapi Mountains and the Piute Mountains since 1998. NatureServe indicates that the subspecies has a very limited range in two mountain ranges in Kern County but states that the butterfly apparently is "fairly common in both ranges." NatureServe further states that the "distribution data for U.S. states and Canadian provinces is known to be incomplete or has not been reviewed for this taxon" and that collectors may be a threat to the populations of this butterfly (NatureServe 2017).

Key Ecological Conditions in Plan Area
Tehachapi fritillary occurs in mountains meadows, forest openings and rocky outcrops where host plant species of the genus Viola occur, perhaps a subspecies of *Viola purpurea* (Lotts and Naberhaus 2017).

Sequoia – Summary
This butterfly is extremely rare and localized; in the plan area it was found only in the Piute Mountains since before 1998. Meadow habitat in the Piute Mountains is drying and may be impacted by tree encroachment, climate change, recreation, catastrophic fire events, grazing, and stream channel incision. It is unknown if a current viable population exists within the planning area and therefore, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Aquatic Invertebrates

Western Pearlshell – Sequoia

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the western pearlshell in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: The pearlshell most commonly inhabits cool to cold rivers, but can also be found in smaller, cold headwater streams. They typically occupy areas with low velocities, low shear stress, low gradients, and stable substrates (Vannote and Minshall 1982, Howard and Cuffey 2003, Stone et al. 2004).

Table D-38. Key threats, plan components and expected effects on western pearlshell

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat modification and water quality degradation due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining aquatic invertebrate populations.
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

Habitat modification, water quality degradation, and climate change.

Threats under Forest Service Control

- Habitat loss of degradation due to forest management activities

Impacts on the western pearlshell from human-caused activities include eutrophication due to agricultural runoff and urbanization, sedimentation that smothers mussel beds, water diversions that reduce and alter instream flow regimes, mining, including suction dredge operations, introduction of exotic species, grazing, and water impoundments that reduce current velocities and allow for sediment deposition (Hovingh 2004, Lydeard et al. 2004, Strayer 2006). Freshwater mussels are long-lived and relatively stationary organisms. Unlike more mobile species they are sedentary as adults and thus especially vulnerable to water quality impairment. Excessive sediment is also a contaminant to habitat quality and has been associated with freshwater mussel declines. Vannote and Minshall (1982) and Howard and Cuffey (2006) attributed increased sediment with declines in *M. falcata*, implicating in-channel dredging, logging, and livestock use in the affected watersheds.

Stream habitat degradation caused by historical grazing practices and suction dredging may have reduced the suitability of existing habitat, specifically in the Lower Kern area, where this species is historically known to have occurred. Increased recreational use of the Kern may cause disruption of habitat, increased water pollution, and dislodge adults. Ecosystem-level components would reduce impacts of these activities by avoiding timber in riparian conservation areas, managing grazing to avoid impacts on riparian ecosystems, and providing for ecological integrity of aquatic systems so that they provide high-quality habitat.

This mussel species depends on salmonid fish hosts to sustain and disperse larval clams. Since many salmonid species such as rainbow trout and salmon have experienced severe declines, western pearlshell mussels have declined as well (Krueger 2016). Therefore, plan components that aim to support healthy native fish populations, would benefit mussels as well.

Threats Not Under Forest Service Control

- Habitat loss or degradation due to climate change or other stochastic events

Because clear, cold water is a key habitat element required by the pearlshell, climatological changes that result in reduced streamflow, increased water temperatures, or both, may result in a further reduction in suitable habitats for the mussel or appropriate fish hosts. Climate predictions for the Central Valley and

the southern Sierra Nevada include increased warming, less snowpack, and earlier spring snowmelt. These changes would influence the amount of water supply that can originate from forest lands and from precipitation. Uncertainty about the water supply makes planning for distribution of water in the future challenging (USDA Forest Service 2013a). Although the Forest cannot manage for climate change, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to its effects.

Information on Current Distribution of the Species in the Planning Unit
Although western pearlshell mussel is a widespread species and abundant in many locations across its range, there are numerous examples of its decline or extirpation from streams and rivers, especially in the more arid areas. Its decline has led to limited localities on the Sequoia National Forest. Database records on the Sequoia National Forest plan area include two CNDDB records along the South Fork Kern River near Monache Meadows and NRIS record locations along the Little Kern River and the lower Kern River. There is a need to document the current distribution and abundance of this species, so that if *M. falcata* populations decline in the future, those declines can be documented and protection for vulnerable populations can be provided.

The ecological conditions for western pearlshell on the Sequoia National Forest plan area can be found in the South Fork Kern River and similar river systems, especially where the host fish species occurs. Although, the South Fork Kern River provides habitat for the Western pearlshell, there is little information on actual population trends or density. Documented host fishes for *M. falcata* include: cutthroat trout, rainbow/steelhead trout, Chinook salmon, and brown trout, and a number of other fishes are considered potential hosts.

Key Ecological Conditions in Plan Area
Key ecological conditions include cold creeks and rivers with clean water and where sea-run salmon or native trout persist.

Sequoia – Summary
Although western pearlshell mussel is a widespread species and abundant in many locations across its range, there are numerous examples of its decline or extirpation from streams and rivers. Its decline has led to limited localities on the Sequoia National Forest. Competition for water uses occurs on the Sequoia National Forest. Water for hydroelectric, flood control, irrigation or drinking water alters the flow timing and amount throughout the year. Climate change is expected to reduce the supply, and may increase the competition for water use. Development and population growth will put even more demand on the available water. Increases in recreational use of the Kern River may cause disruption of habitat, increased water pollution, and dislodge adults. *Because several main threats to the species—climate change and water use*—are outside of Forest Service control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of western pearlshell within the plan area. Nonetheless, ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

An Isopod – Sierra

Determination: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of an isopod (*Calasellus longus*) in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

General Key Ecological Conditions: Cave dwelling obligate subterranean species needs high water quality and quantity, including cold water conditions from seeps and springs in caves.

Table D-39. Key threats, plan components and expected effects on Calasellus longus (an Isopod)

Key Threats to Persistence	Plan Components that Alleviate or Eliminate Key Threats	Effects Summary
Habitat modification and water quality degradation due to forest management activities	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events, Riparian/Water Dependent, Wet/Riparian Meadow Dependent, Open Water Dependent)***	Ecosystem-level plan components provide for ecological integrity of aquatic systems so that they provide high-quality habitat and support healthy, self-sustaining aquatic species populations.
Competition and predation from invasive species	***(Refer to Table D-4 Crosswalk for Susceptible to Invasive Species)***	Ecosystem-level plan components would minimize the occurrence and spread of invasive species, and thus would reduce threats to aquatic invertebrates
Habitat loss or degradation due to climate change or stochastic events	***(Refer to Table D-4 Crosswalk for Susceptible to Stochastic Events)***	The Forest Service cannot directly control the effects of climate change or other stochastic stressors; however, ecosystem-level components designed to move toward desired conditions would aid in forest habitats being more resilient to stochastic events including large and severe wildfires, drought, climate change, and widespread tree mortality.

Key Threats to Persistence

changes in water quantity or quality, habitat loss, competition and predation from invasive species, limited distribution and climate change

Threats under Forest Service Control

- Habitat degradation due to alterations to the natural flow regime caves from forest-management activities
- Competition and predation from invasive species

Activities that divert water flow from springs or degrade water quality can greatly impact this species. Recreation use on the Sierra National Forest may also pose a risk to *Calasellus longus* and its habitat. Grazing may also alter habitat conditions. Ecosystem-level components would reduce impacts of these activities by managing grazing and recreation to avoid impacts on riparian ecosystems, and providing for ecological integrity of aquatic systems so that they provide high-quality habitat.

Nonnative fishes have been introduced or have invaded most waters of the range. These waters include extensive areas that were once fishless at high elevations. Sierra Nevada fisheries have largely shifted from native fishes, especially salmon and other migratory fishes, to introduced fishes (USDA Forest Service 2013b). Predation by nonnative, introduced fishes is a major threat to this species. Smallmouth bass may readily consume *Calasellus longus*. Additionally, predation from introduced American bullfrogs likely impact this species. Ecosystem-level components that emphasize controlling current invasive species and preventing their spread would help to reduce this threat.

Threats Not Under Forest Service Control

- Limited distribution
- Habitat loss or degradation due to climate change or other stochastic events.

As a result of limited distribution, this species is highly susceptible to stochastic events and drying conditions resulting from increasing temperatures, along with events related to climate change. In

addition, extremely limited dispersal ability of this species and isolated populations put it at further risk for localized extinctions. Although the Forest Service cannot control for these impacts, maintaining or improving watershed conditions would increase existing habitat resilience and the capability of these areas to support populations.

Warming temperatures can limit distributions of native fishes and other aquatic dependent species, like *Calasellus longus* (USDA Forest Service 2013b). Fish stocking in rivers, streams, reservoirs, and previously fishless lakes can reduce native fish and amphibians.

Information on Current Distribution of the Species in the Planning Unit
Calasellus longus was discovered in the early 1980s by students from the University of California, Davis (Bowman 1981). This isopod is an endemic species to the Shaver Lake area, located on the Sierra National Forest. Shaver Lake is not a natural body of water, but instead, a reservoir for water power formed by the Shaver Lake dam. Having evolved long before 1927, *C. longus* is native to the aquifer that supplies the spring from which the isopods were collected (Bowman 1981).

Key Ecological Conditions in Plan Area
Key ecological conditions for the *Calasellus longus* are water quality and quantity, including cold water conditions from seeps, springs in caves (Elliott et al. 2017).

Sierra – Summary
Threats this species are changes in the persistence or modifications of cool water conditions where this species occurs. These factors combined with direct mortality due to predation, recreation trampling, and stochastic events, including climate change, that affect water temperatures, puts *Calasellus longus* at significant risk. *Because the main threat to the species, climate change,* is outside of Forest control, it is not within the inherent capability of the Forest Service to maintain or restore the ecological conditions to maintain a viable population of *Calasellus longus* within the plan area. Nonetheless, Ecosystem-level components should help maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Plant Species of Conservation Concern Determinations

The Sequoia National Forest has 49 botanical species of conservation concern, and the Sierra National Forest has 46 botanical species of conservation concern, for a total of 81 botanical species between the two national forests (the numbers are not additive as there are species shared between the two forests). Many of these species have very low number of occurrences and/or very limited distribution. Many plant species of conservation concern exist only in one geographic region in California, one national forest plan area, or limited to a single county. For example, Walker Pass milk-vetch is known from only four occurrences, all located in the Walker Pass area in Kern County.

Similar to the wildlife section above, this section summarizes the key ecological conditions and risk factors for each plant species of conservation concern, and the plan components that mitigate those risk factors, provide for persistence, and contribute to maintaining a viable population of each species of conservation concern within the plan areas. Information on species distribution, ecological conditions, and threats is largely excerpted from the rationale documents for plant species of conservation concern for each forest (USDA Forest Service 2022c, d); additional information on each species of conservation concern, the associated selection process, and full references for best available science can be found in those documents and is not repeated here. Plan direction that supports ecological conditions for plant species of conservation concern and address key threats are displayed below in Table D-40 and Table D-41.

Assumptions

Many plant species of conservation concern have only one or two known occurrences in one of the forest plan revision areas. For these species, it is currently unknown if a truly viable population does indeed exist on the Sequoia and/or Sierra National Forests. In these instances, the national forest can contribute to ecological conditions that should move toward a desired condition that is within the natural range of variability, contributing to maintain a viable population to the extent it currently exists or might exist in the future.

A core element for the development of ecosystem based desired conditions for all species, is that management actions that move ecosystem conditions toward the natural range of variation will benefit species persistence. That is, the further a habitat has departed from that historical distribution or structure, the greater the risk to viability of associated species. Maintaining or restoring ecological conditions and functions similar to those under which native species evolved offers the best assurance against losses of biological diversity and maintains habitats for the vast majority of species in an area. However, this approach may not be adequate for some species because the reference condition is not achievable or because of risks not related to habitat. In that case, additional species-specific plan direction/components are added. In some cases, restoration activities pose direct and indirect threats to plant species of conservation concern. Since plants are not able to move away from threats, and are not distributed evenly in suitable habitat, the location, timing, and duration of project activities are very important to persistence of these species.

The type of forest plan direction that would contribute to persistence can be similar for many rare species. Because of this, species-specific plan direction often collectively addresses the needs of many at-risk species (including federally listed species and species of conservation concern) and is construed as plan direction for at-risk species.

The relative rarity of a species alone does not by itself constitute vulnerability, though the threat of stochastic events is associated with and can be exacerbated by rarity (Rabinowitz 1981, Shaffer 1981). In analyzing persistence of a species, occurrence and distribution are factors included along with ecological conditions of habitat and the identified threats in the plan area. Because botanical species are relatively non-mobile, identified threats to species with very low numbers of occurrences and/or very limited distribution needs to be managed at sites where they exist in order to improve resilience to stochastic events, such as wildfire, flooding, and climate change, and provide for persistence over the long term (Slaton 2015).

Methodology

Each of the botanical species of conservation concern from the Sequoia and Sierra National Forest are placed into one of three “Plant Species of Conservation Concern – Botanical Categories” as defined below. These categories are based on the factors summarized in the species of conservation concern rationale documents that include associated best available scientific information (USDA Forest Service 2022c, d).

Plant Species of Conservation Concern – Botanical Categories

- Category 1 botanical species are those species having very few occurrences (typically one or two) in the plan area, with identified threats to persistence, and the species occurs elsewhere.
- Category 2 botanical species are those species having low numbers of occurrences and/or limited distribution, and identified threats to persistence, in the plan area. Although some species are endemic just to the Sequoia or Sierra National Forest plan areas, other species also have occurrences outside the plan area.

- Category 3 botanical species are those species with sufficient numbers and distribution of occurrences and individuals within occurrences such that inadvertent loss of individuals or occurrences will not threaten population persistence and viability.

The term "occurrences" in this case is used to describe discrete clusters of individuals, tracked as element occurrences, by state natural heritage programs, including the California Natural Diversity Database (CNDDB; (California Department of Fish and Wildlife CNDDB 2019) and by the Forest Service's "Natural Resources Manager Threatened, Endangered, Sensitive, and Proposed" (NRM-TESP) site (USDA Forest Service 2019). For rare plants, element occurrences form the basis of quantification that drives global and state rankings of rarity (NatureServe 2017). Protection of occurrences does not imply protection of all individuals within an occurrence.

Plant Persistence Determination Outcomes

The three botanical categories of species of conservation concern described above are applied to one of four possible outcome determinations, which are the same as those discussed in the introduction to this chapter:

1. The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [Category Number] in the plan area. No additional species-specific plan components are warranted.
2. The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the [Category Number] in the plan area. Nonetheless, additional at-risk species plan components have been provided for added clarity and/or measures of protection.
3. The ecosystem plan components may not provide the ecological conditions necessary to maintain a viable population of the [Category Number] in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem and plan components for at-risk species should provide the ecological conditions necessary to maintain a viable population of the [Category Number] in the plan area.
4. It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of the [Category Number] in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

The finding that a viable population will be maintained should not be construed to mean the agency believes there currently is a viable population for all plant species of conservation concern on the Sequoia or Sierra National Forest, rather that the plan components should provide the ecological conditions necessary to maintain a viable population to the extent such a population currently exists or exists in the future.

Forest Plan Direction that Supports Persistence

The Forest Service developed forestwide ecosystem plan direction to support natural ecological processes, functions, and biodiversity and to promote ecological conditions that are resilient to climate change and other stressors. These broad ecosystem desired conditions would support sufficient distribution of reproductive individuals of botanical species of conservation concern and their habitat. In this way, species would remain viable.

Species distribution is partially provided for by plan components that aim to maintain or restore the diversity and connectivity of ecosystems and habitat types throughout the plan area (FSH 1909.12.20.13). Forestwide ecosystem plan components support natural ecological processes, functions, and biodiversity,

and promote ecological conditions that are resilient to climate change and other stressors. Such disturbance processes as fire, insect outbreaks, and climate change and some management activities, such as grazing and recreation, are addressed by ecosystem and other plan components that consider effects on plant communities or species diversity. Additional ecosystem plan components provide area-specific desired conditions and management direction and are tailored to specific ecosystem types or management areas, including providing ecological conditions that support persistence of species of conservation concern in riparian conservation areas; and habitat types that host many botanical species of conservation concern.

Species-specific plan components provide additional forestwide guidance for at-risk species, and are designed to promote healthy, resilient ecosystems that support functional plant and animal communities and self-sustaining populations of at-risk species. These plan components are particularly important to category 1 and category 2 botanical species of conservation concern because they address site-specific threats in occupied habitat.

Species-specific plan components for at-risk species, including for special habitats, mitigate risk to persistence from land management activities, and provide guidance for addressing existing site-specific threats not related to project activities, while balancing the needs of at-risk species with other resource uses and ecological processes. As a result, each threat in each ecosystem for each species of conservation concern identified has been addressed or mitigated in at least one plan component in the forest plan, to support the persistence of each species. Disturbance processes such as fire and management activities such as grazing and recreation are addressed by ecosystem and other plan components that consider effects on plant communities or species diversity. In addition, potential management approaches focusing on at-risk species suggest development of systematic and programmatic approaches to achieve conservation of species of conservation concern, though the plan does not guarantee that these approaches will be implemented.

We developed all plan revision alternatives to have adequate plan direction, including both ecosystem plan components and at-risk species-specific plan components, to provide for ecological conditions that contribute to the persistence of plant species of conservation concern in the plan area. Only alternative B modified includes SPEC-PLANT-STD 01, designed to better address risk to persistence from land management activities and provide guidance for addressing existing site-specific threats. The following tables display how plan components meet plant species of conservation concern habitat needs (Table D-40) and address threats (Table D-41). These tables do not include all plan components that provide for persistence of at-risk botanical species, focusing instead on the most relevant plan direction that would provide for key ecological conditions and mitigate threats.

In some cases, it is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of these botanical species in the plan area. In that event, plan components contribute to maintaining a viable population of the species within its range.

Table D-40. Crosswalk of plan direction that supports key ecological conditions for persistence of plant species of conservation concern by ecosystem type

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
All ecosystem types	**TERR-FW-DC** 02 Vegetation structure and composition provide ecosystem resilience to climate change and other stressors including altered fire regimes, drought, and flooding in riparian systems. 03 Terrestrial ecosystems retain their essential processes and functions, despite anticipated changes in species composition associated with climate change. **TERR-FW-OBJ** SQF 01 Restore forest structure and composition on 12,000 – 18,000 acres of the montane, upper montane, and portions of the foothill landscape, using primarily mechanical treatment, within 15 years following plan approval. SNF 01 Restore forest structure and composition on 54,000 – 66,000 acres of the montane, upper montane, and portions of the foothill landscapes, using primarily mechanical treatment, within 15 years following plan approval. **TERR-FW-GDL** 01 Vegetation treatments facilitate increasing heterogeneity at all scales, from tree clumps to large landscapes. Several treatment strategies can be employed: using landscape topography (slope, aspect, and slope position) to vary stand densities; promoting tree clumps and gaps within a stand, increasing the proportion of large to small trees; retaining important habitat structures such as large trees, snags, and trees with broken tops; and increasing diversity by promoting hardwoods, pines and native plant species. ***Exception: Does not apply in community buffers.*** **SPEC-FW-DC** 01 Persistent populations of native, and desirable nonnative, plant and animal species are supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the National Forest. These ecosystems are also resilient to uncharacteristic fire, climate change, and other stressors, and this resilience supports the long-term sustainability of plant and animal communities. **SPEC-FW-GOAL** 01 Communicate, collaborate, and cooperate with other agencies, tribes, partners and private landowners to encourage resource protection and restoration of ecological conditions that benefit wildlife, fish, and plants across ownership boundaries.	**TERR-FW-DC** 05 Ecological conditions contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and support the persistence of species of conservation concern. **SPEC-FW-DC** 02 Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impacts from threats (such as disease and other site-specific threats). Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern. 03 The structure and function of the vegetation, aquatic and riparian system, and associated microclimate and smaller scale elements of special habitats (like carbonate rock outcrops) exist in adequate quantities within the capability of the plan area to provide habitat and refugia for at-risk species with restricted distributions. **SPEC-FW-GDL** 01 Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for at-risk species where they occur to minimize impacts on ecological conditions that provide for the persistence of at-risk species. 05 Habitat management objectives or goals from approved conservation strategies or agreements should be incorporated, if appropriate, in the design of projects that will occur within at-risk species habitat. **SPEC-PLANT-STD** 01 Use information that is current, accurate, and precise enough to avoid or mitigate impacts on plant species of conservation concern when designing projects. If such information cannot be obtained, assume occupancy of the project area by one or more plant species of conservation concern within suitable habitat and apply resource protection measures to avoid or mitigate impacts that would limit their persistence in the plan area. To promote beneficial effects of fire and other disturbances on fire-adapted plant species of conservation concern, this standard does not apply to the following activities: a. The fire itself when conducting a prescribed under-burn. b. Temporary or light disturbance supporting the use of fire where every effort is made to mitigate the impact. Only scatter residual woody materials when neutral or beneficial to plant species of conservation concern.

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Blue oak woodland	**TERR-BLU-DC** 02 Fires occur periodically to maintain lower levels of dead grass and litter levels so that they do not fuel intense fire. Fires typically burn with low to moderate vegetation burn severity. 03 In annual grasslands, native plant abundance is maintained or improved and provides enough residual plant matter at the end of the growing season to maintain germination potential, site productivity and to protect soils.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Chaparral-live oak	**TERR-CHAP-DC** 01 Chaparral comprises native shrub and understory species that reflect the natural range of variation for the site. The chaparral vegetation type is composed of varying age classes and densities that protect against accelerated erosion, with 2 to 20 percent of the type in early seral grass and herbaceous cover, 5 to 20 percent in native herbaceous plants and shrubs, and 70 to 95 percent in dense shrubs. 02 Chaparral is in a constant state of transition from young to older stages and back again, with fire as the primary disturbance. High-severity fires that kill most aboveground stems occur on average every 35 to 100 years. Fire-return intervals allow the buildup of native shrub and plant seeds in the soil seed bank and for the accumulation of fuels necessary to support fire-induced regeneration. Invasive nonnative plants do not dominate between fires. **TERR-CHAP-GDL** 01 Treatments using fire within chaparral should be designed to provide a diversity of seral stages at the landscape scale. Where feasible, leave small to medium unburned or lightly burned patches for wildlife within very large burn units. 02 When chaparral is the potential natural vegetation type, treatment projects should not include active reforestation with the intent to convert the area to a forested type.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Montane	**TERR-MONT-DC** 01 At the landscape scale, the Sierra Nevada montane landscape is a heterogeneous mosaic of open and closed canopy forest patches, meadows and riparian areas. These ecosystem types occur in a complex mosaic of different densities, sizes, and species mixed across large landscapes that vary with topography, soils, and snow accumulation. The composition, structure, and function of vegetation make these ecosystems resilient to fire, drought, insects, pathogens, and climate change. The mix of seral stage patches, and open versus closed canopied areas, varies by forest type as described in table 1 of the revised forest plans. Large and old trees are common in later seral stages throughout the landscape and in varying densities see “Old Forest Habitats” section. 02 At the landscape scale, fire is a key ecological process restoring and maintaining patchy fuel loads, and increasing heterogeneity and understory plant vigor. Fires occur regularly, generally every 10 to 20 years. Fires in this zone burn with low, moderate, or mixed severity, with dispersed patches of high severity (greater than 75 percent basal area mortality) generally less than 10 acres and rarely greater than 200 to 250 acres in size. The proportion of areas burned at high severity within a fire is generally less than 10 to 15 percent.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Black oak/canyon live oak	**TERR-BLCK-GDL** 01 Where possible and appropriate to enhance forest structural heterogeneity or an underrepresented hardwood component, projects should create crown space around existing medium- to large-diameter California black oak and canyon live oak to allow crown development of the oaks. Where replacement age classes are missing, projects should create openings near mature oaks to stimulate natural regeneration or retain existing oak regeneration consistent with forest type desired conditions.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Ponderosa pine	**TERR-POND-DC** 01 At the landscape scale, the ponderosa pine vegetation type consists of open forests with a mosaic of varied tree sizes, densities and understory vegetation. They are dominated by ponderosa pine trees and, where black oak is common, co-dominated by black oak. Understory shrubs and plants are common. These areas are highly resilient.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Dry mixed conifer	**TERR-DMC-DC** 02 At the landscape scale, areas dominated by medium and large-diameter trees comprise more than 60 percent of the landscape. Overstory tree canopy cover is variable and ranges from 10 to 50 percent at a fine scale, with some small patches exceeding 50 percent cover. Trees are denser in some locations, such as north-facing slopes and canyon bottoms, but in small patches in limited areas (less than 20 percent of the area). Vigorous shrubs cover 10 percent or more of the area, with density varying by aspect, slope, and soil type. 04 At the mid- to fine scale, small irregularly shaped openings with less than 10 percent tree cover make up from 10 to 50 percent of the area, and contain a mix of grasses, herbaceous plants and shrubs.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Moist mixed conifer	**TERR-MMC-DC** 01 At the landscape scale, varying mixtures of Jeffrey or ponderosa pine, white fir, red fir, incense cedar and sugar pine trees occur. Native shrubs and plants are common in the understory. 06 At the fine scale, irregularly shaped groups of trees and widely spaced trees are variably spaced with some tight clumps. Vigorous shrub cover varies from 10 to 60 percent of the area. Openings with less than 10 percent tree cover are in various shapes and intermixed with groups of trees. These openings make up 10 to 30 percent of the area, are typically less 0.5 acre, and contain a mix of grasses, forbs, and shrubs.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
All upper montane	**TERR-UPPR-DC** 01 At the landscape scale, fire is a key ecological process in upper montane landscapes, restoring and maintaining patchy fuel loads, and increasing heterogeneity and understory plant vigor. Fires occur regularly to irregularly, depending on vegetation type. Fires in this zone burn with low, moderate, or mixed severity with dispersed patches of high severity (greater than 75 percent basal area mortality) generally less than 10 acres and rarely greater than 200 to 250 acres. The proportion of areas burned at high severity within a fire is generally less than 10 to 15 percent.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Red fir	**TERR-RFIR-DC** 02 Fires occur every 25 to 80 years as a key ecological process in red fir forests. Fire as an ecological process creates, restores, and maintains ecosystem resilience and increases understory plant vigor, heterogeneity, and habitat diversity. 03 At the landscape scale, areas dominated by medium and large-diameter trees and low to moderate canopy cover (between 10 and 60 percent) comprise most of the landscape. Trees are denser in some locations such as north-facing slopes and canyon bottoms, near meadows, or where snow accumulates. Early seral vegetation, shrubs, grasses, herbaceous plants, tree seedlings or saplings, mostly occur in very small areas, intermixed within forest stands or patches. 06 At the mid- to fine scale, small openings mostly less than 0.1 to 0.5 acre are intermixed within stands of trees; they make up 5 to 20 percent of the area within tree stands, have less than 10 percent tree cover, are irregularly shaped, and often contain herbaceous plants, shrubs, and tree seedlings and saplings. Some openings and the understory of some red fir patches have little to no understory plants but instead have a high diversity of mushrooms and other fungi.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Lodgepole pine	**TERR-LDGP-DC** 02 Fires occur every 30 to 100 years as a key ecological process in lodgepole pine forest. Fire as an ecological process creates, restores, and maintains ecosystem resilience and increases understory plant vigor, heterogeneity, and habitat diversity. 04 In wet lodgepole pine forests, areas dominated by medium- and large-diameter trees comprise more than 45 percent of the landscape. Tree stocking (basal area) is highly variable, ranging from 50 to 280 square feet per acre, with most less than 150 square feet per acre. Canopy cover ranges from 20 to 70 percent but is generally 50 percent. Small openings with less than 10 percent tree cover are irregular in shape, and make up from 5 to 20 percent of the area and contain a mix of grasses, herbaceous plants, and shrubs. Sufficient tree regeneration in openings provides for stand replacement. 07 In dry lodgepole pine forests, areas dominated by medium- and large-diameter trees comprise more than 60 percent of the landscape. Canopy cover is generally 10 to 40 percent but may exceed 40 percent in small patches and moist microsites. 08 Within dry lodgepole pine patches, individual trees are variably and often widely spaced. Tree stocking (basal area) is highly variable with most stands having around 120 square feet per acre but ranging from 20 to 200 square feet per acre. Small openings with less than 10 percent tree cover are irregular in shape and make up from 10 to 50 percent of the area and contain a mix of bare ground, rock, grasses, herbaceous plants and shrubs.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Jeffrey pine	**TERR-JEFF-DC** 01 At the landscape scale, the Jeffrey pine type is part of a heterogeneous mosaic of upper montane forests, shrublands, and other vegetation types. Forests are dominated by Jeffrey pine trees and are generally open. Open-canopied stands dominate the landscape, with generally less than 10 percent of the area having more than 40 percent canopy cover. Open canopies allow shade-intolerant Jeffrey pine tree regeneration. 02 Fire is a key ecological process, creating a diversity of vegetation types, maintaining understory plant diversity and lowering surface fuels. Fires occur frequently, every 10 to 15 years, with mostly low and moderate vegetation burn severity. 07 At the fine scale, openings of various shapes surround and are intermixed with trees. These gaps make up from 10 to 70 percent of the area, are typically less than 0.2 to 0.5 acre, and contain herbaceous plants, shrubs, and tree regeneration.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Montane chaparral	**TERR-MCHP-DC** 01 Chaparral consists of native shrub and understory species that reflect the natural range of variation for the site. The chaparral vegetation type is composed of varying age classes and densities that protect against accelerated erosion, with 2 to 20 percent of the type in early seral grass and herbaceous cover, 5 to 20 percent in native herbs and shrubs, and 70 to 95 percent in dense shrubs. 02 Chaparral is in a constant state of transition from young to older stages and back again, with fire as the primary disturbance. High-severity fires that kill most aboveground stems occur on average every 35 to 100 years. The fire return interval is long enough to allow the soil seed bank of uniquely adapted plants that follow fire to be maintained over short and long terms. Fuels are able to accumulate sufficiently in areas to carry fire in the areas of fire-adapted plants. Invasive nonnative plants do not dominate between fires.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Aspen	**TERR-ASPN-DC** 01 The structure, function, and composition of aspen stands are within the natural range of variation; there is a wide age and size class distribution of aspen and it is contributing to habitat and biodiversity. Aspen is successfully regenerating. **TERR-ASPN-GDL** 04 The number and size of conifers removed to enhance aspen should be based on the following long-term objectives: a. maximize direct and indirect light (this may require treating beyond the existing aspen stand perimeter); b. allow aspen expansion; c. reduce seed sources of shade-tolerant conifers; d. maintain fuel loads, including reduced coarse woody debris, that promote resilient aspen stands to allow future prescribed burning; and e. promote wildlife habitat, plant assemblages, and water yields typically found in functioning aspen communities.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Subalpine	**TERR-ALPN-DC** 02 Fires occur infrequently in subalpine woodlands, generally once every 100 years or longer, are mostly very small, and burn with mixed severity. Fire intensity is highly variable, but crown fires are usually limited in size. 03 Subalpine woodlands are resilient to insects, diseases, fire, wind, and climate change. High-elevation white pines (whitebark pine, limber pine, and foxtail pine) are healthy and vigorous, with a low incidence of white pine blister rust, and resilient to moisture stress and drought. White pine blister rust-resistant trees are regenerating, and populations of high-elevation white pines have the potential to expand above the tree line.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Alpine	**TERR-ALPN-DC** 05 Alpine ecosystems are resilient to climate change, and fires are small and occur infrequently.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Sagebrush	**TERR-SAGE-DC** Sequoia National Forest Only 01 The sagebrush type has a diversity of age classes, stand structure, cover classes and native understory composition. 02 Sagebrush ecosystems are resilient to fire and other disturbances (such as grazing, recreation, invasive species (including cheatgrass) and climate change. 03 Grazed areas have or are trending toward satisfactory soils condition, functional hydrology and biotic integrity. Sagebrush ecosystems contain all key elements and conditions, including sagebrush regeneration and recruitment, ecosystem productivity, native perennial grass cover, biological soil crusts, and symbiotic fungal associations. 04 Fire occurs as a natural process within the natural range of variation, generally burning in small extents. Fires occur infrequently, generally every 40 to 80 years or longer. 05 Where nonnative annual grasses exist in sagebrush vegetation communities, the native species persist with adequate structural and functional diversity including shrubs, perennial bunchgrasses, and forbs.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Pinyon-juniper	**TERR-PINY-DC** Sequoia National Forest Only 01 Pinyon-juniper types have a mosaic of trees and open areas that provide wildlife habitat, contribute to functional soils, and are resilient to disturbances such as fire, invasive species, insects, disease, and climate change. **TERR-PINY-GDL** Sequoia National Forest Only 01 Appropriately sized patches of undisturbed vegetation should be included in project designs to minimize nonnative species spread and maximize native species regeneration.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Xeric shrub	**TERR-XER-DC** Sequoia National Forest Only 01 Xeric shrub vegetation is a mosaic of diverse ecological types with native shrubs and grasses, commonly sagebrush, saltbush, and goldenbush in various age classes and patch sizes. 02 Vegetation conditions are resilient to natural and human disturbances, such as grazing, flooding, fire, invasive species, and climate change. **TERR-XER-STD** Sequoia National Forest Only 01 Restoration projects in xeric shrub must include design measures to minimize damage to biological soil crusts with the purpose of maintaining areas resistant to nonnative plant invasions.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Old forest	**TERR-OLD-DC** 01 The composition, structure, and functions of old forests and surrounding landscapes are resilient to fire, drought, insects, pathogens, and climate change. Fire occurs as a key ecological process in forest types that are adapted to fire, creating, restoring and maintaining ecosystem resilience and fire-related composition and structure. 03 Between 40 and 80 percent of the forested landscape contains old forest areas. Old forest areas are clumps and patches of old forest components such as old trees, snags, and large downed logs. These areas are irregularly distributed across the landscape and interspersed with stands of younger trees, shrubs, meadows, other herbaceous vegetation, and unvegetated patches.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Complex early seral habitats	**TERR-CES-DC** 01 Complex early seral habitat contains a sufficient abundance and distribution of snags (especially large-diameter snags) for cavity-nesting wildlife, variable densities of native shrubs and herbaceous plants, and resprouting oak and aspen where they occur. *Exceptions:* • *Does not apply to community buffers where there is no overlap with WHMA.* • *Does not apply to CWPZ where there is no overlap with the WHMA.* **TERR-CES-GDL** 01 Post-disturbance restoration projects should be designed to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. 03 Post-disturbance restoration projects should be designed to manage the development of fuel profiles over time. 04 Post-disturbance restoration projects should be designed to recover some of the value of timber killed or severely injured by the disturbance to support ecological restoration objectives.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Special habitats	**TERR-SH-DC** 01 The integrity of special habitats is maintained or improved from current conditions. Composition, diversity, and structure of unique plant assemblages are maintained in all areas, including those with multiple-use activities. 02 Microclimate or smaller scale habitat elements provide habitat and refugia for species with a specific geographic or restricted distribution. 03 Conditions remain suitable for long-term sustainability of the suite of native plants adapted to special habitats and their associated symbiotic associations, such as insect pollinators. **FIRE-FW-GDL** 05 During wildfires, avoid fire management activities in special habitats and along the Pacific Crest National Scenic Trail (PCT), except when necessary to protect life or property. This includes activities such as line construction, staging areas, safety zones, water drafting, and camps. When conducting fire management activities near special habitats or along the PCT, take extra measures to avoid spread of invasive plants and minimize impacts on the PCT tread.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-SH-STD 01 At the project scale, evaluate and incorporate maintenance and enhancement needs for special habitats into project design and implementation.

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Riparian habitat	**WTR-FW-DC** 02 Water quality supports State-designated beneficial uses of water. Water quality is sustained at a level that retains the biological, physical, and chemical integrity of aquatic systems and benefits the survival, growth, reproduction, and migration of native aquatic and riparian species. **WTR-RCA-DC** 02 Riparian conservation areas have ecological conditions that contribute to the recovery of threatened and endangered species and support persistence of species of conservation concern as well as native, and nonnative aquatic (Sierra National Forest only), and riparian-dependent plant and animal species. 06 Soil structure and function is sustained to infiltrate and disperse water properly, withstand erosive forces, sustain favorable conditions of stream flow, and cycle nutrients. Associated water tables support riparian vegetation and restrict non-riparian vegetation. 08 The condition of vegetation in riparian conservation areas, including riparian species composition, stand density, and fuel loading, is consistent with healthy riparian systems and reduces risks from uncharacteristic wildfire in the watershed. **WTR-RCA-STD** 02 Limit pesticide applications to cases where project-level analysis indicates pesticide applications are consistent with riparian conservation area desired conditions. 09 Mitigate or prohibit ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining fen ecosystems and the plant species that depend on these ecosystems. 10 Assess the hydrologic function of riparian areas, meadows, fens, and other special aquatic features during rangeland management analysis. Ensure that characteristics of special features are, at a minimum, at proper functioning condition or functioning at-risk and trending toward proper functioning condition, as defined in appropriate technical report. If systems are functioning at-risk, ensure that grazing practices are not retarding rates of natural recovery and assess appropriate actions to move towards proper functioning condition. 12 Designate mechanical equipment exclusion zones within riparian conservation areas when designing projects. The default exclusion zone width is within 150 feet of perennial streams, meadows springs, and seeps; and 75 feet for intermittent streams. The width where mechanical equipment is limited can be adjusted in consideration of geomorphology, slope, soil conditions, and when needed to allow for ecological restoration activities. Temporary crossings can be authorized provided that the risk of short-term sedimentation and erosion are minimized through implementation of best management practices.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 **SPEC-FW-GDL** 06 Water developments (such as a diversion or well) should be avoided near streams, seeps, and springs where there is high risk of dewatering aquatic and riparian habitats where at-risk species occur. **MA-CW-DC** 01 Conservation watersheds provide high-quality habitat and functionally intact ecosystems that contribute to the persistence of species of conservation concern and the recovery of threatened, endangered, proposed, or candidate species.

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Riparian habitat (continued)	**WTR-RCA-GDL** 02 Water quality or habitat for aquatic and riparian-dependent species should be maintained or restored. Roads, trails, off-highway vehicle trails, staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites that have been identified as contributing to degradation of water quality or habitat for aquatic and riparian-dependent species should have corrective actions implemented where possible. 05 Post-wildfire management activities should emphasize and enhance native vegetation cover, stabilize channels, reduce erosion, and minimize adverse effects from the existing road network to protect riparian systems. 06 To improve water quality or habitat for aquatic and riparian-dependent species, evaluate the impacts of facilities on riparian conservation areas when reissuing permits for livestock. If significant adverse impacts are found, existing livestock facilities should be relocated outside of wetlands and riparian areas or mitigated. **WTR-RCA-MEAD-DC** 02 Wetlands and groundwater-dependent ecosystems (including springs, seeps, fens, wet meadows, and associated wetlands or riparian systems) support stable herbaceous and woody vegetation communities that are resilient to drought, climate change, and other stressors. Root masses stabilize stream channels, shorelines, and soil surfaces. The natural hydrologic, hydraulic, and geomorphic processes in these ecosystems sustain their unique functions and biological diversity. 05 Meadows have substantive ground cover and a rich and diverse species composition, especially of grasses and forbs. Meadows have high plant functional diversity with multiple successional functional types represented. Perennial streams in meadows contain a diversity of age classes of shrubs along the streambank, where the potential exists for these plants. 06 A complexity of meadow habitat types and successional patterns support native plant and animal communities. Meadow species composition is predominantly native, where graminoid (grass-like) species are well represented and vigorous, and regeneration occurs naturally. Healthy stands of willow, alder, and aspen are present within and adjacent to meadows with suitable physical conditions for these species. Natural disturbances and management activities are sufficient to maintain desired vegetation structure, species diversity, and nutrient cycling. **MA-CW-DC** 02 Conservation watersheds exhibit long-term (multiple planning cycles), high, watershed integrity and aquatic, riparian, and terrestrial ecosystems are resilient to stochastic disturbance events such as wildfires, floods, and landslides. 04 The ecological integrity of upland vegetation is resilient and maintains soil productivity, water quality, and creates conditions to maintain or improve watershed conditions under the Watershed Condition Framework.	

Ecosystem Type	Ecosystem Plan Components	Species-specific Plan Components
Fens	WTR-RCA-STD 09, 10, 11 WTR-RCA-MEAD-DC 02	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 SPEC-FW-GDL 06 MA-CW-DC 01
Lakes, ponds	**WTR-RCA-LPP-DC** 01 Lakes and ponds retain necessary attributes, such as adequate vegetation and large woody debris to function properly and support native biotic communities. Attributes include floodwater retention and groundwater recharge, stabilized islands and shoreline features, and diverse characteristics to provide for amphibian production, waterfowl breeding, and biodiversity.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Springs and seeps	**WTR-RCA-SPR-DC** 01 Springs provide sufficient water to maintain healthy habitats for native riparian and aquatic species. 03 Springs and associated streams and wetlands have the necessary soil, water, and vegetation attributes to be healthy and functioning at or near potential. Water flow is similar to historic levels and persists over time, within constraints of climate change.	TERR-FW-DC 05 SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Table D-41. Crosswalk of plan direction that supports the persistence of plant species of conservation concern by addressing key threats

Threat	Ecosystem Plan Components	Species-specific Plan Components
Altered fire regime	**TERR-FW-DC** 02 Vegetation structure and composition provide ecosystem resilience to climate change and other stressors including altered fire regimes, drought, and flooding in riparian systems. 08 Fire occurs as a key ecological process in fire-adapted ecosystems where it does not pose an unacceptable risk to life and property. Fire regimes, including the frequency, extent, and severity of fire, is ecologically appropriate and enhances ecosystem resilience and habitat heterogeneity, diversity, and quality. **TERR-FW-OBJ** SQF 01 Restore forest structure and composition on 12,000 – 18,000 acres of the montane, upper montane, and portions of the foothill landscape, using primarily mechanical treatment, within 15 years following plan approval. SNF 01 Restore forest structure and composition on 54,000 – 66,000 acres of the montane, upper montane, and portions of the foothill landscapes, using primarily mechanical treatment, within 15 years following plan approval. 02 **Sequoia National Forest** Restore low and moderate severity fire mosaics on at least 32,000 acres within 15 years following plan approval. 02 **Sierra National Forest** Restore low and moderate severity fire mosaics on at least 50,000 acres within 15 years following plan approval. **FIRE-FW-DC** 01 Fire management activities minimize the risk of loss of life and damage to property or ecosystem function. Firefighter and public safety is the first priority in every fire management activity.	**TERR-FW-DC** 05 Ecological conditions contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and support the persistence of species of conservation concern. **SPEC-FW-DC** 02 Ecological conditions for at-risk species support self-sustaining populations within the inherent capabilities of the plan area, including minimizing impacts from threats such as disease and other site-specific threats. Ecological conditions provide habitat conditions that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; and improve conditions for species of conservation concern. 03 The structure and function of the vegetation, aquatic and riparian system, and associated microclimate and smaller scale elements of special habitats like special features such as carbonate rock outcrops exist in adequate quantities within the capability of the plan area to provide habitat and refugia for at-risk species with restricted distributions. **SPEC-FW-GOAL** 01 Design features, mitigation, and project timing considerations should be incorporated into projects that may affect habitat for at-risk species where they occur to minimize impacts to ecological conditions that provide for the persistence of at-risk species. 03 Work with the California Department of Fish and Wildlife following the memoranda of understanding and U.S. Fish and Wildlife Service to restore and maintain essential habitat for at-risk species and implement other recovery actions according to species recovery plans.

Threat	Ecosystem Plan Components	Species-specific Plan Components
Altered fire regime (continued)	02 Fire management activities reduce fuel buildup, help maintain and protect habitat for a variety of species, reduce smoke from larger fires, provide added protection for communities and utility infrastructure, and restore fire on the landscape. These actions are also an integral part of achieving sustainable recreation, particularly by maintaining scenic attractiveness, integrity, and character. 04 Wildland fires burn with a range of intensity, severity and frequency that allow ecosystems to function in a healthy and sustainable manner. Wildland fire is understood as a necessary process, integral to the sustainability of fire-adapted ecosystems and is used as an effective restoration tool see TERR-FW-DC related to fire. The landscape is strategically compartmentalized by treated areas and natural features, which facilitates use of prescribed fire and wildfire to meet resource objectives for protecting values and resources. **FIRE-FW-GOAL** 02 Work with partners to plan restoration and fire management projects for large landscapes (subwatershed or larger) when and where possible to improve economic feasibility of restoration and effectiveness of changing the negative fire effects from large wildfires. 04 Restore ecosystems to a more fire-resilient condition and lessen the threat of wildfire to communities. **FIRE-FW-STD** 02 If fire management activities are required within designated wilderness areas, research natural areas, botanical areas, giant sequoia groves, or the Pacific Crest National Scenic Trail Management Area: • Apply minimum impact strategies and tactics to manage wildland fire, unless more direct attack is needed to protect life or property. • When possible, allow naturally ignited wildfires to function in their natural role. In cases where fire may damage the ecological values for which a research natural area was established, take measures to exclude fire from the research natural area. **FIRE-FW-GDL** 01 Use naturally ignited and prescribed wildland fires to meet multiple resource management objectives, where and when conditions permit and risk is within acceptable limits. 03 When managing wildland fire, allow fire to burn in riparian ecosystems when fire effects are expected to be within the natural range for the ecosystem to improve riparian ecosystem function.	05 Habitat management objectives or goals from approved conservation strategies or agreements should be incorporated, if appropriate, in the design of projects that will occur within at-risk species habitat. **SPEC-PLANT-STD** 01 Use information that is current, accurate, and precise enough to avoid or mitigate impacts on plant species of conservation concern when designing projects. If such information cannot be obtained, assume occupancy of the project area by one or more plant species of conservation concern within suitable habitat and apply resource protection measures to avoid or mitigate impacts that would limit their persistence in the plan area. In order to promote beneficial effects of fire and other disturbances on fire adapted plant species of conservation concern, this standard does not apply to the following activities: a. The fire itself when conducting a prescribed under-burn. b. Temporary or light disturbance supporting the use of fire where every effort is made to mitigate the impact. Only scatter residual woody materials when neutral or beneficial to plant species of conservation concern.
Climate change	**TERR-FW-DC 02** **TERR-ALPN-DC** 05 Alpine ecosystems are resilient to climate change, and fires are small and occur infrequently. **TERR-MONT-DC 01** **TERR-PINY-DC 01** **WTR-FW-DC** 01 Adequate quantity and timing of water flows support beneficial uses and ecological structure and functions, including aquatic species diversity and riparian vegetation. Watersheds are resilient to changes in air temperatures, snowpack, timing of runoff, and other effects of climate change. **WTR-FW-GOAL** 02 Take a landscape- or watershed-scale approach to restoring aquatic and riparian ecosystems, integrating with recreation, range management, fuels, and vegetation management in order to efficiently use limited resources, including partnerships, and to effectively address climate change.	TERR-FW-DC 05 SPEC-FW-DC 02 & 03 SPEC-FW-GOAL 03

Threat	Ecosystem Plan Components	Species-specific Plan Components
Erosion/soil degradation	**MA-CW-DC** 04 The ecological integrity of upland vegetation is resilient and maintains soil productivity, water quality, and creates conditions to maintain or improve watershed conditions under the Watershed Condition Framework. **WTR-RCA-DC** 06 Soil structure and function is sustained to infiltrate and disperse water properly, withstand erosive forces, sustain favorable conditions of stream flow, and cycle nutrients. Associated water tables support riparian vegetation and restrict non-riparian vegetation. **WTR-RCA-STD** 11 Limit construction of new skid trails or temporary roads for access into riparian conservation areas unless it is the only feasible option to conduct restoration activities for improvement of riparian conservation areas. 12 Designate mechanical equipment exclusion zones within riparian conservation areas when designing projects. The default exclusion zone width is within 150 feet of perennial streams, meadows springs, and seeps; and 75 feet for intermittent streams. The width where mechanical equipment is limited can be adjusted in consideration of geomorphology, slope, soil conditions, and when needed to allow for ecological restoration activities. Temporary crossings can be authorized provided that the risk of short-term sedimentation and erosion are minimized through implementation of best management practices. **WTR-RCA-GDL** 03 When vegetation is treated in near-river or stream areas, coarse wood should be considered as an addition to the streams to enhance habitat, where possible. 04 To reduce soil disturbance in riparian conservation areas, activities should use methods that limit soil disturbance to less than 20 percent of the riparian conservation area (such as low ground pressure equipment, helicopters, over-snow logging, extra ground cover requirements, or other non-ground disturbing actions) to achieve desired conditions consistent with best management practices and plan direction. **WTR-RCA-MEAD-DC** 02 Wetlands and groundwater-dependent ecosystems including springs, seeps, fens, wet meadows, and associated wetlands or riparian systems support stable herbaceous and woody vegetation communities that are resilient to drought, climate change, and other stressors. Root masses stabilize stream channels, shorelines, and soil surfaces. The natural hydrologic, hydraulic, and geomorphic processes in these ecosystems sustain their unique functions and biological diversity.	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Fuels and/or vegetation treatments	**TERR-FW-GDL** 01 Vegetation treatments facilitate increasing heterogeneity at all scales, from tree clumps to large landscapes. Several treatment strategies can be employed: using landscape topography (slope, aspect, and slope position) to vary stand densities; promoting tree clumps and gaps within a stand, increasing the proportion of large to small trees; retaining important habitat structures such as large trees, snags, and trees with broken tops; and increasing diversity by promoting hardwoods, pines and native plant species. **Exception: Does not apply in community buffers** 06 Design vegetation treatments to maintain or enhance special habitat features.	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 FIRE-FW-GDL 01, 05

Threat	Ecosystem Plan Components	Species-specific Plan Components
Fuels and/or vegetation treatments (continued)	**FIRE-FW-DC** 02 Fire management activities reduce fuel buildup, help maintain and protect habitat for a variety of species, reduce smoke from larger fires, provide added protection for communities and utility infrastructure, and restore fire on the landscape. These actions are also an integral part of achieving sustainable recreation, particularly by maintaining scenic attractiveness, integrity, and character. 04 Wildland fires burn with a range of intensity, severity and frequency that allow ecosystems to function in a healthy and sustainable manner. Wildland fire is understood as a necessary process, integral to the sustainability of fire-adapted ecosystems and is used as an effective restoration tool see TERR-FW-DC related to fire. The landscape is strategically compartmentalized by treated areas and natural features, which facilitates use of prescribed fire and wildfire to meet resource objectives for protecting values and resources. **FIRE-FW-STD** 02 If fire management activities are required within designated wilderness areas, research natural areas, botanical areas, giant sequoia groves, or the Pacific Crest National Scenic Trail corridor: • Apply minimum impact strategies and tactics to manage wildland fire, unless more direct attack is needed to protect life or property. • When possible, allow naturally ignited wildfires to function in their natural role. In cases where fire may damage the ecological values for which a research natural area was established, measures should be taken to exclude fire from the research natural area. **FIRE-FW-GDL** 03 When managing wildland fire, allow fire to burn in riparian ecosystems when fire effects are expected to be within the natural range for the ecosystem to improve riparian ecosystem function. 04 Where possible during wildland fire management activities, locate incident bases, camps, helibases, staging areas, helispots and other centers for incident activities outside of riparian conservation areas to avoid impacts on aquatic- and riparian-dependent resources. **FIRE-GWPZ-GOAL** 01 Protect natural resources from the negative impacts of wildfire and prevent direct threats to life or property in nearby communities. **FIRE-WRZ-STD** 01 Use natural barriers and features like creeks, old fire footprints, ridges and man-made lines such as roads and trails when managing wildfires to meet resource objectives, unless unsafe or impractical. **TIMB-FW-DC** 02 Production of timber contributes to ecological, social, and economic sustainability and associated desired conditions. A sustainable mix of forest products including both sawtimber and non-sawtimber is offered under a variety of harvest and contract methods in response to market demand and restoration needs. 03 Salvage of dead and dying trees captures some of the economic value of the wood while retaining key features in quantities that provide for wildlife habitat, soil productivity and other desired conditions of ecosystems.	

Threat	Ecosystem Plan Components	Species-specific Plan Components
Fuels and/or vegetation treatments (continued)	**TIMB-FW-STD** 03 Timber harvest is prohibited on lands where soil, slope, or other watershed conditions may be irreversibly damaged, as identified in project-specific findings. 04 Even-aged regeneration methods for harvesting timber are not authorized. Harvests resulting from natural catastrophic conditions such as fire, insect and disease attack, or windstorm are not considered even-aged regeneration harvests. **Sierra National Forest Only** 05 The quantity of timber that may be sold per decade shall be less than or equal to the sustained yield limit of 48.7 million cubic feet per year, with the following exceptions: salvage or sanitation harvesting of timber stands that are substantially damaged by fire, windthrow, or other catastrophe or that are in imminent danger from insect or disease attack. In these situations, trees may be harvested over and above the sustained yield limit, consistent with the desired conditions for terrestrial and aquatic ecosystems. **Sequoia National Forest Only** 05 The quantity of timber that may be sold per decade shall be less than or equal to the sustained yield limit of 15.9 million cubic feet per year, with the following exceptions: salvage or sanitation harvesting of timber stands that are substantially damaged by fire, windthrow, or other catastrophe or that are in imminent danger from insect or disease attack. In these situations, trees may be harvested over and above the sustained yield limit, consistent with the desired conditions for terrestrial and aquatic ecosystems. [Sequoia NF only] **TIMB-FW-GDL** 03 On lands not suited for timber production, reforestation of deforested lands should contribute to ecological restoration of desired vegetation conditions, to provide benefits such as improved scenic character, wildlife habitat, carbon sequestration, and watershed condition	
Horticultural collection	The collection or taking of plant species of conservation concern is prohibited except as authorized by regional policy	N/A
Hydrological alteration	**WTR-FW-DC** 03 Watersheds are fully functioning or trending toward fully functioning and resilient; recover from natural and human disturbances at a rate appropriate with the capability of the site; and have a high degree of hydrologic connectivity laterally across the floodplain and valley bottom and vertically between surface and subsurface flows. Physical geomorphic, hydrologic connectivity and associated surface processes such as runoff, flooding, in-stream flow regime, erosion, and sedimentation are maintained and restored. Watersheds provide important ecosystem services such as high-quality water, recharge of streams and shallow groundwater, and maintenance of riparian communities. Watersheds sustain long-term soil productivity. **WTR-FW-STD** 01 Use best management practices as described in agency technical guides and handbooks to mitigate adverse impacts on soil and water resources during the planning and implementation of forest management activities. 02 Restoration projects will not result in long-term degradation of aquatic and riparian conditions, including connectivity, at the watershed or subwatershed scale. Adverse effects from project activities are acceptable when they are short-term, site-scale, and support, or do not diminish, long-term recovery of aquatic and riparian resources.	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 **SPEC-FW-GDL** 06 Water developments such as a diversion or well should be avoided near streams, seeps, and springs where there is high risk of dewatering aquatic and riparian habitats where at-risk species occur. **WTR-RCA-DC** 02 Riparian conservation areas have ecological conditions that contribute to the recovery of threatened and endangered species and support persistence of species of conservation concern as well as native and desired nonnative aquatic and riparian-dependent plant and animal species.

Threat	Ecosystem Plan Components	Species-specific Plan Components
Invasive species	Primary direction is provided by the National Strategic Framework for Invasive Species Management FS-1017 2013[21] **INV-FW-DC** 01 Terrestrial and aquatic invasive species are controlled or eradicated when possible, and establishment of new populations is prevented. 02 The area affected by invasive species and introduction of new invasive species is minimized. **INV-FW-GOAL** 01 Coordinate and cooperate with local, State and Federal agencies and tribes, and public utilities to manage and control invasive and nonnative species. **TERR-PINY-GDL** **Sequoia National Forest Only** 01 Include appropriately sized patches of undisturbed vegetation in project designs to minimize nonnative species spread and maximize native species regeneration. **INV-FW-STD** 02 Hay, straw, and other crop-related forage or mulch products used for animal feed or bedding, soil stabilization land rehabilitation, or other purposes must be certified by California or Nevada and/or to the North American Invasive Species Management Association standards as being weed-free to prevent unintentional introduction of invasive species unless in consultation with the Forest Service invasive species coordinator it is determined that certified weed-free material is not reasonably available. 03 Use an integrated pest management approach in the planning and implementation of all projects and activities. 04 When entering or exiting project sites, wash heavy equipment to prevent the spread of invasive species. **INV-FW-GDL** 01 Projects should be designed to minimize invasive species spread by incorporating prevention and control measures into ongoing management or maintenance activities that involve ground disturbance, terrestrial or aquatic habitat alteration, or the possibility of spreading invasive species. When feasible, projects should include measures to use invasive species-free gravel, fill, and topsoil; and include follow-up inspections as needed and specified in regional or national strategies. 02 To the extent feasible, plant and seed materials used for revegetation, restoration, and rehabilitation projects should be native, genetically appropriate to the site, disease free, and capable of becoming established to restore natural species composition and ecosystem function. 03 Weed control and prevention measures should be included as necessary when issuing, amending or reissuing permits, including but not limited to livestock grazing, special uses, and pack stock operator permits. **FIRE-FW-GDL** 06 When conducting fire management activities, take appropriate measures to prevent the spread of invasive species. **WTR-RCA-GOAL** 02 Where invasive species are adversely affecting the persistence of native species, work with the appropriate State and Federal wildlife agencies work to reduce impacts of invasive species to native populations.	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

[21] USDA Forest Service. 2013. National Strategic Framework for Invasive Species Management FS-1017 2013. Forest Service United States Department of Agriculture. Washington, D.C.

Threat	Ecosystem Plan Components	Species-specific Plan Components
Livestock grazing	**RANG-FW-DC** 01 Rangelands, along with grazable forestlands and woodlands, provide large areas of contiguous space supporting native and desired nonnative vegetation that has the potential to be grazed. These ranges sustain biological diversity and ecological processes and help to preserve the rural landscape and cultural heritage of the central, southern and eastern Sierra Nevada. 02 Livestock grazing is managed to meet or move toward the desired vegetation condition represented by diverse plant functional groups, species richness and diversity, and structure and condition of plant communities. 03 Manage rangelands to maintain or restore hydrologic function and soil productivity of watersheds. Livestock grazing is managed to accommodate the maintenance or restoration of aquatic and riparian processes and functions. **RANG-FW-STD** 01 Manage livestock grazing to attain desired conditions in blue oak-interior live oak woodlands, annual grasslands, aspen, special habitats, great gray owl protected activity areas, occupied willow flycatcher habitat, and riparian conservation areas. Where livestock grazing is found to prevent or retard attainment of desired conditions, modify grazing practices (such as number of livestock, timing, scheduled rest, and range structures). If adjusting practices is not effective, remove livestock from the area using appropriate administrative authorities and procedures 03 If meadow ecological status is determined to be moving in a downward trend due to grazing, modify or suspend grazing. Management of meadows that are in low ecological status or not in proper functioning condition and have active erosion will be modified to achieve or show substantial progress toward meeting mid- or late seral status and proper functioning condition within 5 years. **RANG-FW-GDL** 02 Burned areas should be evaluated to determine appropriate use of livestock grazing necessary for recovery of desired vegetation conditions, related biophysical resources, and fuels management. **WTR-RCA-GDL** 02 Water quality or habitat for aquatic and riparian-dependent species should be maintained or restored. Roads, trails, off-highway vehicle trails, staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites that have been identified as contributing to degradation of water quality or habitat for aquatic and riparian-dependent species should have corrective actions implemented where possible.	SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Mining	**GEO-FW-DC** 01 Mineral resources on National Forest System lands provide for public benefit, while minimizing adverse environmental effects on other forest resources from mineral exploration, development, and extraction.	SPEC-FW-DC 02 & 3 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Threat	Ecosystem Plan Components	Species-specific Plan Components
Recreation, including trampling and trail maintenance	**REC-FW-DC** 05 Areas of the national forest provide for a variety of recreation opportunities with minimal impact on sensitive environments and resources. 06 Visitors can connect with nature, culture, and history through a range of sustainable outdoor recreation opportunities, and are committed to resource stewardship. 07 The management and operation of facilities are place based, integrated with other resources, and responsive to changing environmental, social, and economic conditions that may limit or alter access. 08 New developed recreation infrastructure is located in ecologically resilient landscapes, is economically sustainable, and responsive to public needs. 09 Dispersed recreation occurs in areas outside of high visitation, developed facilities, or communities, and does not adversely impact natural or cultural resources. 10 Permitted recreation uses, such as recreation special events or guided activities, are consistent with recreation opportunity spectrum classes, protect natural and cultural resources, and contribute to the economic sustainability of local communities. 13 A sustainable system of trails provides access to destinations, provides for opportunities that connect to a larger trail system, provides linkages from local communities to the national forest, and is planned, designed and managed to be compatible with other resources. **REC-FW-GOAL** 02 Manage dispersed recreation activities when evidence of impacts on natural resources emerge or are causing damage.	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 **REC-FW-GDL** 01 When locating new recreation facilities, do not adversely affect environmentally and culturally sensitive areas, such as at-risk species breeding habitat or at-risk plant species habitat. 03 Use integrated resource planning when designing projects to address impacts on culturally sensitive areas and at-risk species habitat, and to address changing conditions in recreation opportunity spectrum classes. **DA-WILD-DC** 07 National Forest System trails that access wilderness are part of a high-quality wilderness experience for visitors. National Forest System trails meet national quality standards, with minimal deferred maintenance. Trails in wilderness are located in resilient areas, and do not cause adverse impacts on at-risk species, water quality, soils, hydrologic connectivity, or cultural resources.
Road maintenance	**INFR-FW-DC** 01 Forest infrastructure, such as roads, buildings, campgrounds, water systems and bridges, is managed to provide for the planned use and protection of resources, and is maintained for health and safety 05 Infrastructure (administrative sites, recreation facilities, and roads) has minimal adverse effects on riparian and aquatic resources **WTR-RCA-STD 11**	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01
Pesticides		WTR-RCA-STD 02 Limit pesticide applications to cases where project-level analysis indicates pesticide applications are consistent with riparian conservation area desired conditions.
Unauthorized OHV travel	The authorized motorized route system was developed under the Travel Management Rule. Unauthorized OHV travel is handled through law enforcement. INFR-FW-DC 01, 04	TERR-FW-DC 05 SPEC-FW-DC 02 & 3 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01

Individual Determinations – Plant Species of Conservation Concern

The determinations for plant species of conservation concern were found to be driven primarily by their corresponding botanical category, along with their occurrence and distribution. The botanical category and determination outcome of each individual plant species of conservation concern are displayed in Table D-42. The table also includes key threats, ecosystem type, and a summary of the plan direction. These are particularly important for providing for the persistence and viability of each species in the plan area. Plan components have been designed to provide for viability of the species in the plan area, but cannot prevent all adverse impacts on individuals of the species. Plan component SPEC-PLANT-STD 01 was added to the forest plans to better address the risk to persistence from land management activities and to provide guidance for addressing site-specific threats to botanical species.

Below we outline the determination finding for each of the three botanical categories, providing a species-specific example for each category. Persistence determinations are provided as species-specific paragraphs to facilitate understanding of the analytical approach used to categorize species and apply persistence determinations.

Category 1 Botanical Species

Category 1 botanical species are those species having one or two occurrences in the plan area, with identified threats to persistence, and the species has more occurrences outside the plan area. These species lack sufficient redundancy of individuals and distribution within the plan area to allow them to easily absorb and recover from adverse impacts of identified threats, including climate change and other stochastic events, and face risk of local extirpation.

Since botanical species are non-mobile, they need to be protected at the sites where they exist. For these species, species-specific plan components are key to addressing identified site-specific threats, and for ensuring that plant species of conservation concern are considered during project planning and implementation. For this reason, both ecosystem-level and species-specific plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of Category 1 species within its range. Therefore, we find that determination outcome 4 best applies.

Determination 4: It is beyond the authority of the Forest Service or not within the inherent capability of the plan area to maintain or restore the ecological conditions to maintain a viable population of category 1 botanical species in the plan area. Nonetheless, the plan components should maintain or restore ecological conditions within the plan area to contribute to maintaining a viable population of the species within its range.

Narrative Example - *Camissonia integrifolia* - Kern River evening primrose
Camissonia integrifolia is endemic to Kern County, where it occurs near Weldon and Kelso Canyon, in chaparral at elevations of 2,500 to 3,000 feet. There are 4 CNDDB occurrences, with one occurrence in the Sequoia National Forest plan revision area, located near Miracle Hot Springs. There are 14 Consortium of California Herbaria specimens from the same area of Kern County as the CNDDB occurrences, near Weldon and Kelso Canyon. These collections are from the 1950s through 2015. Table D-42 lists the key ecological conditions and risk factors for Kern River evening primrose and summarizes plan direction that support ecological conditions, mitigate for identified threats, and provide for persistence and contribute to maintaining a viable population.

Category 2 Botanical Species

Category 2 species have a low number of occurrences and/or very limited distribution in the plan area. Many category 2 plant species of conservation concern are endemic to the national forest or local area. Rarity is a factor that is considered along with ecological conditions of habitat and identified threats in the plan area. Identified threats include management and recreation activities, and stochastic events like climate change, wildfire, and flooding. Category 1 and 2 species face high risk of local extirpation because they lack sufficient redundancy of individuals and distribution to allow them to easily absorb and recover from such adverse impacts. For these species, the persistence of all occurrences is important to maintain population viability.

Because botanical species are non-mobile, they need to be protected at the sites where they exist. For these species, species-specific plan components are key to addressing identified site-specific threats, and for ensuring that plant species of conservation concern are considered during project planning and implementation. Ecosystem-level and species-specific plan components are needed to provide the ecological conditions necessary to maintain viable populations of category 2 botanical species of conservation concern in the plan area. Therefore, we find that determination outcome 3 best applies.

Determination 3: The ecosystem-level plan components may not provide the ecological conditions necessary to maintain a viable population of the category 2 botanical species of conservation concern in the plan area. Therefore, additional species-specific plan components have been provided. The combination of ecosystem-level and species-specific plan components should provide the ecological conditions necessary to maintain a viable population of these botanical species in the plan area.

Narrative Example - *Eriophyllum congdonii*, Congdon's woolly sunflower
Eriophyllum congdonii is endemic to the Merced River drainage in Mariposa County. It occurs in rocky outcrops of open, chaparral-live oak woodlands and yellow-pine forests at 500 to 1,900 meters elevation in Mariposa County. CNDDB contains 15 recorded occurrences for *Eriophyllum congdonii* with 8 of them known from the Sierra National Forest. One occurrence is along an established trail. Table D-42 lists the key ecological conditions and risk factors for Congdon's woolly sunflower and summarizes the plan direction designed to support ecological conditions, mitigate for identified threats, and provide for persistence and contribute to maintaining a viable population.

Category 3 Botanical Species

Category 3 species have sufficient numbers and distribution of occurrences, and individuals within occurrences, that inadvertent loss of individuals or some occurrences will not threaten population persistence and viability. Some category 3 plant species of conservation concern are endemic to the Sequoia or Sierra National Forest. As with category 1 and 2 species, many species occurrences face site-specific threats. But for these species, ecosystem-level plan components should provide the ecological conditions necessary to maintain a viable population in the plan area. Nonetheless, additional species-specific plan components for these at-risk species have been provided for added clarity and/or measures of protection. Therefore, we find that determination outcome 2 best applies.

Determination 2: The ecosystem plan components should provide the ecological conditions necessary to maintain a viable population of the category 2 species in the plan area. Nonetheless, additional species-specific plan components have been provided for added clarity and/or measures of protection.

Narrative Example - *Ivesia campestris* - field ivesia

Ivesia campestris is a perennial herb that is endemic to the southern Sierra Nevada, including many small populations on Kern Plateau. Ecosystem types associated with this species include subalpine and meadow. There are 56 total CNDDB occurrences, with 12 occurring on the Sequoia National Forest plan area and the majority on the Inyo National Forest. Occurrences on the Sequoia National Forest include along Rowell Creek, Albanita Meadow, Broder Meadow, Powell Meadow, and Big Meadow. Threats include road maintenance and unauthorized OHV travel. Table D-42 lists the key ecological conditions and risk factors for field ivesia, and summarizes the plan components (ecosystem and at-risk species-specific) that support ecological conditions and mitigate for identified threats to provide for persistence and contribute to maintaining a viable population.

Determinations for All Botanical Species of Conservation Concern

Land management plan direction is used in Table D-42 to display the primary plan components that would be used to provide the ecological conditions necessary to maintain a viable population of each species of conservation concern in the plan area, and the plan direction that would address key threats to provide for species persistence. This table provides a summary of key ecosystem habitats and threats. More detailed information on threats to individual species can be found in the Rationales for Plant Species Considered for Designation as Species of Conservation Concern (USDA Forest Service 2022c, d).

Table D-42. Persistence determinations for botanical species of conservation concern for the Sequoia and Sierra National Forest, including key ecological conditions and risk factors for each species; and the plan components that mitigate those risk factors, provide for persistence, and contribute to maintaining a viable population of each species

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Allium yosemitense	Sierra	2	3	Rock outcrop, chaparral/ live oak, montane, upper montane	Recreation trampling, invasive species, mining	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-FW-OBJ 01, 02 REC-FW-GDL 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 GEO-FW-DC 01 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Astragalus ertterae	Sequoia	4	1	Pinyon-juniper	Recreation trampling, grazing, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 REC-FW-GDL 03 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

[22] See the section titled Plant Persistence Determination Outcomes
[23] See the section titled Plant Species of Conservation Concern – Botanical Categories

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Astragalus lentiginosus var. *kernensis*	Sequoia	2	3	Subalpine, lodgepole, dry forb, meadow	Recreation trampling, unauthorized OHV travel, road maintenance, grazing	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-ALPN-DC 03 TERR-LDGP-DC 02, 04, 08 WTR-RCA-DC 06, 08 REC-FW-GDL 03 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12, WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 WTR-RCA-DC 02 MA-CW-DC 01
Astragalus shevockii	Sequoia	3	2	Upper montane Jeffrey pine	Grazing, recreation trampling, fire suppression activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-JEFF-DC 01, 02, 07 REC-FW-GDL 03 FIRE-FW-GDL 06 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Astragalus subvestitus	Sequoia	2	3	Montane, pinyon-juniper	Grazing, livestock trampling, unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Boechera evadens	Sequoia	2	3	Rock outcrop, upper montane	Recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 FIRE-FW-GDL 06 TERR-UPPR-DC 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Boechera tularensis	Sequoia, Sierra	2	3	Rock outcrop, montane, upper montane, subalpine, red fir, meadow	Climate change, unauthorized OHV travel, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-RFIR-DC 02,03,06 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 FIRE-FW-GDL 06 REC-FW-GDL 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Botrychium ascendens	Sierra	4	1	Aquatic/ riparian, meadow, montane, upper montane, subalpine	Hydrologic alteration, recreation trampling including packstock, unauthorized OHV travel, severe soil disturbance, grazing, climate change	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 MA-CW-DC 04 REC-FW-GDL 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 MA-CW-DC 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Botrychium crenulatum	Sequoia, Sierra	4	1	Aquatic/ riparian, meadow, upper montane, subalpine	Hydrologic alteration, recreation trampling, unauthorized OHV travel, severe soil disturbance, grazing, livestock trampling, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 MA-CW-DC 02, 04 REC-FW-GDL 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 MA-CW-DC 01
Botrychium lineare	Sierra	4	1	Aquatic/ riparian, meadow, upper montane, subalpine	Hydrologic alteration, recreation trampling, unauthorized OHV travel, severe soil disturbance, grazing, livestock trampling, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12WTR-RCA-GDL 02 MA-CW-DC 04 REC-FW-GDL 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05, 06 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Botrychium minganense	Sierra	4	1	Aquatic/ riparian, meadow, upper montane, subalpine	Hydrologic alteration, recreation trampling, unauthorized OHV travel, grazing, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 MA-CW-DC 04 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05, 06 SPEC-PLANT-STD 01 TERR-FW-DC 05
Botrychium montanum	Sierra	4	1	Aquatic/ riparian, meadow, montane, upper montane, subalpine	Grazing, hydrologic alteration, conifer encroachment, recreation trampling, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 MA-CW-DC 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05, 06 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Bruchia bolanderi	Sierra	2	3	Aquatic/ riparian, montane, upper montane, subalpine	Grazing, hydrologic alteration, road maintenance, recreation trampling, vegetation treatment activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 MA-CW-DC 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Calochortus striatus	Sequoia	4	1	Aquatic/ riparian, meadow, arid shrubland	Livestock trampling, road maintenance, hydrologic alterations, horticultural collecting, invasive species, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-XER-DC 01, 02 TERR-XER-STD 01 WTR-FW-DC 01, 03 WTR-FW-STD 01, 02 WTR-RCA-DC 02, 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 MA-CW-DC 04 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Calochortus westonii	Sequoia	2	3	Meadow, mixed conifer, black oak/ ponderosa pine	Mechanical vegetation treatment activities, road maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-POND-DC 01 TERR-DMC-DC 02 TERR-MMC-DC 01, 06 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Calyptridium pygmaeum	Sequoia, Sierra	4	1	Rock outcrop, upper montane, subalpine, alpine	Climate change, recreation, trampling, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Camissonia integrifolia	Sequoia	4	1	Chaparral	Grazing; unauthorized OHV travel; road maintenance, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Camissonia sierrae ssp. *alticola*	Sierra	2	3	Rock outcrop, montane, upper montane	Invasive species, recreation trampling, road/trail maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 FIRE-FW-GDL 06 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Carlquistia muirii	Sequoia, Sierra	4	1	Rock outcrop, black oak/ ponderosa pine, montane chaparral	Mechanical vegetation and fuels treatment activities, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-POND-DC 01 TERR-MCHP-DC 01, 02 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Carpenteria californica	Sierra	2	3	Chaparral/ live oak, black oak/ ponderosa pine, montane	Invasive species, vegetation/fuels treatment activities, altered fire regime, road maintenance, climate change	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03, 08 TERR-FW-OBJ 01, 02 TERR-CHAP-DC 02 TERR-POND-DC 01 TERR-MONT-DC 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Cinna bolanderi	Sierra	4	1	Meadow, aquatic/ riparian, montane	Grazing and trampling; recreation trampling; soil compaction; hydrologic alteration; mechanical/fuel treatments activities, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 TERR-MONT-DC 01, 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Clarkia biloba ssp. *australis*	Sierra	4	1	Chaparral/ live oak	Invasive species, road maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Clarkia lingulata	Sierra	4	1	Chaparral/ live oak	Invasive species, road maintenance, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Collomia rawsoniana	Sierra	2	3	Aquatic/ riparian meadow, seep, montane, upper montane	Altered fire regime, fuels treatment	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-FW-OBJ 01, 02 WTR-RCA-SPR-DC 01, 03 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Cordylanthus eremicus ssp. *kernensis*	Sequoia	4	1	Pinyon-juniper, arid shrubland and woodland, upper montane	Recreation trampling, unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 TERR-XER-DC 01, 02 TERR-XER-STD 01 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Cypripedium montanum	Sierra	4	1	Montane and upper montane	Altered fire regime, mechanical vegetation/fuels treatment activities, invasive species, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Deinandra mohavensis	Sequoia	4	1	Chaparral, arid shrubland	Grazing, hydrologic alteration, recreation trampling, road maintenance, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-XER-DC 01, 02 TERR-XER-STD 01 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Delphinium inopinum	Sierra	4	1	Rock outcrop, montane, upper montane	Invasive species, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 FIRE-FW-GDL 06 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Delphinium purpusii	Sequoia	3	2	Rock outcrop, cliff, carbonate, pinyon-juniper, chaparral/ live oak, montane	Recreation trampling, unauthorized OHV travel, invasive species; altered fire regime	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-CHAP-DC 02 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 FIRE-FW-GDL 06 INFR-FW-DC 01, 04 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Dicentra nevadensis	Sequoia, Sierra	4	1	Rock outcrop, subalpine, alpine	Unauthorized OHV travel, invasive species, climate change, High recreation use/trampling, road maintenance, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Diplacus pictus *Mimulus pictus*	Sequoia	4	1	Rock outcrop, blue oak woodland	Grazing, recreation trampling, unauthorized OHV travel, trail maintenance, invasive species	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-BLU-DC 02, 03 FIRE-FW-GDL 06 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Draba sharsmithii	Sierra	4	1	Rock outcrop, alpine	Climate change, recreation trampling, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-ALPN-DC 03 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Eriastrum tracyi	Sequoia Sierra	3 4	2 1	Blue oak woodland, chaparral /live oak	Invasives, unauthorized OHV travel, recreation trampling, road maintenance, road salt, vegetation/fuels treatment activities, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 INFR-FW-DC 01, 04 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Erigeron aequifolius	Sequoia	2	3	Rock outcrop, pinyon-juniper	Recreation trampling, vegetation/fuels treatment activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Erigeron multiceps	Sequoia	2	3	Riparian, meadow, upper montane	Altered fire regime, grazing, recreation trampling, unauthorized OHV travel, and mechanical treatments	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-FW-OBJ 01, 02 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Eriogonum breedlovei var. *breedlovei*	Sequoia	3	2	Rock outcrop, carbonate, mixed conifer, pinyon-juniper	Unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-DMC-DC 02 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 INFR-FW-DC 01, 04 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Eriogonum nudum var. *regirivum*	Sierra	4	1	Rock outcrop, carbonate, chaparral/ live oak	Invasive species, recreation trampling, trail construction, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-CHAP-DC 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Eriogonum ovalifolium var. *monarchense*	Sequoia, Sierra	3	2	Rock outcrop, carbonate, pinyon-juniper	Invasives, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Eriophyllum congdonii	Sierra	3	2	Rock outcrop, chaparral/ live oak, montane	Invasive species, mining, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-CHAP-DC 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06 GEO-FW-DC 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Eriophyllum nubigenum	Sierra	4	1	Rock outcrop, chaparral, lower to upper montane	Invasive species, road maintenance, altered fire regimes, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-SH-DC 01, 02, 03 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Erythranthe gracilipes Mimulus gracilipes	Sierra	4	1	Rock outcrop, blue oak woodland, chaparral/ live oak, montane, complex early seral habitat	Invasives, road maintenance and construction, improperly timed fuels or timber treatments, altered fire regime, unauthorized OHV travel, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 TERR-CES-DC01 TERR-CES-GDL 01, 03 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Erythranthe norrisii *Mimulus norrisii*	Sierra	4	1	Rock outcrop, blue oak woodland, chaparral/ live oak	Invasive species, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Erythronium pluriflorum	Sierra	3	2	Rock outcrop, upper montane, subalpine	Unauthorized OHV travel, invasives, climate change, road maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 05 FIRE-FW-GDL 06 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Fissidens aphelotaxifolius	Sierra	4	1	Aquatic/ riparian, montane, upper montane	Hydrologic alteration, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Fritillaria brandegeei	Sequoia	3	2	Montane, black oak/ ponderosa pine	Ungulate browsing, inappropriate mechanical vegetation/fuels treatment activities, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-POND-DC 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Gilia yorkii	Sequoia, Sierra	4	1	Rock outcrop, carbonate, pinyon-juniper	Climate change, invasives, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Githopsis tenella	Sequoia	4	1	Montane chaparral	Recreation trampling; grazing; fire suppression activities, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MCHP-DC 01, 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Helodium blandowii	Sequoia	4	1	Subalpine, meadow	Hydrologic alteration, grazing, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-ALPN-DC 05 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Hesperocyparis nevadensis	Sequoia	2	3	Pinyon-juniper, chaparral/ live oak	Altered fire regime, recreation trampling, horticultural collection, fire suppression activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 TERR-CHAP-DC 02 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Heterotheca monarchensis	Sequoia	4	1	Montane, carbonate	Invasive species, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Heterotheca shevockii	Sequoia	4	1	Blue oak woodland, montane	Road maintenance, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-BLU-DC 02, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Horkelia parryi	Sierra	4	1	Chaparral/ live oak	Altered fire regime, invasive species, unauthorized OHV travel, improperly timed mechanical treatments, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Horkelia tularensis	Sequoia	3	2	Montane	Recreation trampling, road maintenance, infrastructure maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Hulsea brevifolia	Sequoia, Sierra	4 3	1 2	Mixed conifer, subalpine, upper montane	Altered fire regime, road maintenance, recreation trampling, mechanical vegetation/fuels treatment activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 05 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Ivesia campestris	Sequoia	2	3	Subalpine, meadow	Road maintenance, unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-ALPN-DC 05 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Leptosiphon serrulatus	Sierra	4	1	Blue oak woodland, chaparral/ live oak, montane	Invasive species, road maintenance, inappropriate grazing	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Lewisia congdonii	Sierra	4	1	Chaparral/ live oak, montane, upper montane	Mining, road maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 GEO-FW-DC 01 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Lewisia disepala	Sequoia, Sierra	4	1	Rock outcrop, montane, upper montane	Unauthorized OHV travel, fuels treatment, recreation trampling	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 FIRE-FW-GDL 06 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Lewisia kellogii ssp. *kelloggii*	Sierra	4	1	Rock outcrop, montane, upper montane	Unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 FIRE-FW-GDL 06 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Lupinus citrinus var. *citrinus*	Sierra	2	3	Rock outcrop, blue oak woodland, chaparral/ live oak, montane	Unauthorized OHV travel, road maintenance, climate change, invasive species	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 FIRE-FW-GDL 06 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Meesia uliginosa	Sequoia, Sierra	4	1	Aquatic/ riparian, fen, meadow, montane, upper montane	Hydrologic alteration, rarity, climate change	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 WTR-RCA-DC 06 WTR-RCA-STD 08, 09, 10, 11, 12 WTR-RCA-GDL 02 WTR-RCA-MEAD-DC 02, 05, 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Mielichhoferia shevockii Schizymenium shevockii	Sequoia, Sierra	4	1	Rock outcrop, blue oak woodland, chaparral/ live oak, montane	Road maintenance, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-BLU-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 FIRE-FW-GDL 06 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Navarretia peninsularis	Sequoia	4	1	Meadow, montane, montane chaparral	Road maintenance, unauthorized OHV travel, recreation trampling, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-MCHP-DC 01, 02 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Nemacladus calcaratus	Sequoia	3	2	Pinyon-juniper	Recreation trampling, grazing, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Nemacladus twisselmannii	Sequoia	4	1	Montane	Grazing, fire suppression activities, fuels treatments	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Oreonana purpurascens	Sequoia	2	3	Rock outcrop, upper montane, subalpine	Grazing, recreation trampling, recreation development, trail maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 05 FIRE-FW-GDL 06 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Oreonana vestita	Sequoia	4	1	Rock outcrop, montane, upper montane, subalpine, talus	Grazing, recreation, trampling, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 TERR-ALPN-DC 05 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Orthotrichum spjutii	Sequoia	4	1	Rock outcrop, pinyon-juniper	Recreation trampling, grazing, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Phacelia nashiana	Sequoia	4	1	Pinyon-juniper, sagebrush	Grazing, mining, unauthorized OHV travel, road maintenance	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 TERR-SAGE-DC 01, 02, 03, 04 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 GEO-FW-DC 01 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Phacelia novenmillensis	Sequoia	2	3	Pinyon-juniper, montane, live oak	Altered fire regime, recreation trampling; unauthorized OHV travel, mechanical treatments; recreational development; grazing	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 TERR-MONT-DC 01, 02 TERR-OAK-GDL 01 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Platanthera yosemitensis	Sierra	4	1	Aquatic/ riparian, fens, montane, upper montane	Grazing, hydrologic alteration, invasive species, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 WTR-RCA-DC 06 WTR-RCA-STD 09, 10, 11, 12 WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Pohlia tundrae	Sierra	4	1	Aquatic/ riparian, meadow, alpine, subalpine	Livestock trampling, hydrologic alteration, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 TERR-ALPN-DC 03, 05 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Ribes menziesii var. *ixoderme*	Sierra	4	1	Chaparral/ live oak, blue oak woodland	Altered fire regime, fire suppression activities, fuels treatments, invasive plants, unauthorized OHV travel, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-BLU-DC 02 TERR-FW-OBJ 01, 02 FIRE-FW-DC 01, 02, 03, 04 FIRE-FW-GOAL 04 FIRE-FW-STD 02 FIRE-FW-GDL 01, 03 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Sidalcea multifida	Sequoia	2	3	Aquatic/ riparian, meadow, black oak/ ponderosa, pinyon-juniper	Recreation trampling, unauthorized OHV travel	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-POND-DC 01 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 INFR-FW-DC 01, 04 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Streptanthus cordatus var. *piutensis*	Sequoia	2	3	Chaparral, Piute cypress, pinyon-juniper	Road maintenance, unauthorized OHV travel, fire suppression activities	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-CHAP-DC 02 TERR-FW-DC 02, 03 TERR-PINY-DC 01, 02 TERR-PINY-GDL 01 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Streptanthus fenestratus	Sequoia, Sierra	4	1	Rock outcrop, carbonate chaparral/ live oak, montane,	Recreation trampling, invasive species, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 FIRE-FW-GDL 06 REC-FW-GDL 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Symphyotrichum defoliatum	Sequoia	4	1	Aquatic/ riparian, meadow, chaparral, montane	Invasive species, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-MONT-DC 01, 02 TERR-MCHP-DC 01, 02 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Tauschia howellii	Sierra	4	1	Rock outcrop, montane, upper montane	Infrastructure maintenance, fire suppression activities, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-UPPR-DC 01 FIRE-FW-GDL 06 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01

Species	Forest	Determination[22]	Category[23]	Principal Habitats	Key Threats	Ecosystem-level Plan Components	Species-specific Plan Component
Trifolium bolanderi	Sierra	2	3	Aquatic/ riparian, meadow, upper montane	Grazing, hydrologic alteration	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-UPPR-DC 01 WTR-RCA-DC 06 WTR-RCA-MEAD-DC 02, 05, 06 WTR-RCA-STD 10, 12 WTR-RCA-GDL 02 RANG-FW-DC 01, 02, 03 RANG-FW-STD 01	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05
Trifolium kingii ssp. *dedeckerae T. dedeckerae*	Sequoia	4	1	Rock outcrop, alpine, subalpine, montane	Climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-SH-DC 01, 02, 03 TERR-MONT-DC 01, 02 TERR-ALPN-DC 03, 05 FIRE-FW-GDL 06	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05 TERR-SH-STD 01
Viburnum ellipticum	Sequoia, Sierra	4	1	Chaparral/ live oak, black oak/ ponderosa	Fuels treatment activities, invasive species, road maintenance, fire suppression activities, climate change, rarity	SPEC-FW-DC 01 SPEC-FW-GOAL 01 TERR-FW-DC 02, 03 TERR-CHAP-DC 02 TERR-MONT-DC 01, 02 TERR-POND-DC 01 INV-FW-DC 01, 02 INV-FW-GOAL 01 INV-FW-STD 02, 03, 04 INV-FW-GDL 01, 02, 03 INFR-FW-DC 01, 04	SPEC-FW-DC 02, 03 SPEC-FW-GOAL 03 SPEC-FW-GDL 01, 05 SPEC-PLANT-STD 01 TERR-FW-DC 05

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