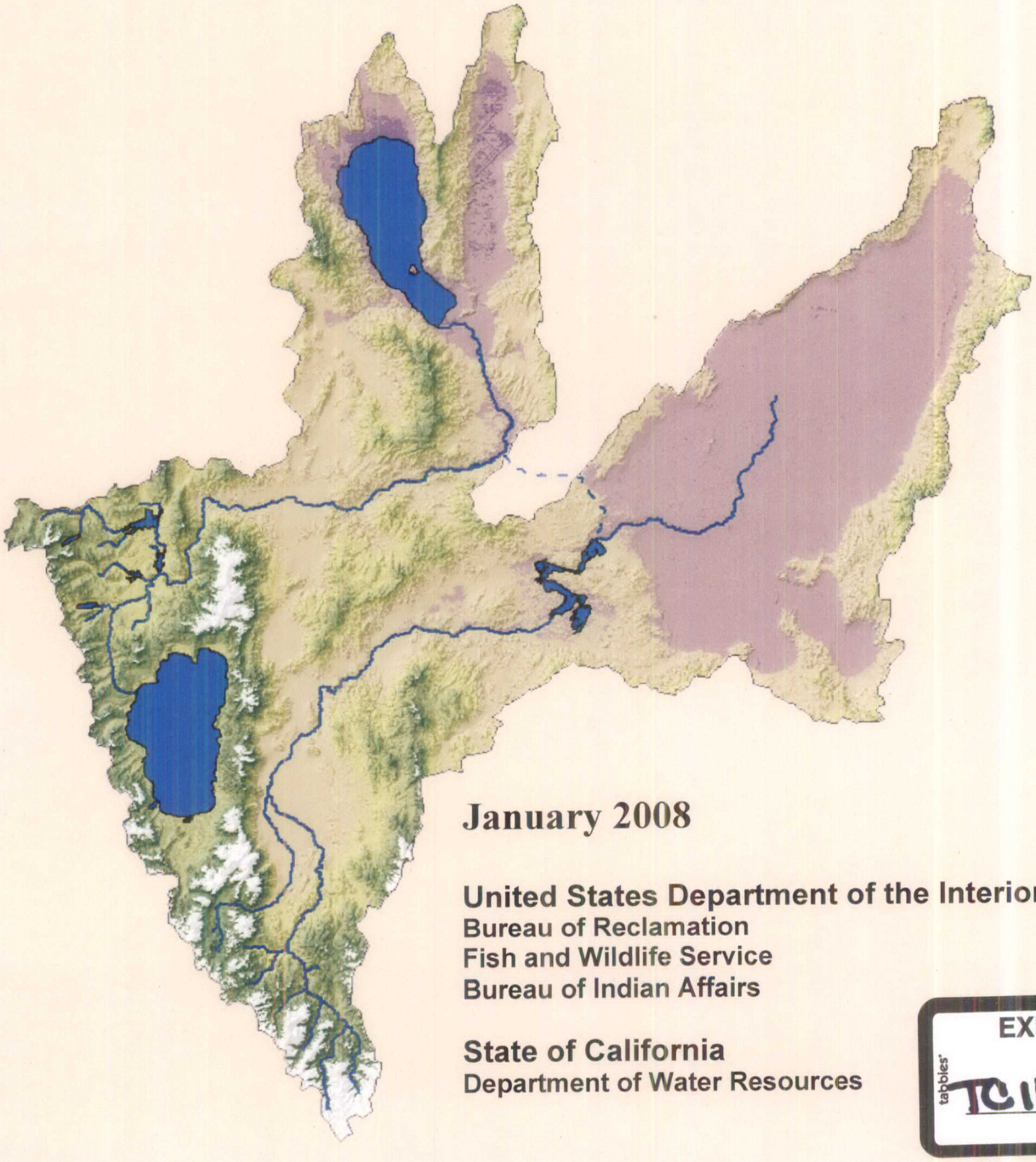
Final Environmental Impact Statement/Environmental Impact Report

Truckee River Operating Agreement



January 2008

United States Department of the Interior
Bureau of Reclamation
Fish and Wildlife Service
Bureau of Indian Affairs

State of California
Department of Water Resources

Final Environmental Impact Statement/Environmental Impact Report
Truckee River Operating Agreement
Alpine, El Dorado, Nevada, Placer, and Sierra Counties, California
Carson City, Churchill, Douglas, Lyon, Pershing, Storey, and Washoe Counties, Nevada

Co-Lead Agencies:

U.S. Department of the Interior
Bureau of Reclamation
Fish and Wildlife Service
Bureau of Indian Affairs

For further information contact:

Mr. Kenneth Parr
U.S. Department of the Interior
Bureau of Reclamation
Lahontan Basin Area Office
705 North Plaza Street
Carson City, Nevada 89701
Telephone: 775-882-3436
Fax: 775-882-7592
E-mail: kparr@mp.usbr.gov

State of California
Department of Water Resources

Mr. Michael Cooney
State of California
Department of Water Resources
901 "P" Street, Suite 313B
Sacramento, California 95814
Telephone: 916-651-0746
Fax: 916-651-0726
E-mail: mikec@water.ca.gov

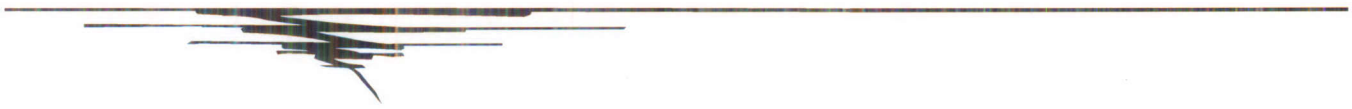
This final environmental impact statement/environmental impact report (final EIS/EIR) evaluates current conditions and three alternatives, including the Truckee River Operating Agreement (TROA) Alternative, which is the proposed action and preferred alternative. TROA has been negotiated pursuant to section 205(a) of Public Law 101-618. As proposed, TROA would modify operations of five Federal and two non-Federal reservoirs to implement the Congressional allocation of Lake Tahoe, Truckee River, and Carson River waters between the States of California and Nevada. TROA would, in part, (1) enhance conditions for endangered and threatened fishes throughout the Truckee River basin; (2) increase municipal and industrial (M&I) drought protection for Truckee Meadows (Reno-Sparks metropolitan area); (3) improve river water quality downstream from Sparks, Nevada; and (4) enhance streamflows and recreational opportunities in the Truckee River basin.

This final EIS/EIR was prepared in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). It is intended to serve public information requirements pursuant to all appropriate Executive orders, Fish and Wildlife Coordination Act, Endangered Species Act of 1973, as amended, and National Historic Preservation Act of 1966 (section 106).

California State Clearinghouse No. 2004042078

Final Environmental Impact Statement/Environmental Impact Report

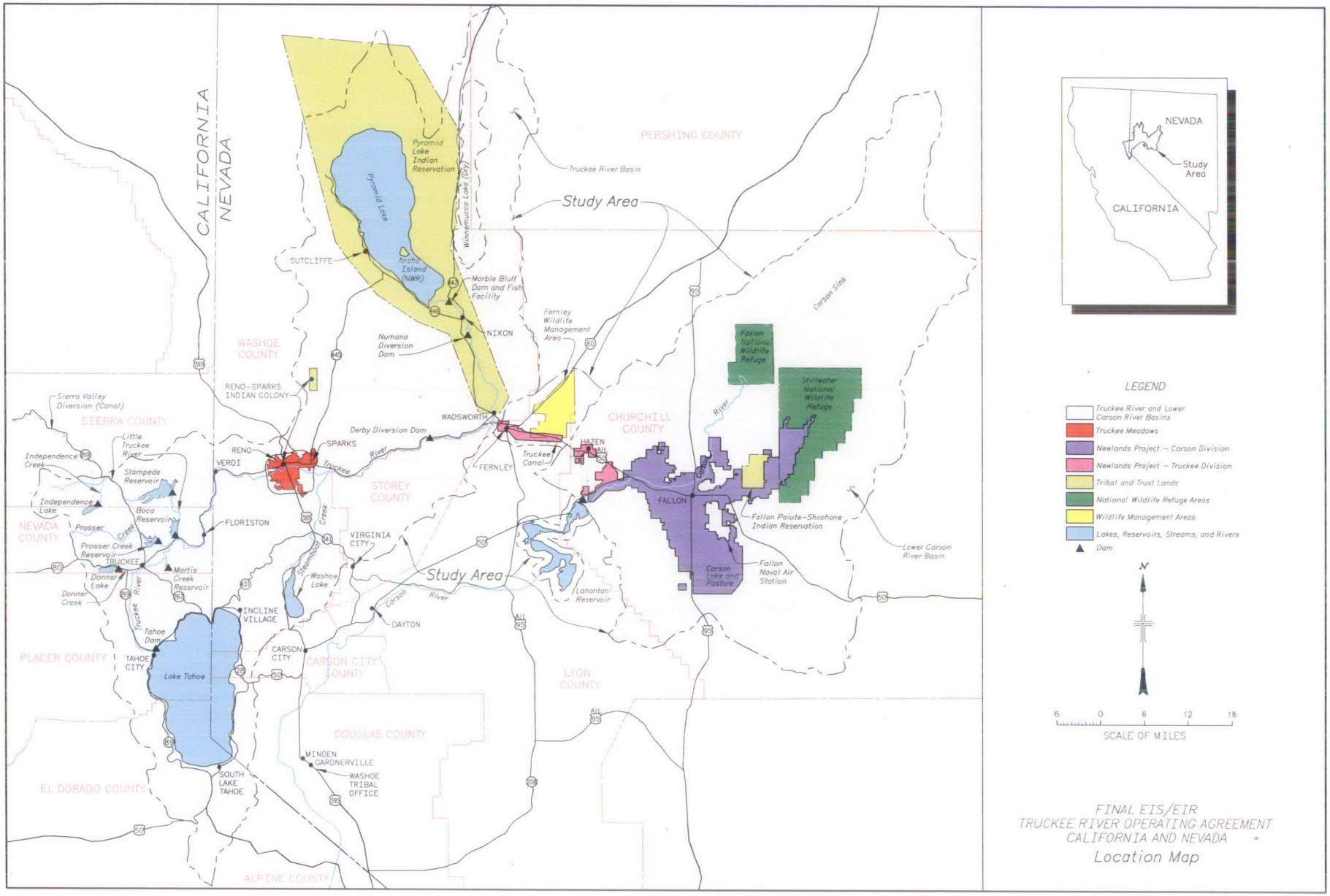
Truckee River Operating Agreement



January 2008

United States Department of the Interior
Bureau of Reclamation
Fish and Wildlife Service
Bureau of Indian Affairs

State of California
Department of Water Resources



FINAL EIS/EIR
TRUCKEE RIVER OPERATING AGREEMENT
CALIFORNIA AND NEVADA

Location Map

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AQI	Air Quality Index
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	best management practice
BNR	biological nitrogen removal
CARB	California Air Resources Board
CCP	Comprehensive Conservation Plan
CCR	California Code of Regulations
CCT	current conditions with TROA
CDFG	California Department of Fish and Game
CDPR	California Department of Parks and Recreation
CDWR	California Department of Water Resources
CE	cumulative effects
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
COE	U.S. Army Corps of Engineers
Compact	Interstate Compact
CWC	California Water Code
DEIS/EIR	draft environmental impact statement/environmental impact report
DO	dissolved oxygen
Draft Agreement	October 2003 Draft Truckee River Operating Agreement
DRI	Desert Research Institute
DSS	Decision Support System
DSSAMt	Dynamic Stream Simulation and Assessment Model with temperature

EIP	Environmental Improvement Program
EIS/EIR	environmental impact statement/environmental impact report
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973, as amended
°F	degrees Fahrenheit
FOIA	Freedom of Information Act
FONSI	Finding of No Significant Impact
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
GIS	geographic information system
H_2S	hydrogen sulfide
Interior	U.S. Department of the Interior
JPFCW	Joint Program Fish Credit Water
Justice	U.S. Department of Justice
LCT	Lahontan cutthroat trout
LRWQCB	Lahontan Regional Water Quality Control Board
LTBA	Lake Tahoe Basin Act
LVPLFWF	Lahontan Valley Pyramid Lake Fish and Wildlife Fund
LWSA	Local Water Supply Alternative
M&I	municipal and industrial
MCL	maximum contaminant level
MOU	Memorandum of Understanding
msl	mean sea level
MUN	municipal and domestic supply
MWh	megawatt-hours
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NASF	Naval Air Station Fallon
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation

NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
No Action	No Action Alternative
NO_2	nitrogen dioxide
NPCW	Newlands Project Credit Water
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NWA	Nevada Waterfowl Association
NWR	National Wildlife Refuge
O_3	ozone
OCAP	Operating Criteria and Procedures
ONR	Outstanding Natural Resource
operations model	Truckee River Operations Model
Pb	lead
P.L.	Public Law
PM_{10}	particulate matter
PSA	Preliminary Settlement Agreement, as modified by the Ratification Agreement
PSI	Pollution Standard Index
Pyramid Tribe	Pyramid Lake Paiute Tribe of Indians
Reclamation	Bureau of Reclamation
revised DEIS/EIR	revised draft environmental impact statement/ environmental impact report
RMHQ	requirements to maintain existing higher quality
RMP	Resource Management Plan
ROD	Record of Decision
SCORP	State Comprehensive Outdoor Recreation Plan
Secretary	Secretary of the Interior
Settlement Act	Title II of Public Law 101-618, the Truckee-Carson-Pyramid Lake Water Settlement Act of 1990
SHPO	State Historic Preservation Office
Sierra Pacific	Sierra Pacific Power Company

SIP	State Implementation Plan
SO_2	sulfur dioxide
States	California and Nevada
STMWRF	South Truckee Meadows Water Reclamation Facility
SWRCB	California State Water Resources Control Board
TCID	Truckee-Carson Irrigation District
TDS	total dissolved solids
TMDL	total maximum daily load
TMWA	Truckee Meadows Water Authority
TMWRF	Truckee Meadows Water Reclamation Facility
TPEA	Tahoe-Prosser Exchange Agreement
TRA	Truckee River Agreement
TRBWG	Truckee River Basin Water Group
TRIT	Truckee River Basin Recovery Implementation Team
TROA	Truckee River Operating Agreement
TRPA	Tahoe Regional Planning Agency
Truckee Meadows	Reno-Sparks metropolitan area
TTSA	Tahoe-Truckee Sanitation Agency
UNR	University of Nevada, Reno
U.S.C.	United States Code
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USRS	U.S. Reclamation Service
VMS	Visual Management System
VQO	Visual Quality Objectives
VRM	Visual Resource Management System
VRP	visibility-reducing particles
WARMF	Watershed Analysis Risk Management Framework
WCWCD	Washoe County Water Conservation District
WMA	Wildlife Management Area
WQSA	Truckee River Water Quality Settlement Agreement
WRAP	Water Rights Acquisition Program for Stillwater National Wildlife Refuge

Table of Contents

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Page

Table of Contents – continued

Table of Contents – continued

Page

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Page

Table of Contents – continued

Table of Contents – continued

Page

Table of Contents – continued

Tables

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Table of Contents – continued

Figures

Table of Contents – continued

Table of Contents – continued

Maps

Table of Contents – continued

Attachments

Appendices (under separate cover)

WATER RIGHT PETITIONS AND APPLICATIONS

As noted in chapter 1, Reclamation, WCWCD, and TMWA have filed two water appropriation applications, four petitions for change, and two time extension petitions (petitions and applications) with SWRCB. (See the SWRCB Notice of Petitions and Water Appropriation Applications Appendix for greater detail.) The purposes of the two applications are to: (1) allow the full capacity of Stampede Reservoir to be used, (2) remove the maximum withdrawal restriction from Prosser Creek Reservoir, and (3) allow an October 1 through August 10 diversion period for Prosser Creek Reservoir. The four change petitions—for each of Prosser Creek, Boca, and Stampede Reservoirs and Independence Lake,—and the two water appropriation applications seek to include common points of diversion[15], rediversion[16], and redistribution[17] of storage, places of use, and purposes of use so that water can be exchanged, stored, and diverted efficiently among these reservoirs, along with Donner Lake and Lake Tahoe, to implement TROA. The two time extension petitions filed for Stampede Reservoir by Reclamation seek additional time to develop the water right associated with Permit No. 11605. Implementation of the operations identified in the proposed petitions and applications is predicated on approval and implementation of TROA; however, implementation of TROA is predicated only on the approval of the proposed change petitions. TROA would supersede all requirements of any agreements concerning the operation of Truckee River reservoirs, including those of TRA and TPEA, and would become the sole operating agreement for these reservoirs.

I. Existing Water Right Licenses and Permits

A. Prosser Creek—Application No. 18006, License No. 10180, Water Right Holder: Reclamation

This license is for 30,000 acre-feet of storage from April 10 to August 10 of each year. It restricts the maximum withdrawal from storage in any one year to 20,162 acre-feet. The point of diversion to storage is at Prosser Creek Dam, in Section 30, Township (T) 18 North (N), Range (R) 17 East (E), MDB&M (Mount Diablo Baseline & Meridian). The purposes of use are irrigation, domestic, municipal, industrial, fish culture, and

---

[15] "Point of diversion" means the point on a natural watercourse where water is initially taken under control (i.e., either diverted away from the watercourse in a conduit or placed into seasonal storage in a reservoir at the point of diversion) under a water right for the purpose of making a beneficial use of water.

[16] "Point of rediversion" means a point on a natural watercourse where water that was previously taken under control—under a water right for the purpose of making a beneficial use of water—is taken under control again (i.e., either diverted away from the watercourse in a conduit or placed into seasonal storage in a reservoir at the point of rediversion). This water was either released from seasonal storage upstream or imported into the watercourse on which the point of rediversion is located.

[17] "Redistribution" means that a quantity of water, which would have been or is physically stored in a reservoir under a license (or permit), may be stored in another reservoir under the same license (or permit).

recreation. The place of use is at the reservoir (in California) and in Truckee Meadows and the Newlands Project in Nevada. As required in the license, the project is operated primarily to allow water, which might not otherwise be available from Lake Tahoe to help meet Floriston Rates, to be released from Lake Tahoe in exchange for a like amount of water to be stored in Prosser Creek Reservoir. This is done under TPEA (described in chapter 2). The only other water stored in Prosser Creek Reservoir is used for the conservation of threatened and endangered fishes of Pyramid Lake.

B. Boca Reservoir—Application No. 5169, License No. 3723, Water Right Holder: WCWCD

This license is for 40,850 acre-feet of storage from about October 1 of each year to about July 1 of the succeeding year. The point of diversion to storage is at the dam in Section 21, T18N, R17E, MDB&M. There are numerous points of rediversion in Nevada. The purposes of use are irrigation and domestic. The place of use is WCWCD in Nevada. The reservoir is used to store water that can be released to help achieve Floriston Rates, and for flood control.

C. Stampede Reservoir—Application No. 15673, Permit No. 11605, Water Right Holder: Reclamation

This permit is for 126,000 acre-feet of storage from January 1 to December 31 of each year, and for 350 cfs of direct diversion from about April 1 to about November 1 of each year. The point of diversion is at Stampede Dam in Section 28, T19N, R17E, MDB&M. There are numerous points of rediversion in Nevada. The purposes of use are domestic, municipal, industrial, irrigation, flood control, fish culture, and recreation. Hydroelectric power is generated at the dam incidental to releases made for the approved purposes of use. Places of use are Truckee Meadows and the Newlands Project in Nevada. The reservoir also provides a measure of flood control. Stampede Reservoir currently stores Project Water. SWRCB conditioned the permit as follows:

> "If and when an interstate compact covering the distribution and use of the waters of the Truckee and Carson Rivers is approved by the Legislatures of the States of California and Nevada and is consented to by Congress, the operation of Stampede Reservoir shall be in conformance with such compact, and the terms and conditions set forth in these permits which are in conflict thereto shall not apply. The Board retains jurisdiction for the purpose of amending the terms of these permits to conform to the terms of such compact." (State Water Resources Control Board, Decision No. D 913, September 25, 1958)

In 1982, the Ninth Circuit Court of Appeals upheld the ruling of the United States District Court for the District of Nevada that the Secretary shall use storage in Stampede Reservoir for the conservation of threatened and endangered fishes of Pyramid Lake

because their status under the Endangered Species Act of 1973 took precedence over any obligation for delivery of water for irrigation and M&I uses. This ruling guides current operations of Stampede Reservoir.

D. Independence Lake—Application No. 9247, License No. 4196, Water Right Holder: TMWA

This license is for 17,500 acre-feet of storage from about December 1 of each year to about July 1 of the succeeding year. The point of diversion is at the dam in Section 35, T19N, R15E, MDB&M. There are several points of rediversion in Nevada. The purpose of use is municipal. The place of use is the cities of Reno and Sparks, Nevada. TMWA also claims a pre-1914 appropriative water right, and holds a separate license for generation of hydroelectric power; however, neither of these rights is part of the change petition.

II. Petitions and Applications

Approval of the change petitions would retain existing points of diversion and rediversion, places of use, and purposes of use for the four reservoirs, and would (1) redistribute storage in Boca Reservoir, Stampede Reservoir, and Independence Lake; (2) add points of diversion and rediversion; (3) expand the place of use to provide for a common place of use under each license and permit; and (4) add purposes of use so that each license and permit has the same purposes of use, except that Independence Lake is not used for flood control purposes. Approval of the two appropriation applications would allow (1) the full capacity of Stampede Reservoir to be used, (2) removal of the maximum withdrawal restriction from Prosser Creek Reservoir, and (3) an October 1 through August 10 diversion period for Prosser Creek Reservoir. Approval of the two time extension petitions for Stampede Reservoir would allow time to develop this water right pursuant to TROA.

Under TROA and the change petitions necessary to implement TROA that are analyzed in this EIS/EIR, water may be stored in each Truckee River Reservoir via three mechanisms: (1) diversion to storage of Project Water, which is the current use of the reservoir, (2) exchanges from other reservoirs, and (3) diversion to storage in lieu of the exercise of direct diversion water rights. Project Water includes unappropriated water that would be stored as a result of approving the applications. Other reservoirs from which exchanges would be made, exclusive of the subject reservoir, are Lake Tahoe, Donner Lake, Prosser Creek Reservoir, Independence Lake, Stampede Reservoir, and Boca Reservoir. Direct diversion water rights would be available from existing or purchased water rights in California or Nevada.

At any time, water could be stored by any or all of these mechanisms. Annual diversions to storage of Project Water could be no more than what is currently allowed in the SWRCB permit/license for the specific reservoir, as supplemented by the applications.

While this Project Water is being stored, exchanges into and out of a reservoir could be made multiple times, each up to the extent the reservoir has unused storage space. Similarly, diversions to storage in lieu of direct diversions could be made multiple times, utilizing unused storage, and subsequently released to serve the use specified for the direct diversion, or exchanged to another reservoir to later serve that use.

A. Change Petitions for Stampede (No. 15673), Boca (No. 5169), and Prosser Creek Reservoirs (No. 18006), and Independence Lake (No. 9247)

Stampede, Boca, and Independence Dams would have common upstream and downstream points of diversion, rediversion, and redistribution. Prosser Creek Dam would continue to be the diversion point for Prosser Creek Reservoir. Numerous common points of rediversion would be added downstream from Independence and Prosser Creek Dams to Pyramid Lake, including Derby Diversion Dam and the Newlands Project. In general, expanded places of use would include the upper Truckee River basin, Truckee Meadows, Fernley area, Newlands Project, and Pyramid Lake Indian Reservation. (For more details about the places of use, see table D and Map No. 320-208-189A-1 in the SWRCB Notice of Petitions and Water Appropriation Applications Appendix.) This expansion of the place of use would allow for potential exchanges of Project Water among the reservoirs in accordance with TROA. Incidental power generation would be authorized at the Stampede, Farad, Fleish, Verdi, and Washoe hydroelectric powerplants. (The Stampede hydroelectric powerplant is not included in the Prosser Creek Reservoir change petition.) Purposes of use would be expanded so that water from the four reservoirs has the following common uses: municipal, domestic, industrial, irrigation, stock watering, fish and wildlife protection/enhancement, fish culture, hydropower generation, instream water quality enhancement, recreation, conservation of Pyramid Lake fishes, and, except for Independence Lake, flood control.

B. Stampede Reservoir—Application No. 31487

This application would supplement the current permit (No. 11605) for Stampede Reservoir. If approved, the total combined amount of water that could be taken from January 1 through December 31 by direct diversion at the rate of 350 cfs and diversion to storage would be 226,500 acre-feet, which represents an increase of 100,000 acre-feet over the amount under the current permit for the reservoir.

Water available for diversion to storage under this application would be water in the Little Truckee River basin upstream of Stampede Reservoir that would otherwise flow to Pyramid Lake. In accordance with TROA, the storage priority of this water would not impair the exercise of vested or perfected direct diversion water rights, and would not constrain or limit the operation of other Truckee River reservoirs.

C. Prosser Creek Reservoir—Application No. 31488

This application would supplement the current license (No. 10180) for Prosser Creek Reservoir. Its approval would remove the existing maximum withdrawal of 20,162 acre-feet in any one year and would change the filling period from April 10–August 10 to October 1–August 10, while continuing to allow a maximum annual storage of 30,000 acre-feet as under the existing license. This would increase the potential annual withdrawal from the reservoir by 9,800 acre-feet.

Water available for diversion to storage under this application would be water in the Prosser Creek basin upstream of Prosser Creek Reservoir that would otherwise flow to Pyramid Lake. In accordance with TROA, the storage priority of this water would not impair the exercise of vested or perfected direct diversion water rights, and would not constrain or limit the operation of other Truckee River reservoirs.

D. Time Extension Petitions (No. 15673)

The two time extensions are necessary to develop the water right associated with Permit No. 11605 (including Application No. 31487 supplement) and to put such water to full beneficial use. A 10-year time extension petition was granted in 1982, and Reclamation petitioned for another 10-year extension in 1992, but the request was placed on hold while TROA negotiations continued. The current petition (No. 15673) seeks approval of the 1992 petition and requests an additional 10-year extension. The total time extension from 1982, including the 10-year extension already granted and two 10-year extensions requested, would be 30 years, effective to 2012.

III. Evaluation Process

SWRCB must consider a number of factors when acting on a change petition:

- That the proposed change will not injure any other legal user of water (California Water Code [CWC] section 1702)
- That the proposed change will not in effect initiate a new right (California Code of Regulations [CCR] title 23, section 791)
- That the intended use is beneficial

SWRCB must also consider a number of factors when acting on an application to appropriate water:

- That unappropriated water is available for appropriation (CWC section 1375(d)).

- The instream flows required to protect beneficial uses of water, including uses identified in a water quality control plan (*Id.* section 1243.5). Beneficial uses include the use of water for recreation and the preservation and enhancement of fish and wildlife (*Id.* section 1243).

- That the water use, method of use, and method of diversion are reasonable, in accordance with article X, section 2 of the California Constitution. (Also see CWC section 275.)

- The effect of the project on public trust resources and protection of those resources where feasible.

Evaluation of the environmental effects of the above actions should consider the following:

- Effects of changes in flows as they relate to fishery, riparian habitat, and water quality issues.

- Effects of adding to places of use.

- Effects of adding purposes of use.

- Miscellaneous: Economic or social effects of a project shall not be treated as a significant effect on the environment, but may be used to determine the significance of the physical changes caused by the project (CCR, title 14, section 15131(a)-(b)).

IV. Summary of Effects

This section presents a compilation of environmental information required by CEQA and additional information provided to assist SWRCB in its decision making process, as described in "Evaluation Process," taken from other sections of this EIS/EIR.

A. Change Petitions that are Implemented with TROA

1. No Injury to Any Other Legal User of Water

By incorporating existing storage priorities and capacities for Project and Private Waters in their respective reservoirs, TROA would not impair or conflict with the exercise of vested or perfected *Orr Ditch* decree water rights or interfere with flood control and dam safety criteria. As discussed in chapter 1 and required by the Settlement Act, TROA must "ensure that water is stored in and released from Truckee River facilities to satisfy the exercise of water rights in conformance with the *Orr Ditch* and *Truckee River General Electric* decrees." TROA Section 1.C protects owners of vested and perfected water rights and provides compensation if implementation of TROA results in an owner

"not receiving the amount of water to which that owner is legally entitled." The one exception is that, since TROA would call for the modification of the *Orr Ditch* and *Truckee River General Electric* decrees, some parties signing TROA voluntarily agree to operations that prevent the full exercise of their water rights. An example is that the United States and Pyramid Tribe must sometimes, under TROA, reduce diversions to Stampede Reservoir storage to allow greater releases to meet higher minimum instream flows than are currently required. Such parties are not claiming injury since they obtain other benefits from storing water under TROA.

Section 204(c)(1) of the Settlement Act and TROA section 6.C assign diversions in the Truckee River basin in California the fourth highest priority, which is higher than the priority of any diversions to the reservoirs specified in the change petitions and applications. An exception in the Settlement Act is that diversions in California initiated after 1990 for commercial, irrigated agriculture are assigned a priority junior to all beneficial uses in Nevada. In any case, the Settlement Act and TROA would preclude water use in the Truckee River basin in California that exceeds the interstate allocation of 32,000 acre-feet per year of which 10,000 acre-feet per year may be surface water use.

In addition, any legal user of water may obtain storage in the subject reservoirs under TROA, provided they agree to comply with its provisions (TROA sections 7.A.2(b) and 7.G), and thus realize the benefits associated with such opportunities for storage and increased operational flexibility in exercising their water right.

2. Does Not in Effect Initiate a New Right

The four change petitions would add common purposes of use and common points of diversion, redistribution, and rediversion. Other terms in the existing permits would not change, except as may be granted by approval of the two applications.

3. That the Intended Use is Beneficial

The change petitions would aggregate existing purposes of use that have been previously approved for the four subject reservoirs, making these purposes of use applicable to all four reservoirs. These beneficial uses are described throughout this chapter.

4. Effects on Changes in Flows as they Relate to Fishery, Riparian Habitat, and Water Quality Issues

Granting the change petitions necessary to implement TROA would have no overall adverse effect on the riverine environment. When Fish Water is managed under TROA to achieve the six-flow regime in the lower reach of the Truckee River, TROA would, with the exception of the Farad reach (which is less than 2 percent of the river length), either maintain the status quo or significantly enhance fish habitat in the river from Lake Tahoe to Pyramid Lake and portions of three tributaries, including Independence Creek. (See "Fish in Truckee River and Affected Tributaries.") As such, TROA would provide benefits to fish in the Truckee River and portions of three tributaries that are not provided under current conditions and No Action. These benefits more than offset the reduced potential to enhance fish habitat in the Farad reach.

Though the minimum bypass flow under TROA (50 cfs) would be the same at all four Truckee River hydroelectric diversion dams, TROA would provide more operational flexibility in achieving bypass flows greater than 50 cfs than under LWSA, No Action, and current conditions. The benefit of the TROA bypass flow provisions is that minimum bypass amounts need not be static, but may be varied (managed) according to the needs of the species (management objectives) in the bypass reach. (See "Minimum Bypass Flow Requirements for TMWA's Hydroelectric Diversion Dams on the Truckee River.")

Article Nine of TROA requires minimum releases from the reservoirs that equal or exceed existing minimum releases. Article Nine also requires exchanges of water among reservoirs when there is low risk to TROA parties in accordance with existing water rights to further increase reservoir releases to those recommended by CDFG. The resulting benefits to instream flows are described in "Fish in Truckee River and Affected Tributaries."

TROA would have no adverse effects on endangered or threatened species under any hydrologic condition when compared to No Action or current conditions, and would have significant beneficial effects to both cui-ui and LCT (tables 3.60-3.70). Results of analyses on special status species associated with riparian or riverine habitats are discussed in "Habitat for Other Special Status Animal Species;" no adverse effect would result from TROA in any hydrologic condition.

Depending on the reach and the hydrologic condition, TROA either would have no effect or would have a significant beneficial effect on riparian habitats and associated wildlife along the mainstem of the Truckee River when compared to No Action and current conditions (table 3.66). TROA would have a significant beneficial effect on riparian habitats and associated wildlife along most tributary reaches in all hydrologic conditions and would have no effect along a few tributary reaches compared to No Action and current conditions (table 3.67).

5. Effects on Adding Places and Purposes of Use

Consolidating places and purposes of use under each license and permit would have no adverse effect because they are already, as an aggregate, common to the existing licenses and permit. Water right owners and the environment would benefit from having common places and purposes of use for Boca, Prosser Creek, and Stampede Reservoirs and Independence Lake because that would allow Credit Waters to be stored in and exchanged among these reservoirs, along with Lake Tahoe and Donner Lake. Also, Project Waters and Private Waters could be stored in and exchanged among the facilities. These operations would increase the availability of such waters for their beneficial uses and, in so doing, many benefits of TROA as described in this chapter would be realized. To allow implementation of TROA, new places and purposes of use are required in California and Nevada.

6. Economic and Social Effects

The economic and social effects of TROA are described in the "Economic Environment" and "Social Environment" sections of this chapter.

7. Other Environmental Effects

Other environmental effects at Prosser Creek, Stampede, and Boca Reservoirs and Independence Lake related to the petitions and applications are summarized as follows.

a. Prosser Creek Reservoir/Creek

Operations model results show that, in wet hydrologic conditions, Prosser Creek Reservoir releases are the same under TROA as under No Action or current conditions. In median hydrologic conditions, storage under TROA generally is greater from April through September than under No Action or current conditions; in Prosser Creek, flows are less in May and June, but much greater in September and October than under No Action or current conditions. In dry hydrologic conditions, storage under TROA is much greater and releases are less in May and June than under current conditions. Releases under TROA are much greater in September and October than under No Action or current conditions.

With approval of the change petitions, preferred flows in Prosser Creek for rainbow trout would be achieved 10 percent more frequently under TROA than under No Action or current conditions. (See "Fish in Truckee River and Affected Tributaries.") As a result, spawning, incubation, and rearing of rainbow trout would be enhanced in this reach.

Operations model results show that, under TROA, Prosser Creek Reservoir storage is below the minimum threshold for fish survival in about half as many years as under No Action and in nearly 30 percent fewer years than under current conditions. (See "Fish in Lakes and Reservoirs, Fish Survival Based on Minimum Storage Thresholds.") As a result, with approval of the change petitions, fish mortality would be substantially less under TROA, which would be a significant beneficial effect.

TROA would have no effect on riparian and wetland vegetation in Prosser Creek Reservoir. Operations model results show that reservoir storage is slightly less under TROA during August and September in wet hydrologic conditions than under No Action or current conditions. (See "Reservoir Storage and Releases" in "Surface Water.") Several years of wet hydrologic conditions may, therefore, allow the temporary expansion of emergent wetlands in the basin of the reservoir. Storage in median and dry hydrologic conditions under TROA is well within the existing operational basin of the reservoir and would not result in a significant adverse effect on existing riparian or wetland vegetation.

b. Stampede Reservoir/Little Truckee River

Operations model results show that, under TROA, Stampede Reservoir storage in wet hydrologic conditions is greater from May through September, and releases are greater from September through December than under No Action or current conditions. In

median hydrologic conditions, storage under TROA is much greater than under No Action or current conditions, while releases are less from November through August, but much greater in October. In dry hydrologic conditions, storage and releases under TROA are much greater year-round than under No Action or current conditions. With approval of the change petitions, minimum flows for brown trout would be sustained more frequently under TROA than under No Action or current conditions.

Under TROA, Stampede Reservoir storage is below the minimum threshold for fish survival in 9 percent fewer years than under No Action and in nearly 13 percent fewer years than under current conditions. (See "Fish in Lakes and Reservoirs.") As a result, with approval of the change petitions, fish mortality would be substantially less, which would be a significant beneficial effect. (See "Fish in Lakes and Reservoirs.")

Stampede Reservoir provides foraging habitat for migrating waterfowl, primarily on islands within the reservoir. In wet and median hydrologic conditions, TROA would have no significant effect on shallow water foraging habitat for waterfowl and shorebirds when compared to No Action or current conditions. In dry hydrologic conditions, with approval of the change petitions and applications, nearly 80 percent more shallow water foraging habitat would be available under TROA than under current conditions, which would be a significant beneficial effect. (See "Waterfowl and Shorebirds.") Under TROA, predator access to islands in Stampede Reservoir would occur in about 50 percent fewer years with approval of the change petitions and applications than under No Action or current conditions; again, this would be a significant beneficial effect. Under TROA, island bird nests would be inundated about 5 percent more frequently than under No Action and about 20 percent more frequently than under current conditions, which would have the potential to adversely affect local, but not regional, Canada goose nesting success.

The small amount of riparian and wetland vegetation at Stampede Reservoir occurs where the Little Truckee River and Sagehen Creek enter the reservoir. The complexity of the topography and substrate characteristics make it difficult to predict the actual pattern of change that might occur, but, because of soil porosity, no significant adverse effect on riparian and wetland vegetation is expected.

c. Boca Reservoir

Operations model results show that, under TROA, in wet hydrologic conditions, reservoir storage is greater from October through December and less in August than under No Action or current conditions. In median hydrologic conditions, storage under TROA is greater from August through March and, in dry hydrologic conditions, greater year-round than under No Action or current conditions.

Under TROA, Boca Reservoir storage is below the minimum threshold for fish survival in 33 percent fewer years than under No Action and in 35 percent fewer years than under current conditions. (See "Fish in Lakes and Reservoirs.") As a result, with the approval of the change petitions, fish mortality would be substantially less under TROA, which would be a significant beneficial effect. Operations model results show slightly less

reservoir storage from July through September under TROA in wet hydrologic conditions than under No Action or current conditions. (See "Reservoir Storage and Releases" in "Surface Water.") Several years of wet hydrologic conditions may, therefore, allow the temporary expansion of emergent wetlands into the operational basin of the reservoir. Storage in median and dry hydrologic conditions under TROA is well within the existing operational basin of the reservoir and would not result in a significant adverse effect on existing riparian or wetland vegetation.

d. Independence Lake and Creek

Operations model results show that, under TROA, Independence Lake storage and releases generally are the same as under No Action. However, in dry hydrologic conditions, storage is greater from July through September and less from November through June; releases are greater from May through September. Approval of the change petitions would result in a number of potential benefits to fish resources at Independence Lake that would not occur otherwise. For example, Article Five of TROA allows Joint Program Fish Credit Water, Fish Credit Water, and Fish Water in Stampede and Boca Reservoirs to be exchanged for Private Water in Independence Lake for the conservation of LCT in the lake. TMWA would allow CDFG to maintain access through the delta at the upper end of the lake for migrating fish. Also, TROA could improve the timing and duration of flows in Independence Creek during summer months.

No minimum threshold for fish survival has been established for Independence Lake. Except for certain months in dry hydrologic conditions, operations model results show similar storage under all hydrologic conditions; thus, no effect on lake fish is expected. The average total area of shallow water fish spawning habitat is the same under TROA and No Action in wet and median hydrologic conditions and differs by less than 8 percent in dry hydrologic conditions, which is not a significant effect. Spawning habitat under TROA is the same as under current conditions. (See "Fish in Lakes and Reservoirs.") Because Independence Lake provides limited habitat for waterfowl and shorebirds, no significant effects would be expected on these resources under TROA.

Preferred flows for rainbow trout likely would occur more frequently with approval of the change petitions. (See "Fish in Truckee River and Affected Tributaries.") Lethal flow conditions would occur significantly less frequently, and rainbow trout spawning, incubation, and rearing would be enhanced.

B. Water Appropriation Applications that may be Implemented with TROA

1. Unappropriated Water Available for Appropriation

Water available for diversion to storage under Application No. 31487 (Stampede Reservoir) would be water in the Little Truckee River basin upstream of Stampede Reservoir that would otherwise flow to Pyramid Lake. The application seeks to allow use of the full capacity of the existing reservoir for the purpose of storing Project Water and Fish Credit Water in accordance with TROA and, in turn, would expand the benefits

derived from TROA. As such, the storage priority of this water would not impair the exercise of vested or perfected direct diversion water rights and would not constrain or limit the operation of other Truckee River reservoirs.

Application No. 31488 (Prosser Creek Reservoir) proposes to expand the storage season and to change the maximum withdrawal amount from Prosser Creek Reservoir to the maximum storage of the reservoir in accordance with TROA. The application seeks to allow use of the full capacity of the existing reservoir in accordance with TROA and, in turn, would expand the benefits derived from TROA. Water available for diversion to storage under this application would be water in the Prosser Creek basin upstream of Prosser Creek Reservoir that would otherwise flow to Pyramid Lake. As such, the priority storage of this water would not impair the exercise of vested or perfected direct diversion water rights, and would not constrain or limit the operation of other Truckee River reservoirs.

2. Instream Flows Required to Protect Beneficial Uses of Water

Article Nine of TROA requires minimum releases from the reservoirs that equal or exceed existing minimum releases. Article Nine also requires exchanges of water among reservoirs, when they may be done with low risk to TROA parties in accordance with existing water rights, to further increase reservoir releases to those recommended by CDFG. Approving the applications would provide additional storage of Fish Credit Water, which must be made available for such exchanges to better meet the recommended releases. The resulting benefits to instream flows are described in the "Biological Resources" section of this chapter.

3. That the Water Use, Method of Use, and Method of Diversion are Reasonable

In determining what constitutes a reasonable use of water or method of use or diversion, the totality of the circumstances must be reviewed along with the specific facts of each case. Water use, method of use, and method of diversion associated with the applications are reasonable because approval of the applications and implementation of TROA would allow (1) water rights to be exercised more effectively and efficiently and (2) reservoirs to be operated more effectively and efficiently in that currently unused reservoir storage space would be used. In addition to better meeting the storage and diversion objectives of water rights holders, uses of water stored and released under these applications would provide benefits to aquatic resources in the Truckee River and in three of its major tributaries. (See Section IV, "TROA," in chapter 2 and table 2.6, along with "Biological Resources" sections in this chapter for details.)

Beneficial uses of water proposed under these applications, as well as those under the proposed change petitions, simply consolidate existing purposes of use, which have been previously approved for the subject reservoirs.

4. The Effect of the Applications on Public Trust Resources and Protection of Those Resources Where Feasible

The California public trust doctrine, as set forth in *National Audubon Society* v. *Superior Court of Alpine County*, 33 Cal. 3d. 419, 658 P.2d 709 (1983), requires the State to protect public trust resources, such as fish and wildlife, recreation, and environmental values. The State has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and no water right holder has a vested right to use water in a manner harmful to the trust. Section 1.A.3 of TROA re-affirms this public trust by stating: "this Agreement is intended to implement California's responsibilities under the public trust doctrine as set forth in *National Audubon Society v. Superior Court of Alpine County* . . . by coordinating operation of Truckee River Reservoirs, Donner Lake and Independence Lake, by supporting recreation and instream flows, and by providing for consultation with California, which will aid in balancing among public trust uses while meeting all other requirements of the Settlement Act." Since the two applications are conditioned on the implementation of TROA, California's responsibility under the public trust doctrine is assured.

The public trust doctrine has been understood to protect, among other things, public access, aesthetic values, ecology, fish and wildlife, habitat, and recreation. TROA would benefit and enhance these protected resources. For example, TROA provides for the establishment of Credit Water, certain categories of which would be used by California and others to enhance instream flows. TROA also provides for a habitat restoration fund to be used over 30 years by California, Nevada, and Pyramid Tribe to restore riverine habitat in the Truckee River system. Other ecological benefits are discussed in the "Biological Resources" sections of this chapter. TROA would not alter public access to the reservoirs. Other categories of Credit Water would enhance aesthetic values, especially for recreationists using these reservoirs. (See "Aesthetic Resources.") Additional storage at Prosser Creek Reservoir would increase visitor usage above that under No Action or current conditions. Use of boat ramps would be the same with or without TROA. Flows for recreational fishing in Prosser Creek would be slightly better under TROA than under No Action or current conditions. Recreational usage at Stampede Reservoir under TROA would be slightly greater than under No Action or current conditions.

5. Effects on Changes in Flows as they Relate to Fishery, Riparian Habitat, and Water Quality Issues

The effects on fishery, riparian habitat, and water quality issues are discussed under "Change Petitions that are Implemented with TROA" and in the "Biological Resources" sections of this chapter.

6. Economic and Social Effects

The economic and social effects of TROA are described in the "Economic Environment" and "Social Environment" sections of this chapter.

C. Time Extension Petitions

Since 1978, the Secretary has used storage in Stampede Reservoir for the conservation of threatened and endangered fishes of Pyramid Lake. Stampede Reservoir is managed for flood control and, to the maximum extent possible, to comply with the Secretary's obligation to Pyramid Lake fishes. This operation is expected to continue until and after TROA becomes effective.

The project includes Reclamation's petitions for two 10-year extensions of time to put the water under the Stampede permit to full beneficial use and to implement the requested change petitions. Approval of the time extensions would not result in an adverse change in the existing environment because Reclamation is already putting the full amount of water under its permit to beneficial use. Thus, the existing environment already includes those existing operations. There is no other environmental impact associated with a potential approval of the time extension petitions, other than any impacts associated with the change petitions that would be made possible by the extension of time. The impacts associated with those change petitions are fully documented herein.