Section 4
Environmental Analysis

This chapter describes the existing environmental conditions in the study area, significance criteria for determining potential impacts and potential impacts resulting from the project. By including an accurate description of the pre-project setting, helpful comparisons can be made that aid in determining project-induced impacts. The resources evaluated for potential project-related impacts include: aesthetics; agriculture resources; air quality; aquatic resources and fisheries, wildlife resources; vegetation, wetlands, cultural resources; geology and soils; public safety and hazards; hydrology and water quality; land use; noise; recreation; traffic circulation; utilities; Indian Trust Assets; and environmental justice This section analyzes the recommended alternative and compares it to the No Action/No Project Alternative which is the baseline condition under NEPA. Under CEQA, the baseline conditions are the existing environmental conditions. No notable change in environmental conditions will occur under the No Action alternative because no modifications to the river reach are expected to occur under that scenario. The resources are evaluated based on significance criteria derived from the *U.S. Department of Interior, Bureau of Reclamation NEPA Handbook* 2000; Appendix G of the *CEQA Guidelines* (Initial Study Checklist), *CEQA Guidelines* Section 15065 (Mandatory Findings of Significance); TRPA Initial Environmental Checklist and Regional Plan; applicable State and Federal regulatory statutes and regulations; the *South Lake Tahoe General Plan* and the *City of South Lake Tahoe City Code.*

4.1 Cumulative Projects Considered

Cumulative impacts take into account past, present, and reasonably foreseeable future projects that might have an impact on the various resources being considered. A past project that has greatly affected this segment of the UTR is the development of the Lake Tahoe Airport. Also to be considered within cumulative impacts is the installation of the sewer pipeline paralleling portions of the river.

Projects are in various stages from planning to implementation for the upper and lower reaches of the UTR. The Lake Tahoe Airport is planning water quality improvements along the runway area. Below is a list of other projects considered.

- The Upper Truckee River and Marsh Restoration Project is located downstream of the project area south of the Highway 50 bridge to the mouth at Lake Tahoe. A joint CEQA/NEPA/TRPA environmental document is being prepared with environmental document approval currently scheduled for June 2009. The project is jointly funded by the California Tahoe Conservancy and Bureau of Reclamation. Four alternatives are being considered. Construction is scheduled to begin in the summer of 2010. (Personal Communication Carroll 2007)

- The River Enhancement project encompassing Reach 2 was funded by the TRCD and originally included all of the property along Reach 2. The project has been placed on hold pending negotiations with the grazing land-owner and the California Tahoe Conservancy. In order for TRCD to be able to use secured funds, the City-owned portion of the Reach 2 project is now a part of the project being analyzed by this document. It is uncertain what the timeframe for construction will be for this portion of the river improvements. For the purpose of this document, it is assumed that construction will begin after 2010.

- The Sunset Stables reach is located directly upstream from the Airport project. The project is jointly funded by the USFS and the California Tahoe Conservancy. A joint CEQA/NEPA/TRPA environmental document will be prepared for construction to begin in summer of 2009. The current schedule is to initiate environmental documentation preparation in the winter of 2007 with a recommended alternative. The earliest that construction could begin would be in 2009. (Personal Communication Carroll 2007)

- The California State Parks project is located at the existing public golf course upstream of the Sunset Stables project. A joint CEQA/NEPA/TRPA environmental document is being prepared and is scheduled for release of a draft by spring of 2008. This project proposes to relocate portions of the golf course further away from river and restore the former golf course to a natural state. Alternatives are being developed through the environmental document process. Construction is expected to begin in 2010 with construction of a new golf course and river restoration construction beginning in 2011. (Personal Communication Carroll 2007)

- The City of South Lake Tahoe under a grant from the California Tahoe Conservancy is in various stages of project development and construction for five erosion control projects located in the Sierra Tract subdivision. Phase 1 of the project is currently under construction (1A constructed in 2007 and 1B in 2008), Phase 2 has already been constructed, and Phase 3 is in the planning and design phase with construction possible in 2009. Phases 4 and 5 have not entered planning or design stages and are expected to be construction in 2010 and 2011 respectively. (Personal Communication Quickel 2007)

- The South Tahoe Greenway Project is to construct a 9.6 mile Class 1 multi-use continuous trail from Meyers, California to Stateline, Nevada. Two alternatives are being considered. One alternative describes the majority of the trail to be constructed along the former Highway 50 Bypass corridor. The other alternative describes the trail following Pioneer Trail. This is an existing road that travels from U.S. 50 south of the Airport to U.S. 50 near the California/Nevada border. The purpose of the trail is to provide a convenient transportation alternative and high quality recreation experience. The project is currently in the planning stages and an NOP/NOI is expected to be recirculated in fall of 2007. The earliest expected construction start date is summer of 2009. Construction would take approximately 2 to 4 years. (Personal Communication Carroll 2007)

- The South Lake Tahoe Airport is finalizing plans to reconstruct the existing runway adjacent to the restoration project area. The runway will be constructed in the same configuration as the existing runway and will not have any effect on new or expanded uses at the airport. This work is scheduled to begin in the summer of 2008 or 2009. (Personal Communication Jenkins 2007)

4.2 Aesthetics

Both natural and man-made landscape features contribute to visual resources and the perceived aesthetic value of a view. The value is determined by contrasts, forms, and textures exhibited by geology, hydrology, vegetation, wildlife, and man-made features. Individuals respond differently to changes in the physical environment, depending on prior experiences and expectations and proximity and duration of views. Therefore, visual effects analyses tend to be highly subjective in nature.

TRPA and the City have jurisdiction over aesthetic issues within the project area. The TRPA Compact provided for the development and implementation of environmental carrying capacities or thresholds. In 1982, TRPA completed inventory work necessary to define and establish threshold standards for preservation of scenic quality. Numerical standards were established at that time for roadway and shoreline travel route ratings and roadway and shoreline scenic quality ratings. Additionally, TRPA adopted a management standard policy statement for overall community design elements. In 1993, TRPA adopted numeric standards for designated public recreation areas and bike trails (TRPA 2001).

These regulations are included within the *TRPA Code of Ordinances* and include design guidelines related to height restrictions, vegetation protection, and shoreline design standards. The City Planning Department will also review the project under their Design Review guidelines. The two agencies generally use the same criteria for aesthetic review.

4.2.1 Existing Conditions

The Lake Tahoe area is well-known for its scenic beauty and aesthetics. The project area is within the Lake Tahoe Basin and visible from Highway 50, Lake Tahoe Airport and surrounding upland areas.

This section describes the visual area that could potentially be affected by the project. This visual area for reaches 2, 3 and 4 of the UTR consists of portions of South Lake Tahoe, El Dorado County and the Stream Environment Zone (SEZ), or the natural marsh and meadowlands, river, and associated floodplain. This includes the Lake Tahoe Airport, Mosher grazing meadow and USFS property to the east.

Photos of the study area from various vista points east and west of the Upper Truckee River and study area are included below.

4.2.1.1 Surrounding Landscapes

The Lake Tahoe Basin setting is typically natural with mid- and long-distance views of mountain ridges, views of forests, and views of Lake Tahoe (Figure 4.2-1). The scenic quality of the surrounding landscapes is very high.

Figure 4.2-1
An Example of Surrounding Views of Project Area

4.2.1.2 Airport Landscapes

Visual characteristics include the Lake Tahoe Airport runways, terminal, and hangar structures (Figure 4.2-2).

Figure 4.2-2
Airport Runway Looking North

4.2.1.3 Views from Upper Slopes onto the Study Area

The Upper Slopes surrounding the study area contain residential neighborhoods and portions of the El Dorado National Forest. Residential neighborhoods have glimpses of the UTR and the surrounding area including proposed staging areas. The views are typically brief, and consist of riparian and meadow landscapes and forest (Figure 4.2-3).

Figure 4.2-3
View from Neighboring Subdivision to the West

4.2.1.4 Views from Lake Tahoe Airport

The Lake Tahoe Airport is located directly west of the project area and has direct line of sight to the proposed construction and staging areas. Existing conditions include views of riparian and meadow landscapes with views of the UTR (Figure 4.2-4).

4.2.1.5 Views from the Study Area

Views from the study area consist primarily of the natural visual setting of the river, riparian areas along the banks, and associated floodplain meadows bordered by forest. The area also provides views of the Lake Tahoe Airport to the west of the river and includes views of fences and sheds associated with cattle grazing activity.

Figure 4.2-4
View from Lake Tahoe Airport Towards the UTR

4.2.1.6 TRPA

According to the TRPA's *Lake Tahoe Basin Scenic Resources Inventory*, the study area is located along Highway 50 in Scenic Roadway Unit Number 36 – Airport Area. Views from Highway 50 include the Airport, some forests, and scattered areas of development and are rated low to moderate for their scenic quality (TRPA Undated).

4.2.2 Significance Criteria and Assumptions

4.2.2.1 NEPA and CEQA

Effects on visual resources are considered significant if the project would:

- Have a substantial adverse permanent effect on a scenic vista.
- Substantially degrade the existing visual character or quality of a site and its surroundings.

4.2.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of impacts of a project on scenic resources. For the purposes of this analysis, a significant impact would result if one or more of the IEC questions was answered Yes. The TRPA IEC was completed for the Recommended Alternative, Alternative 2. The results of

the checklist questions are discussed in the analysis. A copy of the TRPA IEC is included in Section 5.

4.2.2.3 Assumptions

Potential visual or scenic impacts would be temporary as they would only occur during construction and while vegetation is being established. The project is for the purpose of habitat restoration only, no new permanent visible structures are proposed as part of this project.

4.2.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The No Action/No Project Alternative is the future condition without the project. Under this alternative, no work would be performed in the project area, however there could be projects upstream implemented or constructed in the future.

The visual character or quality of the area would not change under the No Action/No Project Alternative. Under existing federal, state and local regulations, the Airport would not be allowed to encroach further east into the floodplain with or without the project. Construction of upstream projects would have no effect on the visual character or quality of the area since they would be located outside of the project area and the viewsheds of neighboring properties.

All of the land included in the project area is publicly owned and would not be subject to development projects. Since no construction work would be proposed as part of the No Action/No Project Alternative, there would be no effects to scenic vistas as a result of this alternative. Because there would be no permanent structures constructed, this alternative would not block views of Lake Tahoe or other scenic vistas.

The No Action/No Project Alternative would be consistent with the TRPA Scenic Quality Improvement Program (SQIP) since no construction would occur at the site and no degradation of the area would occur. The project area is located within Roadway Unit 36 – Airport Area, an area that is not in attainment with travel route ratings thresholds. Views of the Upper Truckee River and the proposed construction area from Highway 50 would be limited (TRPA 1989).

The No Action/No Project Alternative would have a less-than-significant effect on aesthetics.

4.2.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

Alternative 2 –New Channel East of the Airport is the recommended alternative by the TAC. This alternative would involve construction of approximately 4,000 feet of new sinuous channel in the Airport fill that would restore ecosystem processes, create

a more natural channel and floodplain form, and help to reduce bank erosion. A new floodplain would be constructed in the Airport Reach by excavating the fill east of the Airport fence line. Once the vegetation is established, additional construction activity would be required to fill the existing channel to allow use of the realigned channel. The construction schedule for Alternative 2 would span 3 years. During construction there would be a temporary loss of vegetation where the new floodplain is constructed until vegetation becomes established.

Views from the Lake Tahoe Airport and surrounding properties west and east of the study area would be altered for the duration of construction. Because no permanent structures would be constructed, views are expected to return to their previous condition once construction is complete.

4.2.4.1 Views from Upper Slopes onto the Project Site

The project area would be partially visible from a few properties in neighboring subdivisions. Views from residential neighborhoods located on the upper slopes near the project site would be temporarily affected during construction. Vehicles and equipment, as well as material stockpiling could be visible from some neighborhood homes. There would be a temporary loss of vegetation in the area where the new floodplain is constructed, and this could alter the views of some residents. All these visual effects would be temporary and would be removed at the close of construction. Impacts from the loss of vegetation would be reduced over time as new vegetation becomes established. It is expected that by the end of construction most areas would be re-established with either new or transplanted vegetation. Overall, visual impacts would be temporary and less than significant.

4.2.4.2 Views from Lake Tahoe Airport

View from Lake Tahoe Airport would be altered during construction. These visual effects would only be temporary and would be similar to those described above for the upper slopes. The river area is located downslope from the Airport property so very little would be visible with the exception of heavy equipment protruding above the top of the slope.

4.2.4.3 Views from Hwy 50

Views of the UTR and the proposed construction area from Highway 50 would be limited. Only occasional glimpses of the proposed construction and staging areas would be visible. These impacts would be temporary. The river is located downslope and barely visible from Highway 50.

4.2.4.4 Potential Benefits

Alternative 2 could result in long-term beneficial visual impacts. A larger floodplain and more sinuous channel constructed under this alternative would result in a larger riparian and meadow area, thus, improving the visual character of the area. It would also result in an improved habitat for wildlife which would also be beneficial for this scenic vista.

4.2.4.5 TRPA

Alternative 2 would be consistent with the TRPA SQIP. A goal for scenic resources within the SQIP is to maintain and restore the scenic qualities of the natural appearing landscape. This project would enhance the existing condition thus meeting the goal of the SQIP. The project area is located within Roadway Unit 36 – Airport Area, an area that is not in attainment with travel route ratings thresholds. Views of the Upper Truckee River and the proposed construction area from Highway 50 would be limited. Construction activity along the Upper Truckee River and in the meadow area would be visible at some points from Highway 50; however, the Airport structures would screen views from Highway 50 making view possibilities limited. (TRPA 1989)

Although this alternative may have visual impacts related to construction activities, these impacts would be temporary and would be removed at the close of construction. The loss of vegetation during construction would also be temporary until new vegetation becomes established. There would be no adverse permanent impacts to visual resources associated with Alternative 2. Over time, this alternative could improve the visual qualities of the site as a larger riparian and meadow area would develop. All TRPA IEC Scenic Resources questions were answered "No" (Section 5). Alternative 2 would have a less-than-significant impact on aesthetics.

4.2.5 Cumulative Impacts

Although Alternative 2 would have temporary visual effects from vegetation clearing and construction activities, these effects would be removed at the close of construction. The Airport plans to reconstruct a portion of an existing runway and add new runway lights in the summer of 2008. The South Tahoe Greenway Project could start construction of a new paved trail in 2009. This trail would be visible from the study area if the Highway 50 Bypass Alternative is constructed. These two construction projects would have temporary impacts to views from the upper slopes and from Highway 50. These impacts would be related to construction vehicles, equipment, and staging. No new structures would be constructed. No other cumulative projects are expected to contribute to visual impacts within the study area. Because the cumulative visual impacts are all temporary and do not involve construction of any new permanent structures, the cumulative impacts from the proposed project and future construction projects would be less than significant.

4.2.6 Environmental Commitments and Mitigation Measures

There would be no significant impacts to visual resources; therefore no environmental commitments or mitigation measures are required.

4.2.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not result in any visual impacts to the area as no construction actions would occur. Alternative 2 would have some temporary construct-related impacts. Construction equipment and vehicles could be visible to surrounding neighborhoods and visitors to the Airport. Some areas around the new channel would be cleared of vegetation and would be visibly altered until

new vegetation becomes re-established. Over the long-term however, Alternative 2 could create a larger floodplain and more sinuous channel. This could result in a larger riparian and meadow area, thus improving the visual character of the area.

4.3 Agricultural Resources

Historically, some areas within the Tahoe Basin have been used for grazing of cattle and sheep. This goes back to the earliest development of the area. Many of the ranching families still own the property and are currently operating grazing activities. (TRCD 2003)

The study area includes existing grazing areas within and adjacent to the project area, primarily in Reach 2. The Mosher (aka Ledbetter) grazing unit comprises approximately 342 acres within and adjacent to the project area. The UTR and associated channels are significant landscape features within the grazing unit. The river bisects the southern end of the grazing unit, isolating Pasture 6 from Pastures 1 through 5 and 7, and eventually forms the eastern boundary. Attending seasonal channels and oxbows are prevalent throughout the grazing unit. Remnant irrigation diversions, channels, and dikes extend throughout the bottomland areas. Slopes range from 0 to 1 percent within the bottomlands adjacent to the river, to 15 percent in the upland areas. See Figure 4.3-1 showing the grazing unit locations relative to the project area. (TRCD 2003)

4.3.1 Existing Conditions

Agricultural resources adjacent to the project area include several privately owned cattle grazing areas. Reach 2 is bounded by grazing areas to the west and east. Most of this property is owned by the Mosher family. Other land adjacent to the project area is publicly owned with an easement attached to the property to allow for grazing. These areas have been continuously grazed on a seasonal basis for more than 100 years. Controls were implemented in 1997 to limit livestock access to the historic river channel and overflow channel during the grazing season. A grazing plan has been developed in accordance with Section 73 of the *TRPA Code of Ordinances.* The land owner wishes to continue grazing this land. (TRCD 2003)

A perimeter fence enclosing 342 acres defines the Mosher grazing unit. The unit is cross-fenced creating 7 pastures of varying size (see Table 4.3-1). Pastures 1, 2, 3, and 5 are predominately comprised of dry montane meadow; Pastures 3 and 7 are predominately wet montane meadow (or riparian); and Pasture 6 is situated in an upland, mixed conifer setting. Cow/calf pairs typically graze pastures during the summer season, which typically runs from mid June to mid October each year. The length of the grazing season and introduction and removal dates will vary depending on soil moisture conditions and forage production. During a normal year the estimated carrying capacity by all pastures is 333 Animal Unit Months. (TRCD 2003)

Source: Final Report Upper Truckee River Reclamation Project, EnvironmentalAssessment Feasibility Report & Conceptual Plans, January 2003, Tahoe Resource Conservation District.

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Figure 4.3-1
Grazing Areas

Table 4.3-1 Mosher Grazing Unit				
Pasture	**Acres**	**Pasture Type**	**Forage/Acre (lbs)**	**Animal Unit Months**
1	9	Non-irrigated native pasture	1000	11
2	69	Non-irrigated native pasture	1000	86
3	6.5	Riparian pasture	1500	12
4	30	Non-irrigated native pasture	1000	38
5	55	Non-irrigated native pasture	1000	69
6	124	Woodland	312	48
7	37	Non-irrigated native pasture	1500	69

4.3.1.1 Regulatory Framework

Williamson Act

The California Land Conservation Act, better known as the Williamson Act, has been the State's premier agricultural land protection program since its enactment in 1965. The California Legislature passed the Williamson Act in 1965 to preserve agricultural lands by discouraging premature and unnecessary conversion to urban uses. The act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. The vehicle for these agreements is a rolling term, 10-year contract (unless either party files a "notice of nonrenewal," the contract is automatically renewed on an annual basis to maintain the 10-year commitment duration). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather then potential market value. The Williamson Act also establishes a Farmland Security Zone, which introduces a 20-year contract between a private landowner and a county that restricts land to agricultural or open space uses.[1]

TRPA Regulations

TRPA regulates grazing activities in relation to water quality issues through their *Code of Ordinances* Chapter 73. This code section mainly discusses issues related to grazing activity. The TRPA PAS for the area states that grazing is an allowed use and should be maintained in existing grazing areas. The State of California Department of Agriculture also regulates grazing resources and protection of these resources.

[1] A farmland security zone is essentially an area created within an agricultural preserve by a Board of Supervisors (Board) upon request by a landowner or group of landowners. An agricultural preserve defines the boundary of an area within which a city or county will enter into Williamson Act contracts with landowners. The boundary is designated by resolution of the Board or City Council having jurisdiction. Agricultural preserves must generally be at least 100 acres in size.

4.3.2 Significance Criteria and Assumptions

4.3.2.1 NEPA and CEQA

The CEQA Environmental Checklist establishes criteria for determining the level of significance of impacts to agricultural resources from a project. These criteria include the following.

- Will the project convert grazing land to non-agricultural use?
- Will the project conflict with existing zoning for grazing/agricultural use, or a Williamson Act contract?
- Will the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of grazing land to non-agricultural use?

4.3.2.2 TRPA

Effects on grazing resources are considered significant if the project would:

- Result in a substantial increase in the rate of use of any natural resource.
- Result in any conflict with the PAS.

4.3.2.3 Assumptions

It has been assumed that grazing will continue on the private parcels located to the east and west of Reach 2, with or without the project, indefinitely.

4.3.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The No Action/No Project Alternative is the future condition without the project. Under this alternative, no work would be performed at the project site, however there may be additional projects upstream implemented or constructed in the future. The No Action/No Project Alternative would not convert grazing land to non-agricultural uses and would not conflict with existing zoning or a Williamson Act contract. The No Action/No Project Alternative would not result in any environmental changes that would convert grazing land to a non-agricultural use. Future projects planned for the area would be unlikely to alter any agricultural lands within the study area. The No Action/No Project Alternative would have no impact to agricultural resources.

4.3.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

Alternative 2, the recommended alternative, proposes improvements along City owned property in Reaches 2 through 4. Private grazing land is located on non-City owned property in Reach 2 and would not be affected by the proposed construction. Alternative 2 would not take place on privately owned grazing land, nor would it

convert any grazing lands to non-agricultural uses. Because this alternative would not result in the conversion of any existing agricultural land to a non-agricultural use, it would not conflict with any Williamson Act contracts.

This alternative would involve the construction of a larger floodplain within the project area to increase overbanking frequency during periods of high flow. The study area currently floods every 3 to 5 years. Under Alternative 2, the new floodplain would flood more frequently although the extent of flooding would remain unchanged. At RS 12000, where the left bank elevation would equal the 450-cfs design discharge, overbanking onto the floodplain could occur approximately once every 1.5 years. This increase in the frequency of flooding is not expected to impact grazing. As discussed in Section 2, precipitation in the study area primarily occurs from November through March. Any potential flooding frequency increase during these months would not affect the peak grazing season of mid June through October. Additionally, the flooding frequency increase could encourage vegetation growth, which could be beneficial to grazing lands. Overall this impact is expected to be less than significant.

4.3.4.1 TRPA

This alternative would be consistent with the PAS which states SEZ restoration as a permissible use for the area. This alternative would not result in a substantial increase in the rate of use of any natural resource. This alternative would not conflict with any TRPA goals.

4.3.5 Cumulative Impacts

Alternative 2 would increase the frequency of overbank flow and flooding frequency in the surrounding area. Several grazing lands are within close proximity to the river and could experience and increase in flooding frequency. However, the flooding is not expected to occur during peak grazing season and the extent of flooding would remain unchanged. Other cumulative projects would be unlikely to contribute to flooding in this area. Future upstream river restoration projects could involve increasing the frequency of overbank flow, but they would be unlikely to occur in the area adjacent to the project area and would therefore not affect this area. These future restoration projects may even help to reduce flows within the project area during precipitation events. Cumulative impacts to agricultural resources would be considered less than significant.

4.3.6 Environmental Commitments and Mitigation Measures

Alternative 2 would not result in significant impacts to agricultural resources; therefore no environmental commitments or mitigation measures are necessary.

4.3.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not involve the conversion of agricultural land to non-agricultural uses and would not affect any Williamson Act

contract or any existing land zoned for grazing. The No Action/No Project Alternative would not result in any agricultural impacts.

Alternative 2 would not involve the conversion of agricultural land to non-agricultural uses and would not affect any Williamson Act contract or any existing land zoned for grazing. Alternative 2 could increase the frequency of flooding in grazing areas adjoining the study area. This increase in flooding frequency would be unlikely to occur during the peak grazing season and would therefore be less than significant.

4.4 Air Quality

The study area for the analysis of project-related impacts on air quality is the project site and access routes for fill material removal and stockpiling. An approximate one-quarter mile radius around the site would be the area potentially affected by fugitive dust. Due to the reaction time for the formation of ozone, the emission of ozone precursor pollutants, reactive organic gasses (ROG) and nitrogen oxides (NOx), has the potential to affect an area further from the project site.

4.4.1 Existing Conditions

Pollutants for which a national standard has been established are termed "criteria" pollutants, because the standards are based on studies of health effects criteria that show a relationship between the pollutant concentration and its effect. From this relationship, acceptable concentration levels are also established. The National Ambient Air Quality Standards (NAAQS) for these pollutants are listed in Table 4.4-1 and represent the levels of air quality deemed necessary by EPA and California Air Resources Board (CARB) to protect the public health and welfare with an adequate margin of safety. The existing air quality conditions are also summarized in Table 4.4-2 from the South Lake Tahoe monitoring station near the area of analysis. The criteria pollutants of primary concern (carbon monoxide, ozone, nitrogen oxides, and particulate matter) in the project area are described below.

The primary sources of carbon monoxide (CO) emissions are the combustion of hydrocarbon fuels by motor vehicles, as well as fireplaces, stoves, and furnaces. In the project area, the majority of CO emissions are from mobile sources. CO is regulated because of concern for public health. The EPA and California both have the same 8-hour average AAQS of 9 parts per million (ppm). Currently, the area is a maintenance area for CO. TRPA's 8-hour standard is set at 6 ppm. Based on air quality data collected from 2004-2006, no CO standards were exceeded on any day.

Ozone can cause respiratory problems, especially for sensitive groups, as well as damage to vegetation. Ozone is a result of photochemical reactions involving hydrocarbon compounds and oxides of nitrogen (NO_x). During sunny days, especially during the summer, increased levels of ultraviolet radiation contribute to higher levels of ozone. Because ozone is a secondary pollutant (formed by other primary pollutants in the atmosphere), high concentrations of ozone can be found miles downwind of the source of the primary pollutants. Hydrocarbons and NO_x are emitted primarily from fossil fuel combustion, chemical processing, fuel storage and handling, and solvent usage. The project is located in the region of El Dorado County that is within the drainage area naturally tributary to Lake Tahoe as shown in Figure 3-1, Project Location Map. This area is designated as a federal attainment area for ozone as noted in 40 CFR 81.275, and is designated as a state attainment area by CARB as shown in Figure 4.4-1.

Table 4.4-1
National and California Ambient Air Quality Standards

		Standard, as parts per million by volume (ppmv)		***Standard, as micrograms per cubic meter (µg/m^3)***		***Violation Criteria***	
Pollutant	***Avg Time***	***California***	***National***	***California***	***National***	***California***	***National***
Ozone (O_3)	8 hours	0.07	0.08	137	157	If exceeded	If exceeded on more than 3 days in 3 years
	1 hour	0.09	N/A	180	N/A	If exceeded	N/A
Carbon monoxide (CO)	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
	1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
Nitrogen dioxide (NO_2)	Annual	N/A	0.053	N/A	100	N/A	If exceeded
	1 hour	0.25	N/A	470	N/A	If exceeded	N/A
Sulfur dioxide (SO_2)	Annual	N/A	0.03	N/A	80	N/A	If exceeded
	24 hours	0.05	0.14	131	365	If exceeded	If exceeded on more than 1 day per year
	3 hours	N/A	0.5	N/A	1300	N/A	If exceeded on more than 1 day per year
	1 hour	0.25	N/A	665	N/A	If exceeded	N/A
Hydrogen sulfide (H_2S)	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A
Vinyl chloride	24 hours	0.010	N/A	26	N/A	If equaled or exceeded	N/A
Inhalable particulate matter (PM_{10})	Annual	N/A	N/A	20	50 [(1)]	If exceeded	If exceeded
	24 hours	N/A	N/A	50	150	If exceeded	If exceeded on more than 1 day per year
Fine particulate matter ($PM_{2.5}$)	Annual	N/A	N/A	12	15	If exceeded	If exceeded
	24 hours	N/A	N/A	N/A	65 35 [(2)]	N/A	If exceeded on more than 1 day per year
Sulfate particles	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	N/A
Lead particles (Pb)	Calendar quarter	N/A	N/A	N/A	1.5	N/A	If exceeded
	30 days	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A

Source: CARB 2006a.

[(1)] The PM10 annual NAAQS was revoked on December 17, 2006.

[(2)] The PM2.5 24-hour NAAQS was lowered to 35 (µg/m^3) on December 17, 2006.

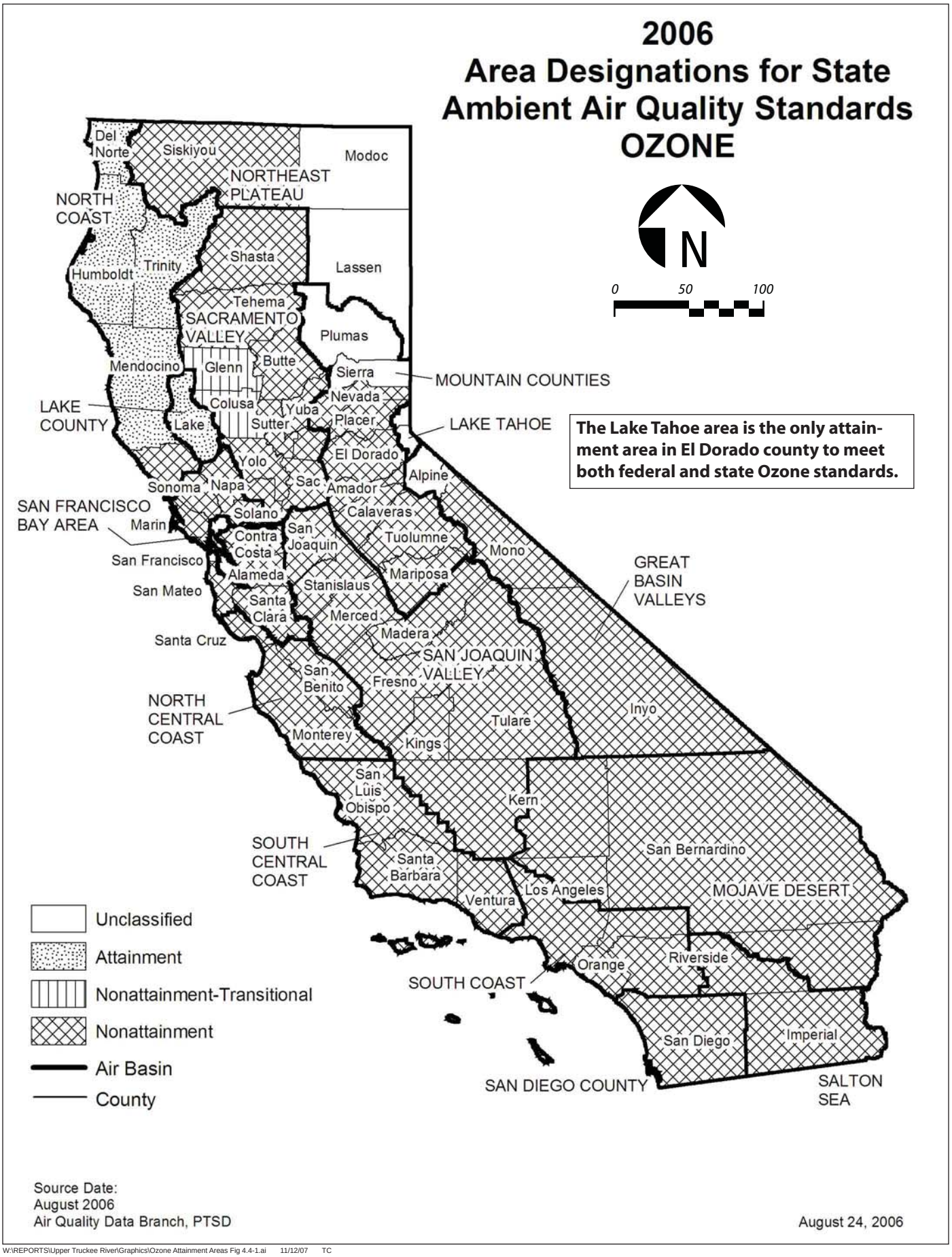
Table 4.4-2
Summary of Pollutant Monitoring Data at South Lake Tahoe-1901 Airport Road Station/Sandy Way

Criteria Air Pollutant And Station Location	*Yearly Monitoring Data*		
	2004	***2005***	***2006***
Carbon Monoxide	EPA / CA	EPA / CA	EPA / CA
Highest 8-hour concentration (ppm)	3.04	1.51	1.18
Days above CAAQS [1]	0	0	0
Ozone 1-hour			
1st High (ppm)	na	0.073	0.086
Days above CAAQS [2]	na	0	0
Ozone 8-hour			
1st High (ppm)	na	0.067	0.075
Days above NAAQS [3]	na	0	0
PM_{10}			
Highest 24-hour concentration (ug/m^3) [4]	47 / 41	38 / 33	66 / na
Arithmetic mean (ug/m^3) [4]	18 / 17	17 / 15	na / na
Calculated number of days above CAAQS [5]	0	0	0
Calculated number of days above NAAQS	0	0	0
$PM_{2.5}$			
Highest 24-hour concentration (ug/m^3) [4]	20 / 23.2	na	na
Annual mean (ug/m^3) [4]	na / 7	na	na
Number of days above standard [5]	0	na	na

[1] Days above standard = days above 8-hour CAAQS of 9 ppm.
[2] Days above standard = days above 1-hour CAAQS of 0.09 ppm.
[3] Days above standard = days above 8-hour NAAQS of 0.08 ppm.
[4] Different methods of analyzing monitored data for PM_{10} and $PM_{2.5}$ are used by USEPA and CARB; therefore, both data are provided, respectively, separated by "/".
[5] Days above standard = days above 24-hour CAAQS of 50 ppm. Most PM_{10} measurements are taken every 6 days; therefore, the number of days over the 24-hour standard in any year is calculated.
[5] Days above standard = days above 24-hour NAAQS of 65 ppm.

N/A = not available

Source: CARB 2006d



W:\REPORTS\Upper Truckee River\Graphics\Ozone Attainment Areas Fig 4.4-1.ai 11/12/07 TC

Figure 4.4-1
Ozone Attainment Areas

CDM

Particulate matter in the atmosphere results from many sources including fugitive dust, vehicle and residential combustion processes, and road abrasives and deicers. The El Dorado Air Pollution Control District (APCD) has permit authority over stationary sources of air pollutants. There are currently no high emissions facilities permitted in the project area. Standards are in place to regulate the amount of inhalable particulate matter in the atmosphere that is smaller than 10 microns in diameter (PM_{10}). The EPA's 24-hour AAQS for PM_{10} is 150 $\mu g/m^3$. The federal annual AAQS for PM_{10} (50 $\mu g/m^3$) was revoke on December 17, 2006. State standards are more stringent, set at 50 $\mu g/m^3$ for the 24-hour AAQS and 20 $\mu g/m^3$ for the annual average AAQS. There is no TRPA threshold for particulate matter measured in total mass. The region is in attainment for both Federal and California PM_{10} emission standards.

The attainment status of the area is summarized in Table 4.4-3.

Table 4.4-3
Federal and State Attainment Status

Pollutant	*State Status*	*Federal Status*
O_3	attainment	Attainment[(1)]
PM_{10}	attainment	Attainment
$PM_{2.5}$	Attainment	Attainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment

(1) The project is located in the ozone attainment area of El Dorado County within the drainage area naturally tributary to Lake Tahoe including said lake.

Visibility is affected by the amount of fine particulate matter less than 2.5 microns ($PM_{2.5}$) in the atmosphere. Fine sulfur aerosols and soils, ammonium nitrate, and smoke contribute to the concentrations of $PM_{2.5}$. Additionally, humidity is a factor in visibility; when relative humidity is above 70%, there is a significant decrease in the visual range. A decrease in visibility caused by a layer of haze results in a reduction in clarity, contrast, and color. This is of great concern especially for areas such as the Tahoe Basin, known to have such stunning scenery. TRPA's thresholds for air quality include visibility standards for both regional and sub-regional visibility. Regional visibility is defined as the overall visibility in the Lake Tahoe Basin. Sub-regional visibility is characterized by the visibility over an urbanized area, such as the south shore of Lake Tahoe. TRPA's regional thresholds for air quality are to achieve visual ranges as follows:

- 97 miles 50 percent of the time and,
- 71 miles 90 percent of the time.

TRPA's sub-regional thresholds for air quality are to achieve visual ranges as follows:

- 48 miles 50 percent of the time and,
- 19 miles 90 percent of the time.

The regional and sub-regional 50 percent visibility ranges and the 90 percent sub-regional visibility range are in attainment. The 90 percent regional visibility standard is not in attainment.

4.4.1.1 Regulatory Framework

Responsibility for air quality regulations and management is shared by Federal, State, regional, and local agencies. On a Federal level, the U.S. EPA, enforces the Clean Air Act, establishes NAAQS, and regulates major emissions sources. Within the Clean Air Act are the conformity provisions. These provisions were put in place to ensure that Federal agencies would contribute to the efforts of attaining the NAAQS. The EPA has issued two conformity regulations: transportation conformity rules which apply to transportation plans and projects, and general conformity rules which apply to all other federal actions. Since the region is currently designated as a maintenance area for CO, the general conformity rules are applicable. A conformity determination is only required for the alternative that is ultimately approved and funded. A project that produces emissions that exceed standards would be required to be mitigated. A project would be exempt from further conformity evaluation if the project-related emissions are less than the *de minimis* thresholds established by the conformity rule.

Air quality on a state level is regulated by the California CARB. CARB works with the air districts to achieve standards set by the EPA and establishes state AAQS that enforce goals outlined in the California Clean Air Act. On a regional level, APCDs or air quality management districts (AQMDs), have many responsibilities. The El Dorado County APCD has authority over stationary sources in the project area, and has developed significance thresholds for CEQA analysis. These districts monitor air quality, establish permitting requirements, design programs to attain or continue to maintain State and Federal AAQS, and enforce air quality standards through inspections, education, training, or fines.

The TRPA acts as the lead air quality planning agency in the Lake Tahoe basin. Local agencies are the last group who share in the air quality management role. Their responsibilities include controlling or mitigating air pollution through land use decisions and local ordinances. Chapter 91 of the *TRPA Code of Ordinances* addresses Air Quality Control. Chapter 93 discusses the Traffic and Air Quality Mitigation Programs.

4.4.2 Significance Criteria and Assumptions

4.4.2.1 NEPA and CEQA

Effects on air quality are considered significant if the project would cause or contribute to any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute to an existing or projected air quality violation.

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).

- Expose the public (especially sensitive receptors including: schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences) located within one-quarter mile from the construction area to substantial pollutant concentrations.

- Create objectionable odors affecting a substantial number of people.

Significance criteria developed by the El Dorado APCD and conformity thresholds established by the EPA were used to determine the significance of project-related air quality effects. Project-related emissions were considered significant if NOx or ROG exceeded 82 lbs/day. PM_{10} emissions from fugitive dusts due to construction activities will be controlled by implementing the Fugitive Dust Control Plan, which is required to be submitted to El Dorado AQMD prior to the start of project per El Dorado AQMD Rule 223-1.5. For large project, the Dust Control Measures should be taken as specified in El Dorado AQMD Rule 223-1 Table 5 and 6.

Table 4.4-4
Ozone Precursor Significance Thresholds

Pollutant	***Pounds per Day***
Oxides of Nitrogen (NO_x)	82
Reactive Organic Gases (ROG)	82

Source: El Dorado APCD

4.4.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of impacts of a project on air quality. For the purposes of this analysis, a significant impact would result if one or more of the IEC questions was answered Yes. The TRPA IEC was completed for the Recommended Alternative, Alternative 2. The results of the checklist questions are discussed in the analysis. A copy of the TRPA IEC is included in Section 5.

Localized mobile-source emissions of CO would be considered significant if the proposed project would contribute to concentrations in excess of more stringent TRPA 8-hour CO standard of 6.0 ppm or the State of California 1-hour CO standard of 20.0 ppm.

4.4.2.3 Assumptions

- Alternative 2 is the recommended alternative, and is the only one included in this air quality impact analysis.

- Construction at the site with mass grading activities and fill transport would occur over the course of approximately 4 months in 2008 and 2010. In 2009, minor grading will take place in areas along the new channel only. The peak year for construction activities and air emissions would be the first year, 2008.

- Excess soil would be hauled to an on-site storage area that is approximately 1 mile roundtrip from the construction site along an existing paved Airport maintenance road and some temporary gravel road. The majority of this fill would be used to backfill the existing channel in year 3. The access road and storage site are shown on Figure 3-3 Construction Staging Areas and Transport Routes.

- Construction equipment required include: excavators, backhoes/loaders, scrapers, compactors, and water trucks, with a maximum 5 pieces of equipment to operate at the same time

- Total construction area would be approximately 27.9 acres for the recommended alternative 2.

- Worker vehicles would travel on average, 50 miles roundtrip for an average of 20 workers per day, and 30 workers at peak day.

4.4.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

Since this is a construction project without any operation air emissions before and after project, there are no air quality impacts for No Action/No Project Alternative.

4.4.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

4.4.4.1 Emission Calculation Methodology

In general, the construction emissions were estimated from various emission models and spreadsheet calculations, depending on the source type and data availability. The CARB Offroad 2007 (off-road engine emission factor model) and EMFAC2007 (on-road vehicle emission factor model) were used along with emission factors obtained from EPA AP-42, MRI Report For Fugitive Dust, and El Dorado APCD CEQA guidelines. Daily and annual emissions construction were estimated from appropriate emission factors, number of equipment and features being worked and the associated schedules. The following construction sources and activities were analyzed for emissions:

- On-site excavation (cut/fill) fugitive dust – based on MRI reported emission factors.

- On-site construction equipment (all pollutants) – based on CARB Offroad modeled emission factors and estimated equipment schedules.

- On-site haul truck engine emissions (all pollutants) – based on EMFAC2007 and estimated vehicle miles traveled.
- On-site haul truck fugitive dust emissions for paved and unpaved road travel – based on AP-42 and estimated vehicle miles traveled.
- Off-site worker vehicle trips to and from the site – based on EMFAC2007 (engine emission factors), and estimated vehicle miles traveled.

4.4.4.2 Emission Inventories

Emissions of criteria pollutants and toxic air contaminants would occur during construction activities at the proposed site. Typical construction activities include earth cut/fill, site grading, and earthmoving by haul trucks, all of which would contribute to fugitive dust emissions or on- and off-site diesel exhaust emissions. Since no operational sources are part of the project action, only construction air quality impacts have been analyzed.

Construction impacts were estimated following the methodology described above. Table 4.4-5 provides a summary of peak daily and annual emission rates for ROG, NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$. In cases where emission factors were only provided for PM_{10}, appropriate CARB PM size profiles were used to estimate $PM_{2.5}$ emissions. Detailed calculation tables that provide emissions by year and by general source categories are included in Appendix E.

Table 4.4-5
Construction Emission Inventories

	ROG	NOx	CO	PM10	PM2.5
Daily Emissions (lbs/day)					
Alternative-2	5.44	54.57	15.92	251.15	26.93
CEQA Threshold	82	82			
Annual Emissions (tpy)					
Alternative-2	0.17	1.68	0.52	8.84	0.94
General Conformity *de minimis*			100 (1)		

(1) CO is the only non-attainment/maintenance air pollutant, which is subject to General Conformity rule.

4.4.4.3 Significance Analysis

As is shown above in Table 4.4-5, ROG and NO_x have a short-term significance threshold of 82 pounds per day under CEQA. The emission inventory indicates that both the ROG and NO_x emissions would be lower than the CEQA thresholds, thus the project would not be considered significant under CEQA.

Dust could be generated during construction. For particulate matter, as required by El Dorado AQMD Rule 223-1.5, a fugitive dust plan must be submitted and approved

prior to the construction to ensure PM_{10} emissions are not exceeding any established air quality standards.

TRPA, the local lead agency, has established a more stringent short term CO air quality standard, i.e. the 6 ppm averaged in 8 hours compared to the 9 ppm of federal and state standard. The Screen3 model was used to evaluate the CO concentration due to the proposed project. The modeling result has indicated that the proposed project would contribute to ambient CO concentration by 0.9 ppm. The CO background concentration at the area is assumed 3.04 ppm in 8-hour average, which is the maximum monitored concentration in the past three years at the nearby monitoring station of South Lake Tahoe-1901 Airport Road as shown in Table 4.4-2. The total CO ambient concentration will be 3.94 ppm due to the proposed project, which is less than the TRPA air quality standard concentration of 6 ppm averaged in 8-hour. Therefore, the proposed project would not be considered significant under local TRPA rule and regulation. The modeling file for CO concentration can be found in Appendix E using EPA Screen3 model.

For annual emission threshold, NEPA has specified annual emission rates of significance for stationary sources only, but no such thresholds were established for construction sources. As a maintenance area for CO, general conformity *de minimis* threshold is applicable for CO emissions only. The annual CO emission calculation indicated that the project emissions of CO do not exceed the *de minimis* threshold of 100 tpy. Therefore, no additional conformity evaluation is required for the project since the project is located in a designated attainment area for other regulated pollutants.

The TRPA IEC Air Quality questions were all answered "No" or "No, with mitigation" (Section 5).

Based on the Air Quality analysis the project would have a less than significant impact to Air Quality with implementation of environmental commitments and mitigation measures discussed in Section 4.4.6.

4.4.5 Cumulative Impacts

The CEQ regulations implementing NEPA define a "cumulative impact," for purposes of NEPA, as follows:

> *Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.* (40 CFR Section 1508.7)

As described in Section 4.1, the Lake Tahoe Airport proposes to reconstruct the center portion, 52 feet on each side of the existing runway centerline, of Runway 18-36,

which will take place at the same time and possibly cause cumulative impacts. However, after reviewing the environmental information submitted by the Airport, the FAA has determined that the proposed project is Categorically Excluded pursuant to FAA Order 1050.1E, which means the actions will not create environmental impacts outside the Airport property. The related documents are part of the administrative record at the Lake Tahoe Airport offices.

Environmental documentation for several of the other potentially cumulative projects as mentioned in Section 4.1 have not yet been completed and are under various stages of development (Upper Truckee River and Marsh, River Enhancement Project, Sunset Stables Reach, California State Parks Project, and South Tahoe Greenway Project). Construction for some of these projects would begin as early as 2009 or 2010. The Sunset Stables project located directly south of the Airport could begin construction in 2009. During 2009 and possibly in 2010, this project would likely be conducting massive fill removal efforts between July and October. The California State Parks Project located approximately 2 miles upstream of the Airport Reach could begin construction as early as 2010 with relocation of the new golf course. The river restoration would not start until 2011 or later. The Upper Truckee River Marsh Restoration Project could potentially begin construction in 2010. However, this project is located approximately 2 miles downstream of the Airport Reach. The River Enhancement Project located in Reach 2 along private grazing land is not expected to begin construction until after the Airport Reach project is complete.

The South Tahoe Greenway Project could begin construction as early as 2009 and would involve grading efforts to construct a linear multi-use trail. A portion of the trail is proposed near the Airport Reach construction area with implementation of the Highway 50 Bypass Alternative. Grading efforts related to this project would a take approximately 2 to 4 years.

Since very little grading activities are proposed in 2009 for the Airport Reach project there would be little contribution to cumulative air quality impacts in 2009. However, a substantial amount of grading activity in the form of backfilling is proposed in 2010.

The South Lake Tahoe erosion control projects would not be expected to generate impacts beyond their immediate boundaries.

Additionally, the phasing of such projects that close to this one could potentially be scheduled to the time when this project construction is done.

Therefore, the cumulative impacts associated with construction activities of the Airport Reach project and the other cumulative projects considered would be less than significant to Air Quality.

4.4.6 Environmental Commitments and Mitigation Measures

There would be no significant impacts to air quality based on the emission calculations compared to the established federal and state thresholds for air

pollutants; therefore no mitigation measures are required for any air pollutants. However, per El Dorado AQMD Rule 223-1, the local government agency has established the Fugitive Dust Control Permit program, which requires the construction operator to submit a permit application for a fugitive dust control plan including the dust control measures as stipulated in El Dorado AQMD Rule 223-1 Table 1 and 2, such as spraying water, applying soil stabilizer, covering stockpiles, haul materials, etc. The permit application must be submitted and approved prior to the construction project. The details of the fugitive dust control measures can be found in Appendix F.

4.4.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not result in any air quality impacts to the area as neither operation nor construction actions would occur to generate significant air emissions. Although the Alternative 2 will produce some air emissions as discussed above, the air quality impacts would not be significant as compared with the thresholds established by federal, state and local agencies.

4.5 Aquatic Resources/Fisheries

This section describes the conditions of aquatic and fisheries resources along the UTR corridor on property owned by the City, and analyzes potential impacts from the No Action/No Project Alternative and Alternative 2. Resources that may be affected by the project include aquatic biota and habitat within UTR Airport Reach project area (in Reaches 2, 3, and 4) as well as resident biota from outside the project area that may utilize habitats in the affected reaches on a seasonal basis (e.g., for spawning, rearing, or migration).

The primary area of influence of the project, in terms of direct action, will include the 1.6-mile segment of the UTR that spans the Lake Tahoe Airport (Reaches 3 and 4), as well as the portion of the river owned by the City in Reach 2. The range of construction activities that have been proposed for this area include enhancement and partial restoration of the original channel to improve hydrologic and geomorphic function.

4.5.1 Existing Conditions

As the principal watershed supplying Lake Tahoe, the UTR provides fundamental linkages that support a variety of fluvial, geomorphic, and ecological processes critical to the functional integrity of the Lake Tahoe Basin. However, aquatic and fisheries resource conditions in the UTR have been greatly altered by both historic and ongoing land- and water-use activities throughout the watershed. Such anthropogenic impacts include timber harvesting (particularly during the Comstock Era), livestock grazing, road construction, fire suppression, and major residential, industrial, and commercial development. These large-scale modifications have impaired the natural hydrologic function of the river system and greatly altered channel morphology, reducing the overall quality of aquatic habitat in the UTR.

Reclamation and development associated with urbanization of the lower watershed has greatly reduced the floodplain area in these reaches. Some areas have been filled (e.g., to accommodate uses such as the Lake Tahoe Airport), while other areas have been ditched and bermed (e.g., to control irrigation on developed pastures). Manipulation and confinement of the channel has caused significant erosion and extensive incision of the channel into the valley floor (TRCD 2003).

Furthermore, human impacts in the Lake Tahoe Basin have created abundant point and non-point sources of pollution that ultimately threaten the renowned clarity and beauty of Lake Tahoe. As the largest single source of stream-transported sediment into Lake Tahoe, the Upper Truckee River delivers approximately eight tons of suspended sediment per day (Boughton et al. 1997). The erosion of dissolved nutrients and nutrient-laden sediments into the lake have stimulated algal growth and caused a marked increase in particulate loads. Coupled with the impairment of the natural filtration processes that historically occurred in riparian, wetland, and marsh systems such as the UTR (i.e., biological removal of entrained nutrients), these changes have resulted in significant declines in water quality in Lake Tahoe. In fact,

the Lake Tahoe Watershed Assessment cites the conversion of the Upper Truckee marsh into the Tahoe Keys development as the single greatest impact to biological integrity in the Lake Tahoe Basin in recent years (Manley et al. 1999). Long-term studies conducted by the Tahoe Research Group since the 1960's have documented a tripling of phytoplankton production and an associated reduction in the clarity of Lake Tahoe's waters of over 40 feet as measured by Secchi disc readings (TRCD 2003). Consequently, erosion and sediment control, along with the reestablishment of active floodplains and the restoration of wetland and riparian habitats, have been identified as the most effective methods for preserving lake clarity.

As in many managed watersheds, human impacts in the UTR drainage are more concentrated at the base of the watershed near the Lake Tahoe shoreline. Impacts to aquatic and fisheries resource conditions are a function of both the physical concentration of human development in the lower watershed, as well as the various cumulative watershed effects that originate upstream and upslope. In general, restoration efforts in the lower UTR are focused primarily on restoring the proper hydrologic and geomorphic function of the channel, and thereby improving aquatic habitat conditions for target fisheries. Overcoming the historic channel incision, increasing overbank flow, and raising groundwater elevations within the lower marsh and floodplain areas are key strategies for overall ecological improvement (TRCD 2003).

Impacts of various proposed enhancement and/or restoration alternatives for the lower reaches of the UTR were initially considered under the preliminary environmental assessment, feasibility report, and conceptual plan for the UTR Reclamation Project. The final report for that phase of the project (TRCD 2003) generally describes current fisheries and aquatic habitat conditions in the lower UTR. While appropriate sections of that final report provide the foundation for this synthesis of existing aquatic and fisheries resource conditions, some review and evaluation of additional information is included as well (e.g., incorporation of relevant gray and peer-reviewed literature, recent study efforts and field investigations, etc.). The results of fish population surveys conducted in 2005 to document baseline (i.e., pre-Project) fish populations in Reaches 2, 3, and 4 are also discussed below.

4.5.1.1 Fishes

The lower reaches of the UTR support a variety of native and introduced fish species (Table 4.5.1). The functional group of primary interest is the cold-water fish assemblage dominated by salmonids (i.e., the family Salmonidae including trout, salmon, char, and whitefish). The only native trout species in the Lake Tahoe Basin, the Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), is of particular concern following over-fishing, habitat degradation, and competition with introduced trout species (currently listed under federally "threatened" status). Attempts to reintroduce Lahontan cutthroat into the upper watershed have met with little success (TRCD 2003). Mountain whitefish (*Prosopium williamsoni*) is the only other native salmonid known to be present in the UTR. At present however, non-native brown trout (*Salmo*

trutta) and rainbow trout (*Oncorhynchus mykiss*) are more common and successful than the native salmonids. Introduced brook trout (*Salvelinus fontinalis*) and kokanee salmon (*Oncorhynchus nerka*) may also occur in the river. However, degraded habitat conditions, especially in the lower reaches of the UTR, greatly limit the production potential for all salmonids (see discussion of aquatic habitat conditions below).

Other desirable native fishes associated with the cold-water assemblage that are known to be present in the UTR include the Paiute sculpin (*Cottus beldingi*), as well as edgewater or slower-water species such as native minnows (i.e., Lahontan redside [*Richardsonius egregious*], speckled dace [*Rhinichthys osculus*], and tui chub [*Siphateles bicolor*]), Tahoe sucker (*Catostomus tahoensis*), and mountain sucker (*Catostomus platyrhynchus*).

Undesirable warmer-water species such as brown bullhead catfish (*Ameiurus nebulosus*) and bluegill sunfish (*Lepomis macrochirus*) are also known to be present in the UTR. Additionally, other undesirable non-natives are known to be present in Lake Tahoe near the mouth of the UTR including largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), and mosquitofish (*Gambusia affinis*). These species may have some potential for expansion into lower portions of the river.

Table 4.5-1
Fishes Known to Occur in the UTR
Taxonomy following Moyle (2002)

Common Name	***Scientific Name***	***Native?***
Salmonids (Family Salmonidae)		
Rainbow trout	*Oncorhynchus mykiss*	introduced
Brown trout	*Salmo trutta*	introduced
Brook trout	*Salvelinus fontinalis*	introduced
Kokanee salmon	*Oncorhynchus nerka*	introduced
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	native
Mountain whitefish	*Prosopium williamsoni*	native
Sculpins (Family Cottidae)		
Paiute sculpin	*Cottus beldingi*	native
Minnows (Family Cyprinidae)		
Lahontan redside	*Richardsonius egregious*	native
Lahontan speckled dace	*Rhinichthys osculus robustus*	native
Tui chub	*Siphateles bicolor*	native
Suckers (Family Catostomidae)		
Tahoe sucker	*Catostomus tahoensis*	native
Mountain sucker	*Catostomus platyrhynchus*	native
Catfishes (Family Ictaluridae)		
Brown bullhead	*Ameiurus nebulosus*	introduced
Sunfishes (Family Centrarchidae)		
Bluegill sunfish	*Lepomis macrochirus*	introduced

2005 Fish Population Surveys

In 2005, quantitative fish population surveys were conducted in Reaches 2, 3, and 4 to establish pre-Project baseline information regarding fish community structure, composition, abundance, and biomass in the Project area. Fish populations were sampled via backpack electrofishing at one site in each of these three reaches using a standard multiple-pass depletion method. Electrofishing sites were 50-60m long, chosen to be representative of the habitat available in each. Physical habitat and ambient water quality were also assessed at each site concurrently with fish sampling efforts.

In all, seven fish species were collected during 2005 electrofishing surveys. Lahontan speckled dace (*Rhinichthys osculus robustus*) was the most abundant species overall, followed by brown trout (*Salmo trutta*), Lahontan redside (*Richardsonius egregious*), Paiute sculpin (*Cottus beldingi*), Tahoe/Mountain sucker (*Catostomus* spp.), rainbow trout (*Oncorhynchus mykiss*), and bluegill sunfish (*Lepomis macrochirus*). Overall species composition for the three reaches combined is illustrated in Figure 4.5-1. Results of 2005 fish population surveys are summarized per reach in Table 4.5-2. Further details regarding 2005 fish population surveys are available in GANDA (2007).

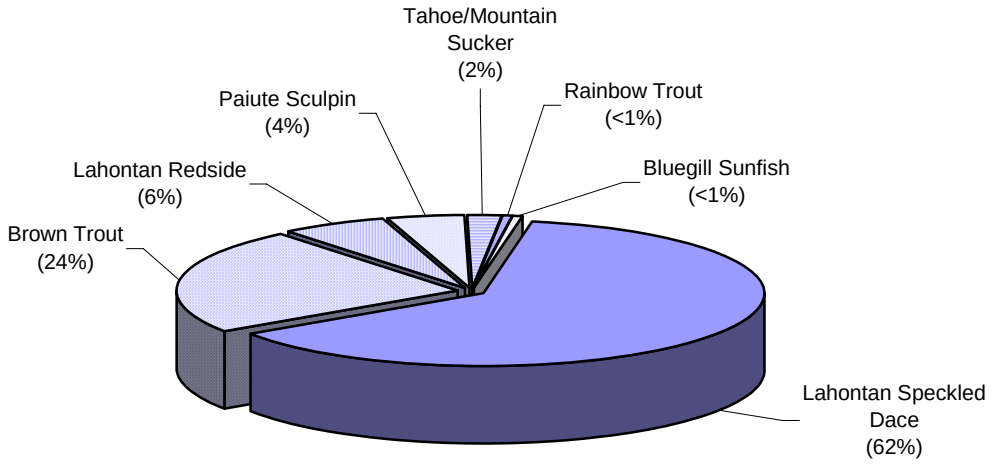


Figure 4.5-1
Overall Fish Species Composition (Reaches 2, 3, 4)

Data from 2005 indicate that fish habitat quality in the middle reach UTR is generally poor for a trout-dominated cold-water fish assemblage. Roughness elements that create fish cover are lacking overall, and the predominantly sandy bottom is largely unsuitable for trout spawning. Hydraulic variability is insufficient to scour pools, sort sands from gravels, and create localized accumulations of spawning substrate. Additionally, the ratio between pool, riffle, and run habitat in the middle reach UTR is considered sub-optimal for supporting a trout-dominated fishery (TRCD 2003).

Table 4.5-2
Summary of 2005 Electrofishing Data from Reaches 2, 3, and 4 of the UTR

Upper Truckee River	*Number of Fish Collected*	*Estimated Population (per site)*	*Lower 95% Confidence Limit*	*Upper 95% Confidence Limit*	*ABUNDANCE*		*BIOMASS*	
					(fish/mile)	*(fish/km)*	*(lbs/acre)*	*(kg/ha)*
REACH 2								
Lahontan Speckled Dace	148	169	150	188	4535	2817	3.1	3.5
Brown Trout	130	138	130	147	3703	2300	9.5	10.6
Lahontan Redside	12	19	12	47	510	317	1.5	1.7
Paiute Sculpin	6	6	6	9	161	100	0.5	0.5
Tahoe and Mountain Sucker	3	3	3	4	81	50	0.1	0.2
Rainbow Trout	5	5	5	6	134	83	0.7	0.8
Bluegill Sunfish	0	0	0	0	0	0	0	0
TOTAL	**304**	**340**	**306**	**401**	**9123**	**5667**	**15.4**	**17.3**
REACH 3								
Lahontan Speckled Dace	273	302	282	322	9724	6040	6.6	7.4
Brown Trout	13	13	13	14	419	260	0.7	0.8
Lahontan Redside	5	25	5	383	805	500	3.7	4.1
Paiute Sculpin	6	6	6	9	193	120	0.2	0.3
Tahoe and Mountain Sucker	1	1	--	--	32	20	0.2	0.2
Rainbow Trout	0	0	0	0	0	0	0	0
Bluegill Sunfish	0	0	0	0	0	0	0	0
TOTAL	**298**	**347**	**306**	**728**	**11173**	**6940**	**11.4**	**12.8**
REACH 4								
Lahontan Speckled Dace	197	213	199	227	5716	3550	4.6	5.1
Brown Trout	104	108	104	114	2898	1800	12.3	13.7
Lahontan Redside	19	21	19	28	564	350	1.8	2.0
Paiute Sculpin	32	37	32	48	993	617	2.3	2.6
Tahoe and Mountain Sucker	17	17	17	18	456	283	3.1	3.4
Rainbow Trout	1	1	--	--	27	17	0.3	0.3
Bluegill Sunfish	6	6	6	6	161	100	2.2	2.5
TOTAL	**376**	**403**	**377**	**440**	**10814**	**6717**	**26.4**	**29.6**

Indeed, minnows (particularly dace) greatly outnumbered trout at all of the survey sites in Reaches 2, 3, and 4 in 2005. Reach 3, adjacent to the Airport, is the most straightened and channelized reach and had the most minnows and fewest trout. By contrast, Reach 2, which is the most sinuous of the three reaches, had the highest trout abundance. In general, minnows preferred marginal and/or slower velocity areas, especially areas with some boulder rip-rap or vegetative cover.

Overall, the vast majority of the fish collected in 2005 were associated with rip-rapped areas where some boulder/cobble cover was available. Elsewhere in these sand-bottom reaches, fish cover is notably lacking, especially for larger trout. In fact, only a few adult brown trout and one adult rainbow trout were collected during 2005 surveys. The presence of many young-of-the-year and age 1+ trout suggests that some successful spawning does occur in the system; likely further upstream in the mainstem, and in tributaries with adequate spawning gravels. However, relatively low trout abundance and biomass overall indicate that the trout population in these reaches is below desirable levels for this fishery (see assumptions section below).

No other quantitative fish population information was available for the UTR for comparison with 2005 survey data. However, some fish population was available for Trout Creek, the next largest watershed in the basin, located immediately east of the UTR drainage. The lower portion of Trout Creek is likely the most comparable stream to the middle reach of the UTR in terms elevation, size, and character (although the UTR is still a much larger watershed). Quantitative fish population sampling was conducted in the lower reaches of Trout Creek in 1985 as part of regional instream flow requirement studies by the California DFG (DFG 1987), and in 2004 as part of post-restoration monitoring for a rehabilitated meadow section of Trout Creek (River Run 2006). Among the DFG data, total trout abundance in the lower reaches of Trout Creek averaged 2,602 trout/mile. In 2004, total trout abundance in the restored portion of Trout Creek averaged approximately 2,100 trout/mile. Estimated trout abundance in the lower portions of the UTR in 2005 averaged 2,394 trout/mile (i.e., within the range of Trout Creek abundances from 1985 and 2004). Total trout biomass was not reported from the 1985 DFG data; however, River Run (2006) reported total trout biomass in lower Trout Creek between 21 and 35 lbs/acre in 2004, as compared to only 7.8 lbs/acre in the UTR in 2005.

4.5.1.2 Aquatic Macroinvertebrates

Aquatic macroinvertebrates are key functional components of stream ecosystems. Invertebrates reduce coarse and fine particulate organic matter and algae, in turn providing food resources for numerous higher trophic levels. For example, aquatic insects and other macroinvertebrates comprise the bulk of the diet of many stream-dwelling fishes, particularly salmonids. Due to the variety of ecological niches that aquatic macroinvertebrates occupy in streams, different invertebrate taxa and/or taxa groups naturally possess varying abilities to withstand different degrees of environmental impairment. As such, aquatic invertebrates serve as useful indicators of stream health and overall ecosystem integrity.

Baseline biomonitoring surveys of the UTR conducted by Lahontan between 1998 and 2000 identified over 160 aquatic macroinvertebrate taxa (mostly insects, but also worms, crustaceans, mollusks, and mites) from samples collected at eight sites throughout the drainage (Herbst 2001a). Generally these data describe a relatively robust macroinvertebrate community in the upper watershed, which declines progressively in the downstream direction (particularly within the current study area below the upper Highway 50 crossing). Herbst (2001a) reported that several indicators of biological integrity declined longitudinally in this manner such that the lower reaches of the river were distinguished by the poorest conditions of habitat and ecological health. This downstream trend can be summarized as a general loss of diversity, sensitive organisms, and community stability. Samples from the lower reaches, for example, typically contained fewer species (30-40 taxa) than samples from the upper reaches (40-50 species). Additionally, shifts in the composition of the benthic community, especially among the sensitive mayfly-stonefly-caddisfly groups (EPT taxa) and functional feeding group distributions, reflected negative downstream changes.

Gerstrung (1986) also briefly described changes in the macroinvertebrate fauna of the UTR that followed downstream changes in the composition of bottom substrate (i.e., from rubble-dominated in the upper reaches, to sand- and silt-dominated in the lower reaches). Preliminary bioassessment data collected in the UTR in 2003 as part of current TRPA and USFS biomonitoring efforts also support these general trends. Samples from the lower reaches of the UTR scored among the lowest of all Lake Tahoe tributaries sampled in terms of a benthic index of biological integrity (B-IBI) being developed for the Tahoe Basin (TRPA, unpublished data). The benthic community of the UTR was characterized by lower taxa richness and diversity, lower abundances of taxa groups considered sensitive to impairment (e.g., EPT-taxa), and higher abundances of taxa considered tolerant of impairment relative to other Lake Tahoe Basin streams.

Declines in the benthic community of the UTR collectively described by these data are attributable to degraded habitat conditions in the lower watershed (see aquatic habitat discussion below). Appropriately, Herbst (2001a) noted that the ecological integrity of the lower river could be enhanced through the implementation of sediment and erosion control measures. Indeed, stream rehabilitation efforts implemented by the City in lower Trout Creek have already demonstrated that enhanced biological integrity follows restoration of the stream channel and subsequent improvement of aquatic habitat conditions (Herbst 2001b).

4.5.1.3 Aquatic Habitat

The quality of aquatic and fisheries resources in the UTR is a function of both physical and biological habitat conditions. The principal determinants of aquatic habitat quality are generally abiotic. Factors such as watershed hydrology, lithology, and fluvial geomorphology fundamentally dictate habitat structure. However, certain biological factors such as large woody debris recruitment and riparian vegetation interact with these large-scale physical factors to ultimately determine habitat

structure. Biological factors can also influence abiotic conditions such as temperature and substrate composition through stream shading and vegetative protection against bank erosion.

However, it is the combination of biological conditions and interactions with abiotic determinants of habitat structure that usually determine the final quality of aquatic habitats in a given stream reach. Primary productivity for example, delivered from both autochthonous sources (e.g., algae and macrophytes) and allochthonous sources (e.g., riparian vegetation), dictates macroinvertebrate density and food resources for higher trophic levels. Competition and predation interactions may determine the suitability of habitats for target species, and/or critical life history stages thereof.

Trout, for example, generally have several key biotic and abiotic habitat requirements at various life stages. Although specific habitat requirements will vary between species, there are several important components that constitute quality habitat for salmonids. First and probably foremost, adult fish require access to spawning areas. In developed watersheds such as the UTR, barriers to migration are common at road crossings, culverts, and other man-made structures. This is especially a concern under very low or very high flow conditions. Spawning adults generally require clean, coarse gravel located in hydraulically favorable areas in order to construct a nest, or redd. Because spawned eggs develop while buried in the substrate, adequate water flow through the interstitial spaces of the substrate is required to ensure oxygenation and elimination of metabolic wastes from the redd site. Areas such as the tails of pools or the heads of riffles are examples of hydraulically favorable sites for interstitial flow.

Proper substrate size distribution of the streambed is therefore critical for successful trout spawning. An abundance of fine sediment at a spawning site is a primary limiting factor for egg and embryo survival. Fine sediments can clog the interstitial spaces between gravels and prevent adequate water circulation through the redd, eventually smothering eggs or embryos. Additionally, the material of the spawning bed itself (i.e., the substrate used to construct the redd) must be large enough overall to prevent its mobilization or erosion during elevated flow conditions. If the spawning substrate is too small and/or unarmored with cobbles or other larger particles, even relatively low magnitude storm events may scour away the redd and its contents prematurely.

Following emergence from the gravel, young trout (or fry) typically move to backwater or edgewater areas of riffles or pools for rearing. At this early stage, lower velocities, dense cover, and an abundance of small food items are critical habitat factors. As they grow larger and more agile, they move into deeper and swifter water where food is more readily available and turbulence affords some protection against predators. Once juveniles attain an adequate size to compete with other fish, they will move into pools and other deeper-water habitats to feed. At this stage, escape cover is critical for survival. Beyond adequate food resources, the combination of depth and adjacent escape cover such as undercut banks, overhanging vegetation, large woody

debris (e.g., root wads, logs), and large boulders or cobbles, provides the highest-quality rearing habitat for trout.

Overall, aquatic habitat quality in the lower UTR is typically poor, as evidenced by a reduced benthic macroinvertebrate community and a generally sparse and unsustainable trout population. Improper functioning of the river channel generates excessive fine sediments and a general lack of instream cover in these reaches. Fine sediment inputs (both from locally eroding banks, and from watershed-scale erosion) have resulted in a predominantly sand-bottom channel that is unsuitable for salmonid spawning and rearing, as well as colonization and production of desirable macroinvertebrates (Figure 4.5-2). Bulk sediment sampling data collected at multiple sites in the lower river in 2004 describe a predominance of median particle sizes (D_{50}) in the range between fines and fine gravels (Entrix, Inc., unpublished data). Herbst (2001a) also reported high percentages of fines and sands in the streambed of the lower reaches of the UTR, as well as the highest percentage of eroding banks. Larger median particle sizes in the range from medium to coarse gravels (without excessive fine sediment infiltration) would be preferable for trout spawning and macroinvertebrate production.

Figure 4.5-2
Typical Substrate Material in the Bed of the Lower UTR
(Note the predominance of sand-sized particles unsuitable for trout spawning.)

Habitat data collected below the upper Highway 50 crossing suggests that the ratio between pool, riffle, and run habitat is sub-optimal for supporting a trout dominated cold-water fishery (Interfluve 1996). A notable lack of riffle habitat and roughness elements in these reaches results in reduced hydraulic variability overall. Stream habitat data collected by the USFS document excessively long and wide habitat units in the lower UTR, indicative of relatively poor and homogeneous habitat conditions overall (USFS-LTBMU, unpublished data). For example, these reaches consistently averaged higher width/depth ratios and habitat unit lengths than other Lake Tahoe tributaries. Additionally, the UTR drainage was characterized as having the highest percentage of entrenched channel types (e.g., Rosgen C and F channel types).

The lack of variability in hydraulic and habitat conditions is attributable to large-scale watershed modifications that have impaired the natural hydrologic function of the system and greatly altered channel morphology (i.e., channel entrenchment, sinuosity, width/depth ratio, and substrate material). The existing widened and deepened channel lacks sufficient roughness elements to produce the hydraulic variability necessary to scour pools, sort sands from gravels, and create localized accumulations of spawning substrate (i.e., to create habitat variability). Instead, generally homogeneous velocity conditions simply move sand waves through the system, ultimately filling pools and burying riffles that previously would have provided spawning habitat for fish and substrate for macroinvertebrate colonization (TRCD 2003). The lack of roughness elements also reduces the amount of available cover for fish. Large woody debris, boulders, and other roughness elements both directly (as hiding places) and indirectly (by creating scour) provide critical cover habitat for fish such as trout.

Currently, adequate salmonid habitat is present only in localized areas of the lower UTR, where isolated obstructions or sharp bends disrupt the typical erosion patterns and alter the sinuosity of the channel (i.e., where some heterogeneity is created). These areas create localized scour where deeper pools and undercuts form, and hydraulic conditions sort fines from pool tail-outs. Undercut banks and obstructions such as root wads also provide escape cover in these areas. As discussed above, the introduction of roughness elements and the restoration of proper channel width, depth, and sinuosity patterns as part of stream rehabilitation efforts on the UTR, are expected, in turn, to restore the physical (and biological) conditions that support good quality trout habitat.

The most degraded habitat in the lower UTR occurs in reaches where the river course has been most directly manipulated. The channel in these areas is typically more homogeneous, where a lack of hydraulic variability, minimal pool scour, hardened rip rap banks, and eroding hillsides create habitat that is either unavailable or too highly degraded for trout spawning and rearing (TRCD 2003). Herbst (2001a) found that channelized reaches of the UTR were characterized by the smallest particle size distributions (i.e., dominated by sand and gravel).

Reaches 3 and 4 in particular have been profoundly affected by historic channelization in order to accommodate the Lake Tahoe Airport. The straightened, confined channel is lined almost completely with rip-rap (Figure 4.5-3). A homogeneous trapezoidal cross-section, and a predominantly sand bottom afford minimal aquatic habitat value (Figure 4.5-4). With the exception of some larger scattered rip-rap pieces along the channel margins, the stream bottom consists almost entirely of fines and fine gravels which are unsuitable for trout spawning. Additionally, escape cover is minimal to non-existent in these reaches allowing for poor rearing conditions and few places for resident fish to seek shelter.

Figure 4.5-3
Looking Upstream Along a Channelized Portion of Reach 3
With Minimal Aquatic Habitat Value

(Note the predominantly sand bottom, rip-rap banks, and lack of cover for fish. The upstream edge of the concrete low-flow crossing that provides emergency access to the airport is visible in the immediate foreground.)

Figure 4.5-4
Cross-Sectional View of the Typical Homogeneous Trapezoidal Channel Form in the Reaches Adjacent to the Airport

(Note the predominantly sand bottom and lack of cover for fish.)

Moreover, the narrow and highly stable nature of the channel confinement in the reaches greatly reduces floodplain area. The west bank of the channel is bound by a large terrace comprised of fill from the development of the Airport, and the opposite bank abuts the hillslope and upland area to the east. Sparsely vegetated hillslopes (particularly on the eastern bank) remain a continuing source of surface erosion. In Reach 3 several features provide grade control in the channel, including some placed

boulder weirs and a concrete low-flow crossing that serves as the Airport's emergency runway access. In Reach 4, a failing concrete diversion dam provides effective grade control at the upstream boundary the reach. As a result, moderate to full-scale restoration and/or enhancement efforts would be required to restore aquatic habitat conditions in these reaches.

4.5.1.4 Regulatory Framework

Threatened, Endangered, and Proposed Species

As defined by the federal Endangered Species Act of 1973 (ESA), a threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. An endangered species is any species that is in danger of extinction throughout all or a significant portion of its range. Proposed species are those that are proposed in the Federal Register by the USFWS to be listed as threatened or endangered. A candidate species is a candidate to become a proposed species.

Species of Concern are taxa for which existing information indicates that listing may be warranted, but where substantial biological information to support a proposed rule is lacking. Section 7 of the ESA directs federal departments and agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat.

The California Endangered Species Act (CESA) generally parallels the main provisions of the federal ESA and is administered by the California DFG. Under the CESA, the terms threatened and endangered are defined as they are in the federal ESA, however these terms apply only to species or subspecies native to California. The CESA prohibits taking a listed species except as otherwise provided under State law. However, unlike its federal counterpart, the CESA extends the take prohibitions to species petitioned for listing (i.e., state candidate species). State agencies are required to consult with California DFG to ensure that any actions undertaken are not likely to jeopardize the continued existence of any threatened or endangered species, or result in destruction or adverse modification of essential habitat.

USFWS Species List

The USFWS species list for the project area included no listed fish or aquatic insect species (queried 7 November 2007 for USGS quad 522B - South Lake Tahoe). Nonetheless, Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) is known to potentially occur within the project area (although no specimens were collected or observed during 2005 fish population surveys in the project area). Lahontan cutthroat trout is listed as federally threatened under the ESA. This species was initially listed under as endangered in 1970; however, its status was reclassified to threatened in 1975. A recovery plan for Lahontan cutthroat trout was finalized in 1995. Historically, Lahontan cutthroat trout occurred throughout the Truckee River watershed and the

larger Lahontan Basin; they have since been extirpated from the majority of their range, including Lake Tahoe and the UTR. Several attempts to reintroduce Lahontan cutthroat trout to the UTR drainage have met without success due to degraded habitat conditions and hybridization and competition with non-native fishes.

CNDDB Species List

The California Natural Diversity Database (CNDDB) is the state program that inventories the status and locations of rare plants and animals in California (i.e., the state equivalent of the USFWS species listings). However, CNDDB queries are not limited to listed species). The CNDDB species list for the project area included no fish species and only two aquatic invertebrates, both of which are found in Lake Tahoe: the Lake Tahoe benthic stonefly (*Capnia lacustra*) and the Great Basin rams-horn (*Helisoma newberryi*), neither of which are state or federally listed (queried 7 November 2007 for USGS quad 522B - South Lake Tahoe). *Capnia lacustra* is a lentic stonefly endemic to Lake Tahoe, known to be associated with deep-water plant communities of algae, mosses, and liverworts that occur at depths between 95 and 400 feet in the Lake. *Helisoma newberryi* is a gastropod (snail) known to occur large lakes (and some slow rivers) where they burrow in soft mud. Neither of these species should occur in the project area.

TRPA

TRPA maintains several standards for fisheries resource thresholds carrying capacities.

- A non-degradation standard shall apply to fish habitat in Lake Tahoe. Achieve the equivalent of 5,948 total acres of excellent habitat.
- Maintain 75 miles of excellent, 105 miles of good, and 38 miles of marginal stream habitat as indicated by the map on page 76 of the EIS for the Establishment of Environmental Thresholds (TRPA, 1983).
- Until instream flow standards are established in the Regional Plan to protect fishery values, a non-degradation standard shall apply to instream flows.

4.5.2 Significance Criteria and Assumptions

4.5.2.1 NEPA and CEQA

Fisheries impacts are significant under NEPA and CEQA if the project would:

- Have a substantial adverse effect on any species identified as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations, or by the California DFG or USFWS (e.g., Lahontan cutthroat trout, a federally "threatened" fish species, is known to occur in the project area);

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites;

- Conflict with any local policies or ordinances protecting fisheries resources; or

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.5.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of impacts of a project on wildlife resources including fish. For the purposes of this analysis, a significant impact would result if one or more of the IEC questions was answered Yes. The TRPA IEC was completed considering the Recommended Alternative, Alternative 2. The results of the checklist questions are discussed in the analysis. A copy of the TRPA Initial Environmental Checklist is included in Section 5.

4.5.2.3 Assumptions

While impacts to aquatic and fisheries resources in the UTR have been primarily related to alterations of physical habitat conditions (e.g., fluvial geomorphology, bank stability, and substrate composition), large-scale changes in the biological composition of aquatic and riparian communities have also been either directly or indirectly imposed (e.g., exotic species introductions, loss of riparian vegetation and wood recruitment). A primary assumption guiding rehabilitation efforts for the lower reaches of UTR is that the system will be principally managed as a cold-water sport fishery with target fish assemblages consisting mainly of trout and other salmonid populations.

Furthermore, it is assumed that the currently degraded conditions of fishery and habitat resources in these reaches are sub-optimal for desired trout production. This assumption is based on information from the preliminary environmental assessment (TRCD 2003), field observations, limited habitat data, and qualitative comparisons with other streams in the region. A key additional assumption is that necessary improvements in aquatic resource conditions will follow from the implementation of strategies to restore natural hydrologic and geomorphic function to the river.

A lack of historical information prior to Comstock Era disturbances requires that some inferences must be made regarding unimpaired conditions in the lower UTR. Indeed, anthropogenic disturbances have been superimposed on natural disturbances regimes for many centuries in the Tahoe Basin, creating complex patterns of influence on biotic integrity. We are thus relegated to reconstructing historic conditions to provide a context for interpreting current conditions and future needs (Manley et al. 1999). In the context of aquatic and fisheries resources however, particular guidance is provided by recent collaborative efforts among resource agencies and regional experts of the Lake Tahoe Fisheries Technical Advisory Group to develop a vision statement

for Lake Tahoe Basin fisheries. In a Memorandum of Agreement between the TRPA, California DFG, Nevada Division of Wildlife (NDOW), USFWS, USFS, League to Save Lake Tahoe, Washoe Tribe, California State Parks and Recreation, Nevada State Parks, California State Lands, Nevada State Lands, and Lahontan, the parties adopted a Desired Future Conditions Statement (DFC) to guide fisheries policy in the Lake Tahoe Region. The DFC states:

> *Aquatic conditions in the Lake Tahoe Basin shall be capable of supporting a healthy, self-sustaining, and functioning fish community. The aquatic community should be comprised of species, habitats, and ecological processes expected to occur in an oligotrophic, cold-water ecosystem and consistent with this region of the Sierra Nevada with recognition that past non-native aquatic species introduction have altered trophic dynamics.* (TRPA, in prep.)

It is assumed that, in terms of aquatic and fisheries resources, the goals of current enhancement and restoration efforts in the lower reaches of the UTR are aligned with this vision statement.

4.5.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

In the absence of the project, the existing sub-optimal conditions of aquatic resources would prevail within the project area. Of the currently future proposed projects, the river restoration projects both downstream and upstream of the Airport Reach could result in direct impacts to aquatic resources during construction. However, given the goals of each of these projects, it is likely that an overall benefit to aquatic resources would result once construction is completed for the river restoration projects. Construction of one of the two proposed South Tahoe Greenway Project alternatives located adjacent to UTR, could have some indirect impacts. However, BMPs would likely be required to reduce these impacts to less than significant.

Thus, the No Action/No Project Alternative would not have any significant negative impacts to aquatic resources. However, in the absence of the project there would also be no benefit to aquatic resources that could result with implementation of the project.

4.5.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

Because restoring the geomorphic function of the river is a primary objective of the project, project impacts are anticipated to be decidedly positive for aquatic and fisheries resources. In particular, increasing overbank flow, raising groundwater elevations, and restoring the natural hydrologic function of the marsh in the project area would result in substantial improvements in an area that plays a key role in the functional ecology of the region. Adding roughness elements, increasing the ability to sort fines from gravels, and the creation of proper pool-riffle-run complexes will increase fish habitat and cover. Benefits for aquatic biota should include improved

rearing and spawning conditions for fish and increased habitat for macroinvertebrate colonization and production in the project area. Potential benefits may extend to Lake Tahoe fisheries immediately downstream, and on a grander scale, may extend to fisheries throughout the larger Truckee River watershed. No aquatic listed species were identified within the project area and the project is designed specifically for including habitat restoration.

The project could have construction related impacts to aquatic resources while working within the existing river channel. Work is proposed to include removal of existing concrete structures, bank stabilization, and construction of new aquatic habitat features. During Year 3, water will be diverted from a portion of the existing channel while it is being backfilled. It is likely that aquatic resources could be impacted during this time. However, environmental commitments and mitigation measures shall be implemented to reduce potential construction related impacts to a less than significant level. These measures are described in Section 4.5.6.

The project is consistent with local Habitat Planning Documents including the City of South Lake Tahoe General Plan, the El Dorado County General Plan, the TRPA Thresholds Evaluation Report (2001) and the Environmental Improvement Program. The project is for the purpose of restoration and is consistent with goals and policies defined by these documents to improve aquatic habitat in the Upper Truckee River.

All Wildlife Resource questions in the TRPA IEC in Section 5 are answered "No" or "No, with mitigation". Therefore, completion of Alternative 2 would be a benefit to aquatic resources in the project area and construction of the project with the environmental commitments and mitigation measures identified in Section 4.5.6 would be a less than significant impact to aquatic resources.

4.5.5 Cumulative Impacts

Projects in the region that would occur simultaneously with this project have the potential to contribute to cumulative impacts. The confirmed and proposed projects considered for cumulative impacts would not likely lead to permanent negative cumulative impacts on aquatic resources within the river. During construction of future river restoration projects upstream and downstream of the project area, construction activities could cause water quality impacts that could affect aquatic resources along the Airport Reach. However, it is assumed that future river restoration projects would implement water quality BMPs and fish rescue efforts during construction to reduce impacts to a less than significant level. Construction of one of the two proposed South Tahoe Greenway Project alternatives could have some indirect impacts. However, BMPs would likely be required to reduce these impacts to less than significant. Therefore, impacts from the Airport Reach project would be less than significant to aquatic resources and would not contribute to a cumulative effect.

4.5.6 Environmental Commitments and Mitigation Measures

As analyzed in Section 4.5.4 this project would have a beneficial effect to aquatic resources. However the environmental commitments and mitigation measures listed in Sections 4.10, Geology and Soils and 4.12, Hydrology and Water Quality along with the measure listed below will lessen potential impacts during construction.

- Fish rescue shall be performed prior to dewatering or partial diversion of water from the stream course or other aquatic habitats in the project area where fish may be present, in order to avoid stranding of fish during construction activities. The removal and relocation of fish shall be performed by qualified biologists using techniques such as electrofishing and seining. Specimens shall be relocated to viable and comparable habitats in the immediate vicinity that are to remain undisturbed for the duration of construction activities.

4.5.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not have any direct negative impacts on the aquatic resources in the study area. However, the quality of aquatic resources in the area may continue to degrade due to the lack of restoration efforts that would help to restore these resources. Alternative 2 may temporarily impact aquatic resources, but would provide overall benefit to these resources with the proposed improvements to aquatic habitat.

4.6 Wildlife Resources

This section presents the existing conditions and impact analysis for wildlife resources along the UTR Airport Reach corridor. This section is based on the following background information:

- *Final Report of the Upper Truckee River Reclamation Project, Assessment, Feasibility Report, and Conceptual Plans* (TRCD 2003);
- California Natural Diversity Database (DFG 2007);
- Lake Tahoe Watershed Assessment (USFS et al. 2003);
- California Wildlife Habitat Relationships (CWHR) System (DFG 2002a);
- *Regional Plan for the Lake Tahoe Basin* – 2001 Threshold Evaluation (TRPA 2002);
- *Sierra Nevada Forest Plan Amendment-Final Environmental Impact Statement* (USFS 2001a); and
- *Upper Truckee River Restoration Project Middle Reaches 3 and 4 Biological Assessment/Biological Evaluation* (Wildlife Resource Consultants 2007).

4.6.1 Existing Conditions

The following excerpt from the Biological Assessment and Biological Evaluation (Wildlife Resource Consultants 2007) documents the existing wildlife species within the project study area.

4.6.1.1 Methodology

A pre-field literature search was conducted to obtain information on the special status animal species potentially occurring within the vicinity of the project area. The USFWS, the USFS LTBMU, and TRPA were also queried regarding special status species that could potentially occur in and near the project area. Finally, the habitat requirements for the special status animal and plant species identified by the USFWS, the LTBMU, and TRPA were reviewed prior to field surveys. (Wildlife Resource Consultants 2007)

Surveys were conducted in the project area for threatened, endangered, sensitive, and candidate (TESC) wildlife species in summer 2001 and 2002. A one-day reconnaissance survey was performed in September 2007. The surveys also assessed whether any potential habitat was present for special status species. All wildlife species observed or detected by sign (e.g., tracks, scat, burrows, carcass, feather, etc.) were recorded and compiled into a species list. Private property was not surveyed on foot but was scanned from the adjacent roads (Wildlife Resource Consultants 2007).

4.6.1.2 Characterization

A complete description of the project area habitat can be found in the *Environmental Assessment, Feasibility Report, and Conceptual Plans for the Upper Truckee River Reclamation Project* (TRCD 2003).

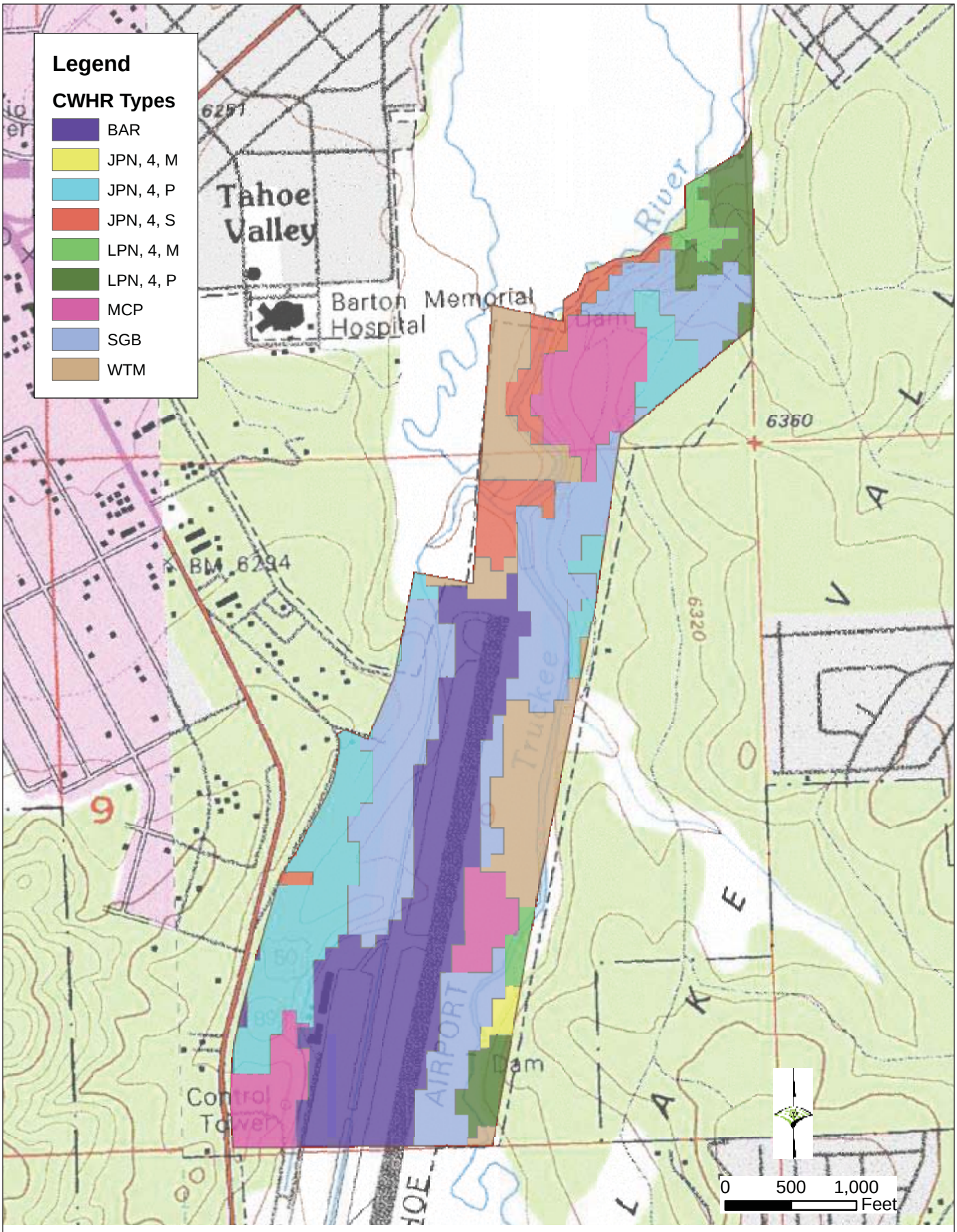
Approximately 25 percent of the project area consists of forest habitat (Jeffrey pine and lodge pole pine), approximately 38 percent of the habitat is scrub (montane chaparral and sagebrush), while wet meadow habitat is approximately 11percent. The remainder of habitat is comprised of barren areas that include the Lake Tahoe Airport. The number of acres of California Wildlife Habitat Relationship (WHR) types in the project area is listed in Table 4.6-1, while the number of WHR types in the action area is listed in Table 4.6-2. The WHR types within the project area are depicted on Figure 4.6-1 and within the action area on Figure 4.6-2. (Wildlife Resource Consultants 2007)

Table 4.6-1
The Number Of Acres Of Each Wildlife Habitat Relationship (WHR) Type In The Project Area

WHR Type	*WHR Size*	*WHR Density*	*Area (acres)*
Barren			64.79
Jeffrey pine	Small tree, 11-24” dbh	40-59%	1.67
Jeffrey pine	Small tree, 11-24” dbh	25-39%	34.16
Jeffrey pine	Small tree, 11-24” dbh	10-24%	13.59
Lodgepole pine	Small tree, 11-24” dbh	40-59%	5.12
Lodgepole pine	Small tree, 11-24” dbh	25-39%	12.99
Montane chaparral			31.75
Sagebrush			69.39
Wet meadow			29.33
TOTAL ACRES			262.73

Table 4.6-2
The Number of Acres of Each Wildlife Habitat Relationship (WHR) Type Outside The Project Area But Within A 0.5 Mile Radius of The Project Area (i.e., Action Area)

WHR Type	*WHR Size*	*WHR Density*	*Area (acres)*
Annual grass			8.88
Barren			61.78
Jeffrey pine	Small tree, 11-24” dbh	40-59%	262.57
Jeffrey pine	Small tree, 11-24” dbh	25-39%P	433.71
Jeffrey pine	Small tree, 11-24” dbh	10-24%	43.08
Lodgepole pine	Small tree, 11-24” dbh	40-59%	106.69
Lodgepole pine	Small tree, 11-24” dbh	25-39%	159.76
Lodgepole pine	Small tree, 11-24” dbh	10-24%	28.89
Montane chaparral			123.82
Montane riparian		25-39%	11.79
Sagebrush			68.30
Sierran mixed conifer		10-24%	66.61
Urban			75.84
Wet meadow			246.59
TOTAL ACRES			1598.31



Source: Quad Map USGS CWHR Types – USDA Forest Service

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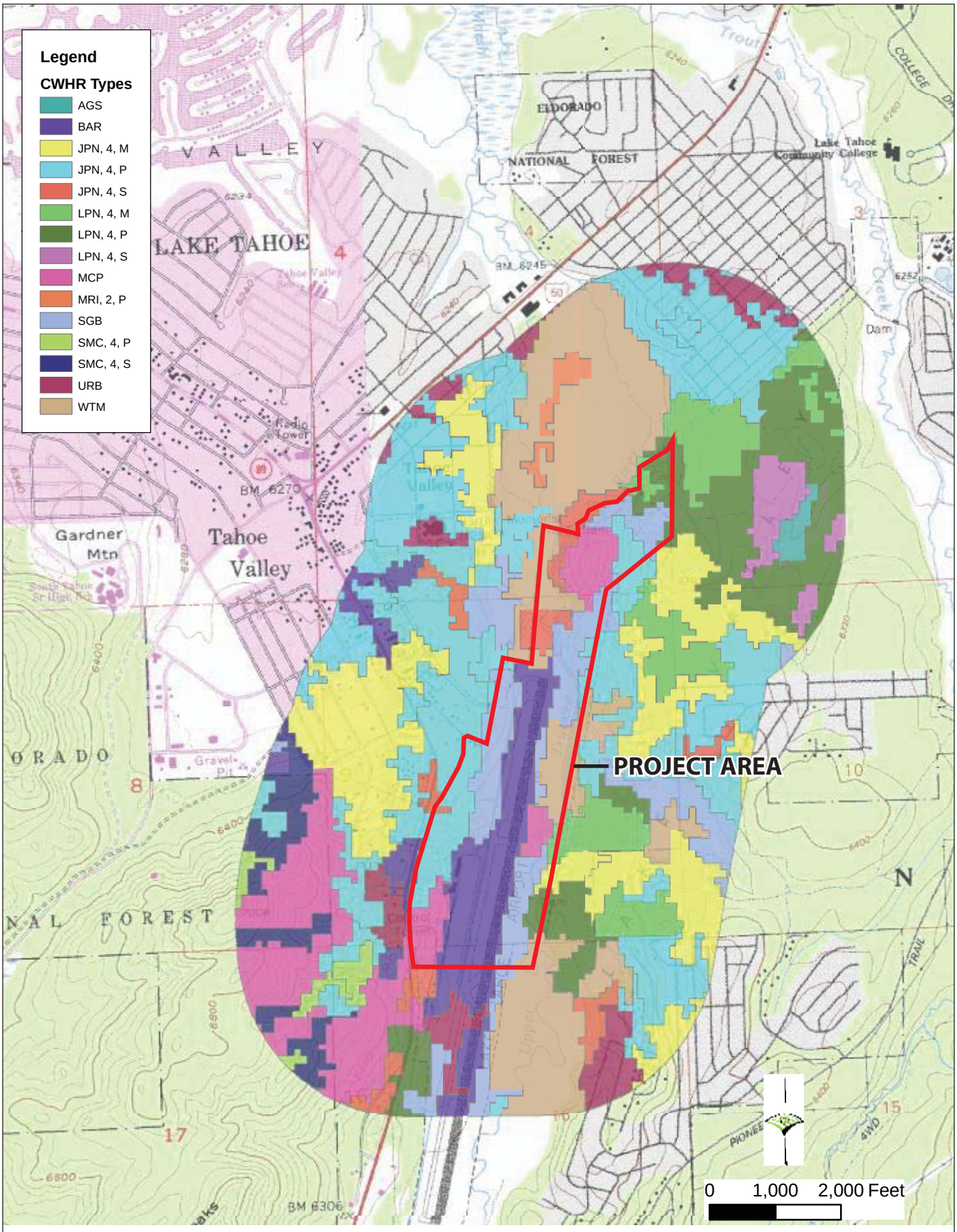
CDM

Figure 4.6-1
Wildlife Habitat Map of Project Area



Source: Quad Map USGS CWHR Types – USDA Forest Service

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CDM

Figure 4.6-2
Wildlife Habitat Map of Surrounding Area
(within 0.5 mile radius of project area)

4.6.1.3 General Wildlife

The Lake Tahoe Basin provides habitat for a broad variety of resident and migratory wildlife species. Nearly 300 species of animals inhabit the Lake Tahoe Region (TRCD 2003). The project area is bounded by the Lake Tahoe Airport on the west and by residential development and undeveloped private property to the east. The urban development is bisected at its midpoint by undeveloped USFS land. Informal trails parallel the meadow/forest edge near the easternmost portion of the project area. People use the project area for dog walking, bike riding, and walking. The potential for wildlife in the project area was ascertained through a review of reports on wildlife conditions prepared for other projects in the general vicinity of the project area including LTBMU wildlife occurrences and observations of wildlife species and/or their sign (eg, scat, tracks) during the protocol-level wildlife surveys conducted for other projects. For instance, species observed during field surveys conducted for TRCD in 2003 include a total of 44 birds, nine mammals, two reptiles, and one amphibian (TRCD 2003).

The following notes were made during surveys for TRCD.

> "Coyotes were observed foraging in the meadows during the early morning bird surveys and their sign (e.g., tracks, scat) was present throughout the project area. Although not directly observed, raccoons preyed on the freshwater clams (*Margaritifera margaritifera*) found in the UTR. Numerous large beds of these clams are present in the sandy areas of the river. Beavers or their sign (e.g., clipped branches) were not detected in the project area. Various species of rodents occupy the project area, including chipmunks, gophers, voles, and squirrels. Although not detected via sign or direct observation, several species of shrews and weasels could occur in the project area. Bats were observed foraging during the two survey visits conducted at dusk. No roost sites are present in the project area. The bridge crossings were surveyed for evidence of roosting bats. No bats or their sign (e.g., scat, urine scent) were observed. The bridges do not provide suitable roosting habitat for bats (e.g., no crevices). The project area provides habitat for a variety of resident (e.g., Stellar's jay) and migratory bird species (e.g., evening grosbeak). Flocks of brown-headed cowbirds, an obligate nest parasite, were observed in the project area during both survey years. Because of the Lake Tahoe basin's high altitude, few reptiles are endemic to the area. Two species were observed in the project area, the fence lizard and an unidentified species of garter snake. Tree frogs were noted in several locations in the project area where standing water was present. Although not observed, western toads (Bufo boreas) and long-toed salamanders (Ambystoma macrodactylum) could potentially occupy the project area" (TRCD 2003).

Later surveys in 2004 and 2007 did not observe any additional species than those noted above.

4.6.1.4 Threatened, Endangered, or Sensitive Species

Threatened, endangered, and sensitive (TES) species are native species that are accorded special legal or management protection because of concern for their continued existence. There are several different categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels. Special status species are defined as follows:

- Wildlife species listed or proposed for listing or candidates for listing under federal or state Endangered Species Acts;
- Wildlife species considered Species of Special Concern by the USFWS;
- Wildlife species considered sensitive by other federal agencies, such as the USFS and TRPA Special Interest Species TRPA;
- CDFG Species of Special Concern; and
- Species protected under local jurisdictions (Wildlife Resource Consultants 2007).

One special status animal species, the Northern goshawk *(Accipiter gentilis)*, is known to occur in or near the project area. However there have not been sitings since 1989 and suitable habitat in the project area is not present. Special status animal species that have suitable habitat in the project area include: bald eagle *(Haliaeetus leucocephalus)*, California spotted owl *(Strix occidentalis)*, willow flycatcher *(Empidonax traillii)*, great grey owl *(Strix nebulosa),* Sierra Nevada red fox *(Vulpes vulpes necator)*, American marten *(Martes americana),* and Great basin rams-horn snail *(Helisoma newberryi)*. Additional species classified as TRPA Species of Special Interest that may occur or have habitat in the project area include various waterfowl and mule deer *(Odocoileus hemionus)*.

Bald Eagle (Haliaeetus leucocephalus)
Status - USFWS de-listed (species will be monitored for 5 years), TRPA Species of Special Interest

Habitat consists of mature coniferous forests with the presence of dominant and co-dominant trees (defined as trees taller and with a greater circumference of the upper canopy relative to the surrounding stand) in close proximity to large bodies of water (Golightly 1991). Bald eagle nests are usually located in uneven-aged (multi-storied) stands with old growth components. Trees selected for nesting are characteristically one of the largest in the stand or at least co-dominant with the overstory (Lehman et al. 1979). Nests are typically constructed in large, dominant live trees with open branch work. The massive stick platform nests are added to annually.

Snags, trees with exposed lateral limbs, or trees with dead tops are often present in nesting territories and are used for perching or as points of access to and from the nest. Most tree perches selected by eagles provide a good view of the surrounding area (USDI 1986). Bald eagles typically perch in large, robustly limbed trees, on

snags, on broken topped trees, or on rocks near water (Peterson 1986; Laves and Romsos 1998).

Breeding is initiated as early as January 1 via courtship, pair bonding, and territory establishment, and normally ends approximately August 31, when the fledglings leave the immediate nest site. Incubation may begin in late February to mid-March, with the nesting period extending to the end of June.

Bald eagles historically nested in the Lake Tahoe Basin (Orr and Moffit 1971). However, between 1971 and 1995, no confirmed nesting pairs were sighted. Since 1996, bald eagles have nested with varying degrees of success in the Lake Tahoe Basin. At least two nest sites currently exist. The Pacific Bald Eagle Recovery Plan identifies four nesting territories in the Lake Tahoe Basin, three of which are targeted for the California side of Lake Tahoe (USDI 1986).

The Tahoe Basin contains wintering habitat for bald eagles, consisting of mid to late successional stages of montane riparian and mixed conifer forest (USDA 1988). Sighting records indicate that the Lake Tahoe Basin is used year-round by bald eagles. However, use occurs primarily during fall and winter months when kokanee salmon (*Oncorhynchus nerka*) spawn.

Bald eagles are known to fly over the Lake Tahoe shore, which is approximately two miles north of the project area during the fall, winter, and spring months. The closest known bald eagle nesting areas to the project area are approximately 10 miles west at Emerald Bay and 17 miles north at Marlette Lake. During summer, bald eagles are typically observed near these two locations. Bald eagle activity in the Lake Tahoe Basin typically declines during summer as individual winter resident eagles disperse or migrate to more productive summer breeding and foraging grounds (USDA 2005).

Occurrence in Project Area

Bald eagles have been recorded two miles north of the project area in the UTR Marsh where the river enters Lake Tahoe. As part of their environmental compliance, the Lake Tahoe Airport contracted with an individual to conduct winter (November to March) avian surveys in the vicinity of the airport for over a decade. These surveys were conducted from the northernmost portion of the Airport (Reach 1 and 2) north to Lake Tahoe. The surveyor observed bald eagles in the marsh area north of Highway 50, but not in the vicinity of the project area. These surveys are no longer required for Airport operations because the results were the same every year.

The project area is not a TRPA mapped bald eagle management zone or mapped winter habitat. No bald eagle nests are documented in or near the project area. There are no known communal or winter roost sites in or near the project area. Dispersing individuals or latitudinal migrants could pass through the project area.

The project area does not contain preferred nesting habitat, and given the amount of disturbance due to the Airport (e.g., noise) and dispersed recreationists, it is

considered unlikely that bald eagles would nest in the project area. Bald eagles could potentially forage in the project area. However, the project area does not contain the concentration of potential prey compared to that found in the Upper Truckee Marsh (e.g., waterfowl). Prior to the human modifications due to land use, resource extraction, and development of the Airport, the project area probably provided consistent foraging habitat for bald eagles (Wildlife Resource Consultants 2007).

California Spotted Owl (Strix occidentalis)
Status – USFS LTBMU Sensitive Species, TRPA Species of Special Interest

Spotted owls occupy mixed conifer, ponderosa pine, red fir and montane hardwood vegetation types. According to the California Spotted Owl Sierran Province Interim Guidelines Environmental Assessment (USDA 1993), nesting and roosting habitat typically includes a forest stand with greater than 70 percent canopy cover. Optimum habitat consists of dense, mature trees with multiple canopies and abundant snags and down woody material. Nesting habitat is characterized by dense canopy closure (>70 percent) with medium to large trees and usually at least two canopy layers present. In addition, nest stands usually have some large snags and an accumulation of logs and limbs on the ground (USDA 1993). Foraging habitat can include all medium to large tree stands with 50 percent or greater canopy closure (Verner et al. 1992).

Within the Lake Tahoe Basin, detections have been uncommon in eastern watersheds (USDA 2005). Between 13 and 15 nesting pairs of spotted owls have been documented within the LTBMU.

Occurrence in Project Area

No suitable nesting habitat is present. A small amount of potential foraging habitat is present in the easternmost portion of the project area. Using the CWHR classification, suitable spotted owl foraging habitat includes the 4M, 4D, 5M, 5D, and 6 CWHR size and canopy classes. Approximately 2.5 percent of the project area (6.79 acres) contains these size and canopy classes. The forested habitat situated east and adjacent to the project area could potentially be used by foraging spotted owls (approximately 23 percent of the habitat [369.26 acres] within a 0.5 mile radius of the project area). No nesting spotted owls have been recorded in or within a 0.5 mile radius of the project area (USDA 2007). Because suitable nesting habitat is not present, no protocol nesting spotted owl surveys have been conducted. The closest known record for a spotted owl detection was made in 2004, approximately two miles east of the project area in the Heavenly Creek goshawk territory (Wildlife Resource Consultants 2007).

Northern Goshawk (Accipiter gentilis)
Status - USFS LTBMU Sensitive Species, TRPA Species of Special Interest

Preferred habitat consists of older-age coniferous, mixed, and deciduous forest habitat. The habitat also consists of large trees for nesting, a closed canopy for

protection and thermal cover, and open spaces allowing maneuverability below the canopy (USDA et al. 1988). Snags, down logs, and high canopy cover are critical habitat features. The former two are also an important component used by numerous prey species. Many of the species that provide the prey base for goshawks are associated with open stands of trees or natural openings containing an understory of native shrubs and grass (Fowler et al. 1988).

Northern goshawk nesting habitat is characterized by dense canopy closure (50-90%) with mature timber. Nest trees for this species are commonly located on benches or basins surrounded by much steeper slopes (Call 1979). Mature trees serve as nest and perch sites, while plucking posts are frequently located in denser portions of the secondary canopy. The same nest might be used for several seasons, but alternate nests are common within a single territory. The chronology of nesting activity varies annually and elevationally. In general, nesting activities are initiated in February. Nest construction, egg laying, and incubation occur through May and June. Young birds hatch and begin fledging in late June and early July. They are independent by mid-September (USDA 1992).

For goshawks, recommendations for managing forests call not only for maintaining nest stands, but also for developing forest environments that support a variety of their prey species in a 2430 hectare area surrounding each nest (Reynolds et al. 1992). Important components of foraging areas include snags and down logs for prey base populations (Reynolds 1983; USDA 1991). A dependence on one type of prey could conceivably lead to a decline in a predator population if that prey species declined (McGowan 1975; Newton 1979). The diet of the goshawk is typically varied and is not dependent on only one or a few species. Small mammals and birds are the goshawks' primary prey (Verner and Boss 1980; Fowler 1988).

Occurrence in Project Area

A small amount of potential foraging and nesting habitat is present in the easternmost portion of the project area. Using the CWHR classification, suitable northern goshawk habitat includes the 3D, 3M, 4M, 4D, 5M, 5D, and 6 CWHR size and canopy classes. Approximately 2.5% of the project area (6.79 acres) contains these size and canopy classes. Within a 0.5 mile radius of the project area, approximately 396.26 acres falls into these classifications. The utility of the analysis using the CWHR types is questionable because a historic goshawk nest is situated in northwest of the project area in habitat typed as Jeffrey pine 4P. The nest has not been active since 1989. Protocol surveys for goshawks have been conducted in habitat located within 0.5 miles of the project area, but no goshawks have been detected (USDA 2007).

Because a limited operating period would apply to any project activities within 0.5 miles of an active goshawk nest, surveys for nesting goshawks were conducted in potentially suitable habitat within 0.5 miles of the project area. No goshawks were detected during the surveys conducted in 2001 or 2002. Another survey was conducted in 2004 within and east of the project area, however, not within the entire

project area. No goshawks were observed during the 2004 survey (Wildlife Resource Consultants 2007).

Great Grey Owl (Strix nebulosa)
Status – USFS LTBMU Sensitive Species

Preferred habitat is mixed coniferous and hardwood forests, usually bordering small openings or meadows (USDA 1991). Optimal habitat is semi-open areas near dense coniferous forests, which the owls use for roosting and nesting. Breeding great grey owls typically occur between 4,000 and 8,000 feet. Courtship and nest site selection occur during late winter. Most nests are in broken-top snags generally greater than 21 inches dbh and 20 feet tall (USDA 1992). Nests are also found in debris platforms from dwarf mistletoe or in old stick nests of other raptors. Nests are generally located within 1,000 feet from the edges of wet meadows that range in size from 15 to 250 acres. Preferred canopy closure is greater than 70 percent although owls use habitat with canopy closure as low as 40 percent (Zeiner et al. 1990).

The owls prey primarily on voles and pocket gophers throughout the year (Zeiner et al. 1990). High prey density, perch availability, and relatively open forest canopies have been identified as important factors in foraging habitats (Bull et al. 1988). In winter, the owls hunt in early morning and from late afternoon to dusk. During the breeding season, they hunt throughout the day and night. Great grey owls hunt by perching two to 20 feet high at the edges of meadows or grasslands and listening for prey in grass runways or underground burrows. The owls fly low over the ground and drop on their prey (Winter 1981).

Occurrence in Project Area

Suitable habitat is present in and near the project area. However, the likelihood of great grey owls occupying the project area is low. Great grey owls have not been observed in the Lake Tahoe Basin and there are no reliable historic records of this species occurring in the basin. (Wildlife Resource Consultants 2007).

Willow Flycatcher (Empidonax traillii)
Status - USFS LTBMU Sensitive Species, California State-listed Endangered

Nesting habitat typically includes moist meadows with perennial streams and smaller spring-fed or boggy areas with willow (*Salix* spp.) or alder (*Alnus* spp.) (Serena 1982; Harris et al. 1988). Willow flycatchers have been found in riparian environments of various shapes and sizes ranging from small willow-surrounded lakes or ponds with a fringe of meadow or grassland to various willow-lined streams, grasslands, or boggy areas. Willow flycatcher nest territories generally contain open water (i.e., running water or standing water), boggy seeps, or saturated soil (Bombay et al. 1999).

Nests constructed of grass and sedges are usually located in willows between 3.3 to 10 feet in height (Serena 1982). In mountain meadows, duff from the previous growth season must be available when the flycatchers construct their nest.

In the Sierra Nevada, willow flycatchers have nested in meadows less than one acre to several hundred acres in size (Serena 1982; Stafford and Valentine 1985; Flett and Sanders 1987; Bombay et al. 1999). However, most willow flycatchers occur in meadows larger than 20 acres. Riparian meadow sites used by willow flycatchers vary in size and shape and may contain relatively dense, linear stands of shrubs, or irregularly shaped mosaics of dense vegetation with open areas in between. Various researchers describe openings within thickets of riparian deciduous shrubs or tall clumps of shrubs separated by open areas as important components of willow flycatcher nesting habitat (Serena 1982; Harris et al. 1988; Sanders and Flett 1989). Large contiguous willow thickets are avoided (Harris et al. 1988; Sanders and Flett 1989). According to Sanders and Flett (1989), openings within willow patches appear to increase habitat suitability. However, Harris et al. (1988) found it was not possible to predict presence or absence of willow flycatchers by willow clump sizes. Nonetheless, some openness in the shrub stratum seems important. The loss and degradation of riparian habitats is probably the primary cause of historic and recent declines in willow flycatchers.

Occurrence in Project Area

Suitable foraging and nesting habitat is present in the project area. Surveys for willow flycatchers were conducted in accordance with A Willow Flycatcher Survey Protocol for California (Bombay et al. 2000) in 2001 and 2002. No willow flycatchers were detected during the surveys. The LTBMU has delineated both suitable and emphasis habitat within the project area. Emphasis habitat is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component. No occupied habitat or willow flycatcher territories are mapped in the project area (Wildlife Resource Consultants 2007).

Mallard/Waterfowl

Status – LTBMU Management Indicator Species, TRPA Species of Special Interest

The LTBMU Land and Resources Management Plan (1988) identifies mallard as a Management Indicator Species (MIS) associated with wetlands, large and small ponds and lakes; emergent vegetation; open water; invertebrates, submerged aquatics, and grasses. Habitat management is based on standards and guidelines in the LTBMU Land and Resources Management Plan (USDA 1988) and in the Sierra Nevada Forest Plan Amendment Final (SNFPA) EIS (USDA 2001), as adopted by the 2004 SNFPA Record of Decision (ROD) (USDA 2004). Mallards nest in a wide variety of situations with dense cover, including grasslands, marshes, riverine floodplains, bogs, forest, and islands. A large proportion of upland nests (50-90 percent) are 150 meters from water (Drilling et al. 2002). Mallards nest on the ground, usually in tall herbaceous vegetation. Microhabitats during breeding season favor shallow wetlands, shoreline

vegetation, and shallows of deeper wetlands. More detailed information on the mallard habitat requirements can be found in the LTBMU MIS report (USDA 2006).

Occurrence in Project Area

Mallards and other species of waterfowl (e.g., common merganser) have been observed within the river corridor (Wildlife Resource Consultants 2007).

Mule Deer (Odocoileus hemionus)

Status - – LTBMU Management Indicator Species, TRPA Species of Special Interest

Deer habitat in the LTBMU consists of summer range only; mostly in the form of meadows and early to mid-successional vegetation stages with brush that can be used for forage and cover (USDA 1988). Preferred habitat requirements for fawning include undisturbed meadow and riparian areas that provide hiding cover and succulent forage. Mule deer preferentially browse on shrubs rather than graze on forbs and grasses. Preferred shrubs are mostly in the rose family and include bitterbrush, cliff-rose, and rose. Willows and many other riparian species are also favored.

To avoid heavy snows and reduced forage, mule deer migrate primarily altitudinally. The regional migrations of the Carson deer herd entail movements from summer range into lower elevation winter range, which is located outside the Tahoe Basin, east of the project area.

Occurrence in Project Area

The project area is located near the summer range of the Carson Deer Herd. No mapped migration routes or critical winter, fawning, or summer range habitat for the Carson Deer Herd occurs in or near the project area. No mule deer or their sign (e.g. scat and tracks) were observed in or near the project area (Wildlife Resource Consultants 2007).

Sierra Nevada Red Fox (Vulpes vulpes necator)

Status – USFS LTBMU Sensitive Species

The Sierra Nevada red fox inhabits forested areas interspersed with riparian habitats, meadows and brush fields. Preferred forest types include red fir, lodgepole pine, and sub-alpine fir in the higher elevations of the Sierra Nevada (USDA 1992). The fox occurs mainly at elevations greater than 7,000 feet and seldom below 5,000 feet. Rock outcrops, talus slopes, and down logs are necessary for den sites. Red foxes make elevational migrations downslope in winter; using ponderosa pine and mixed conifer habitats. They move seasonally from the higher elevations in the winter to mid-elevation forests during the summer.

This species is omnivorous and an opportunistic hunter. Primary prey items are chipmunks, squirrels, wood rats, mice, and birds. The Sierra Nevada red fox might be more tolerant of openings than either marten or fisher, as they will hunt in open areas.

Predator avoidance in the open may not be a problem for this fox (Duncan Furbearer Interagency Working Group 1989). The Sierra Nevada red fox is sensitive to human disturbances including logging, grazing, and recreational activities (Steinhart 1990).

Occurrence in Project Area

Very little is known about the status of the red fox in the vicinity of Lake Tahoe. This species is nocturnal and seldom seen. Occasional sightings of the fox have been reported in Tahoe National Forest, but none in or near the project area. Multiple survey efforts conducted throughout the Lake Tahoe Basin since 1993 have not detected Sierra Nevada red fox (USDA 2007). There are no reliable historic records of this species occurring in the Lake Tahoe Basin or in the project area.

Suitable habitat is present in and near the project area. However, due to the lack of either incidental or verified sightings, the potential for this species to occur in or near the project area is considered very low. This species may be extirpated from the Lake Tahoe Basin (Wildlife Resource Consultants 2007).

American Marten (Martes Americana)
Status – USFS LTBMU Sensitive Species

Preferred habitat is characterized by dense (60-100 percent canopy closure), multi-story, multi-species mature coniferous forests with a complex physical structure near the ground (Buskirk and Ruggerio 1994). Marten do use a variety of other habitat types, but depend on a well-connected expanse of late-successional forest. High numbers of large snags and down logs are an important component of marten habitat, especially in winter when snow covers much of the ground. Snags and down logs provide denning and resting sites for marten, access to subnivian areas, and habitat for marten prey (Corn and Raphael 1992). Subnivian habitat is also important for resting and thermoregulation during winter (Buskirk and Ruggiero 1994). In winter, martens usually require forest with a canopy closure at least 50 percent (Bissonette 1991).

High quality habitat includes close proximity to forested riparian corridors that are used as travelways and an interspersion of small (<1 acre) openings with good ground cover used for foraging (Spencer et al. 1983; Freel 1991; Raphael and Jones 1991). Travelways 300 to 600 feet in width are recognized by one expert as the minimum for marten dispersal (Chapel et al. 1992). Riparian corridors or other means for dispersal are necessary to martens to provide safe and frequent movements through poor habitat areas and between habitats. These travelways should be multistoried stands and should have a minimum canopy closure of 50 to 60 percent (Freel and Stewart 1991). Martens forage at the edge of openings, especially natural meadows, but they avoid traveling across large openings. Variable sizes for home ranges within the Sierra Nevada are reported in the literature; male home ranges vary from 673 to 3,000 acres and females range from 427 to 1,075 acres (Knapp 1994).

Occurrence in Project Area

A small amount of potential habitat is present in the easternmost portion of the project area. Using the CWHR classification, suitable marten habitat includes the 4M, 4D, 5M, and 5D CWHR size and canopy classes. Approximately 2.5 percent of the project area (6.79 acres) is suitable for martens. The forested habitat situated east and adjacent to the project area could potentially be used by martens (approximately 23 percent of the habitat [369.26 acres] within a 0.5 mile radius of the project area). No incidental sightings of martens in or near the project area have been recorded by the LTBMU (USDA 2007). Protocol surveys for martens using sooted trackplates or remote cameras have not been conducted in project area. Martens have been documented more than 2.25 miles east of the project area at Heavenly Ski Resort (USDA 2007).

Great Basin rams-horn snail (Helisoma newberryi)
Status – USFS LTBMU Sensitive Species

The habitat of the Great Basin ramshorn snail includes muddy areas of lakes and streams, especially near springs or upwellings. The snails characteristically burrow in soft mud and may be invisible even when abundant (USDA 1998). This species can occur with several other endemic molluscs. The Great Basin rams-horn snail has been recorded in Lake Tahoe and the adjacent slow segment of its outflow, the Truckee River.

Occurrence in Project Area

Potentially suitable habitat is present within portions of the UTR that are slow moving with a muddy substrate. However, no populations are known to exist in the project area (Wildlife Resource Consultants 2007).

4.6.1.5 Regulatory Framework

As defined by the Endangered Species Act of 1973, a threatened species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. An endangered species is any species that is in danger of extinction throughout all or a significant portion of its range. Proposed species are those that are proposed in the Federal Register by the USFWS to be listed as threatened or endangered. A candidate species is a candidate to become a proposed species.

Species of Concern are taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking. Section 7 of the ESA directs federal departments and agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of their critical habitat.

General USFS direction for threatened and endangered species is summarized below:

FSM 2670.12
Manage National Forest lands so that all existing native and desired nonnative wildlife, fish, and plants can maintain at least viable populations.

Conduct forest activities to avoid actions that may cause a species to become threatened or endangered.

FSM 2670.21
Manage National Forest system habitats and activities for threatened and endangered species to achieve recovery objectives so that special protection measures provided under the ESA are no longer necessary.

FSM 2670.31
Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State, and private forestry, and research activities and programs.

Establish objectives through the Forest planning process for habitat management and/or recovery of populations, in cooperation with States, the USFWS, and other Federal agencies.

Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the USFS to determine their potential for effect on threatened and endangered species, and species proposed for listing.

Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effects totally through alternatives identified in a biological opinion rendered by the USFWS, when an exemption has been granted under the act, or when the USFWS biological opinion recognizes an incidental taking. Avoid taking adverse impacts on species proposed for listing during the conference period and while their Federal status is being determined.

Initiate consultation or conference with the USFWS when the USFS determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when USFS projects are for the specific benefit of a threatened or endangered species.

Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect organisms or populations from harm or harassment as appropriate.

USFS Sensitive Species
USFS sensitive species are those plants and animals identified by the Regional Forester for which population viability is a concern. Concern is warranted by a

downward trend in population numbers, density, or habitat conditions, which would reduce a species' existing distribution (FSM 2670.5). Sensitive species are managed so that USFS actions ensure that these species do not become threatened or endangered (FSM 2670.22). The 3 March 2005 Regional Forester's sensitive species list for the LTBMU includes 30 species of plants and animals (see Table 4.6-1).

General Forest Service direction for sensitive species is summarized below:

FSM 2670.32 Sensitive Species
Assist States in achieving their goals for conservation of endemic species.

As part of the NEPA process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species.

Avoid or minimize impacts to species whose viability has been identified as a concern.

If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

Establish management objectives in cooperation with the States when a project on National Forest System lands may have a significant effect on sensitive population numbers or distribution. Establish objectives for Federal candidate species, in cooperation with the USFWS and the State(s).

TRPA
TRPA maintains several standards for biological resource thresholds carrying capacities.

- Maintain 75 miles of excellent, 105 miles of good, and 38 miles of marginal stream habitat as indicated by the map on page 76 of the EIS for the Establishment of Environmental Thresholds.

- Provide a minimum number of population sites and distance zones for the following seven species: northern goshawk, osprey, wintering bald eagle, nesting bald eagle, golden eagle, peregrine falcon, waterfowl, and deer.

- A non-degradation standard shall apply to significant wildlife habitat consisting of deciduous trees, wetlands, and meadows while providing for opportunities to increase the acreage of such riparian associations.

California Department of Fish and Game
The mission of the CDFG is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The License and Revenue Branch issues licenses, permits, stamps and tags consistent with statutory and regulatory requirements, collects revenue and provides information to support the use and

enjoyment of California's diverse natural resources and to insure that they are available for future generations.

The CDFG has jurisdiction over state-listed threatened and endangered species. Although the state and federal lists are generally similar, differences are present. Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife. The CDFG jurisdictional limits closely mirror those of the USACOE.

4.6.2 Significance Criteria and Assumptions

4.6.2.1 NEPA and CEQA

Biological impacts are significant under NEPA and CEQA if the project would:

- Have a substantial adverse effect on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California DFG or USFWS;
- Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California DFG or USFWS;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.6.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of impacts of a project on wildlife resources. For the purposes of this analysis, a significant impact would result if one or more of the IEC questions was answered Yes. The TRPA IEC was completed considering the Recommended Alternative, Alternative 2. The results of the checklist questions are discussed in the analysis. A copy of the TRPA IEC is included in Section 5.

4.6.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The No Action/No Project Alternative would not result in a direct disturbance to wildlife or wildlife habitat within the project area. However, the No Action/No Project Alternative also includes the most likely future conditions in the absence of the project, including other projects in and adjacent to the project area. Of the

currently proposed future projects, the only project that could potentially directly affect wildlife in the area of this project is the South Tahoe Greenway Project. One of the two proposed alternatives is to develop a 9.6 mile multi-use trail from Meyers to Stateline that runs immediately east of the project. However, because the project is within the same regulatory setting, this project would also be required to mitigate identified impacts on wildlife resources or make a Statement of Overriding Consideration through the EIR process.

Thus, the No Action/No Project Alternative would not have any significant adverse impacts on wildlife resources and habitat. However, in the absence of the project there would also be no benefit to wildlife habitat that could result with implementation of the project.

4.6.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

The purpose of the UTR Airport Reach project is to restore ecosystem function to the river and associated floodplain as envisioned by the SNFPA (2004). The objectives of the project are to improve natural function of the channel, increase over bank flow, and deposit sediment into the floodplain more frequently. Controlling the flow and gradient, protecting the stream banks and designing to allow the creek to overtop its banks during peak periods would have many benefits. Benefits include reduced velocities, more frequent flooding of the meadow during high flows, improved riparian and meadow vegetation, higher groundwater, more productive fisheries, improved macroinvertebrate populations, and a reduction in fine sediment transport during overbanking events (Wildlife Resource Consultants 2007).

The number of acres of each CWHR type within the project area is shown in Table 4.6-1 while the number of acres outside the project area and within a 0.5 mile radius is shown in Table 4.6-2 (see also Figures 4.6-1 and 4.6-2). Following project completion, there would be no change in the number or type of acres within a 0.5 mile radius of the project area. Within the project area, an additional 499 linear feet of river channel would be created and associated montane riparian and wet meadow habitat would be restored. In some locations, such as near the re-established river channel, this restoration would cause a shift from montane chaparral and sagebrush to montane riparian and wet meadow habitat. This would be a beneficial effect to riparian-dependent wildlife species in the project area (Wildlife Resource Consultants 2007). During construction approximately 463 trees would be removed. Approximately 60 of these trees have already been topped as part of the airport tree removal project to meet FAA requirements. Some of the logs would be used for inchannel improvements. Tree removal is described in more detail in Section 3.3.1.8.

4.6.4.1 Effects of Special Status Species

Special status species with known habitat in the project area are discussed in section 4.6.1.4. Below are descriptions of potential project effects to these species.

Bald Eagle

No direct effects are anticipated since bald eagles have not been recorded in the project area. The quantity and distribution of suitable bald eagle habitat would not be altered by any of the project activities. Individual bald eagles could experience temporary auditory and/or visual disturbance if they fly over or near the project area during construction activities. However, because project activities would occur adjacent to the Airport, it is considered unlikely that individuals would experience additional disturbance over the conditions that currently exist. Since the project would likely result in improved habitat conditions for waterfowl, post-project habitat could improve foraging opportunities for bald eagle.

No direct effects to potential nest or roost trees would occur as no tree removal is scheduled in potentially suitable habitat, such as the conifer habitat in the eastern portion of the project area. The trees' proximity to the Airport and existing recreational use probably reduces their utility for bald eagles. If bald eagles nest in or near the project area during project implementation, construction activities could disturb them and cause nest failure. However, no disturbance to bald eagle breeding activities and habitat would occur because a limited operation period (LOP) from March 1 to August 31 would be applied within 0.5 miles of any active nest (Wildlife Resource Consultants 2007).

California Spotted Owl

Spotted owls have not been documented nesting in or adjacent to the project area. No direct effects to nesting spotted owls are expected as there are no records of spotted owls nesting in or near the project area, and forest with preferred characteristics of nesting habitat is not present. If spotted owls are nesting within ¼ mile of the project area during implementation, construction activities could disturb them and cause nest failure. No disturbance to spotted owl breeding activities and habitat would occur because a ¼ mile no-disturbance radius would be delineated around any active nest from March 1 through August 31.

Spotted owls could forage in the forested portions of the project area. During construction, the project activities might temporarily disturb any spotted owls that are present as a result of the noise, mechanical activity, and human presence. These species are primarily nocturnal. Since construction activities would be limited to daylight hours, the potential for disturbance to foraging individuals would be limited. However, any resting spotted owls could be displaced from the immediate construction area and zone of influence. These impacts would persist as long as construction is taking place at a given location. Because project activities are scheduled to occur over several years, this seasonal disturbance (mid-summer to early fall) could extend the period of time that spotted owls might not forage in the project area. Once construction is completed, any spotted owls could return.

While few project activities would occur in forest habitat (e.g., vehicle traffic), it is possible that spotted owl prey species could be affected by the project. Prey species may be subject to individual behavioral changes or vehicle mortality during

implementation. Small mammals generally reproduce quickly and following project completion, their populations would be expected to recover. Any potential effects to prey are unlikely to adversely affect foraging spotted owls because this species forages over large areas and the affected area is small relative to the available, surrounding forest habitat (Wildlife Resource Consultants 2007).

Northern Goshawk

If goshawks are nesting in the known territory or within 0.5 miles of the project area during project implementation, construction activities could disturb them and cause nest failure. An annual protocol dawn or acoustic broadcast goshawk survey would be conducted in and near the project area in order to identify and protect any nests that could be adversely affected by project activities. No disturbance to goshawk breeding activities and habitat would occur because a LOP from February 15 to September 15 would be applied within 0.5 miles (per TRPA requirements) of any active nest.

Even if goshawks are not detected nesting in the project area, they could still occupy the territory. Project activities could potentially disturb any foraging, non-nesting goshawks as a result of the human presence, mechanical activity, and noise. Prolonged disturbance from project activities could decrease goshawk foraging efficiency and disrupt typical behavior patterns. If present, individuals might alter their behavior by avoiding portions of the project area during construction. The displacement might be short term until construction is finished. However, project activities are scheduled to occur over several years; this seasonal disturbance (mid-summer to early fall) could extend the period of time that goshawks might not occupy the project area. However, once the activity ceases, the goshawks could return.

Habitat disturbance from project activities, such as construction of the new channel, filling the old channel, and installation and use of temporary roads, could reduce prey availability in the area of direct impact through displacement of birds, mortality of small mammals, and loss of habitat for these species. However, this short-term potential effect is unlikely to adversely affect any foraging goshawks because the project area where an action would occur represents a small portion of potentially available foraging habitat. Because goshawks preferentially forage in forested habitat, project activities in the meadow should not reduce their foraging effectiveness.

No alteration of forest structure or canopy would occur as a consequence of the project. Long-term vegetation changes associated with the river restoration should not adversely affect prey availability for goshawks. Improvements in wet meadow and riparian habitat are expected to increase habitat for small mammals and songbirds, two categories of potential prey. It is possible the restored conditions in the meadow could translate into improved habitat conditions for forest-edge species, which would also improve the prey base for goshawks (Wildlife Resource Consultants 2007).

Great Grey Owl

There are no historic or recent detections of great grey owls within the Tahoe Basin. Nonetheless, the project area provides suitable foraging habitat for this species.

Therefore, it is possible that the project activities could disturb great grey owls in or near the project area as a result of the human presence, mechanical activity, and noise. Individuals could alter their behavior by avoiding the project area during construction activities. Any impacts would be temporary in duration and would persist only as long as construction is taking place at a given location. Once construction is completed, any great grey owls could return. Because project activities are scheduled to occur over three years, this seasonal disturbance (May to October) would extend the period of time that great grey owls could not forage in the project area.

Project activities could temporarily reduce prey availability in the area of direct impact through mortality of small mammals or behavioral changes. Small mammals generally reproduce quickly and following project completion, their populations would be expected to recover, although a shift from species such as gophers to more shrews is likely. Following project completion, the meadow habitats are likely to support greater numbers of small mammals, in particular, species that thrive in wet meadows such as voles. These habitat changes could improve the potential prey base and habitat quality for great gray owls. The quantity and distribution of suitable great gray owl habitat would not be altered by any project activities (Wildlife Resource Consultants 2007).

Willow flycatcher

No direct effects to nesting willow flycatchers are expected. Willow flycatchers have not been detected foraging or nesting in the project area. Nest upset is considered unlikely because willow flycatcher surveys would be performed prior to implementation of any project phases that occur in or near willow habitat. If nesting willow flycatchers are detected, a protected activity center would be delineated by the LTBMU or TRPA wildlife biologist and a LOP would be implemented from June 1 through August 31.

It is possible that non-nesting, undetected willow flycatchers could use the project area (i.e., birds arrive after protocol surveys are concluded). Any willow flycatchers occupying the project area during construction activities might be displaced from the immediate work area due to mechanical activity, noise, and visual disturbance. The displacement could result in a temporary spatial redistribution of individuals, changes in habitat use patterns, or changes in occupancy of habitat.

Although the project would be constructed in phases over several years, not all portions of the project area would be entered and disturbed at a given time. Nonetheless, the overall effect could be such that the disturbance level prevents occupancy by willow flycatchers throughout the several years of construction. This potential long-term disturbance is not likely to cause any adverse effects to willow flycatchers because they have never been documented in the project area.

Localized reductions in suitable willow flycatcher riparian and wet meadow habitat could occur. Some components of the project, such as channel construction and fill,

would temporarily reduce habitat suitability for willow flycatchers due to loss of willows. Although willows are likely to be salvaged for planting along the new channel, it is likely to take several years for them to grow to sufficient size (e.g., > 2 m) before they are suitable nesting and foraging habitat for willow flycatchers. In the long term, the project would increase the quantity, quality, and distribution of suitable willow flycatcher habitat. After the project is completed, channel length will increase by approximately 14 percent. The increased stream length would lead to expanded riparian shrub cover along the additional 499 feet of river. The planned construction of selected areas of wet meadow could result in conditions that reduce nest predation; standing water can prevent easy access to willow flycatcher nests by ground predators such as weasels and chipmunks. Because moisture would be retained in the meadow complex for a longer period of time through the summer, invertebrate prey levels could increase for the willow flycatcher (Wildlife Resource Consultants 2007).

Mallard/Waterfowl

The portion of the 29.33 acres of wet meadow located east of the Airport would be affected by construction of the new river channel. Because the actions that would occur in this habitat are designed to restore ecosystem conditions, these effects would result in improved habitat conditions following project implementation. Following project implementation, it is expected that wet meadow and montane riparian habitat would be restored and likely increase in acreage due to the previously described project activities. Both the increased wet meadow and montane riparian habitat would improve habitat for mallards (Wildlife Resource Consultants 2007).

Mule Deer

The project would not directly or indirectly affect any of the CWHR high capability habitats (combined reproduction, cover, and feeding) in the analysis area for mule deer. Activities associated with new channel construction would occur in wet meadow and sagebrush habitat. Following project implementation, it is expected that wet meadow and montane riparian habitat would be restored and likely increase in acreage due to the previously described project activities. The increased montane riparian habitat would increase cover and foraging habitat for mule deer (Wildlife Resource Consultants 2007).

Sierra Nevada Red Fox

There are no historic detections of Sierra Nevada red fox within the Tahoe Basin. As cited in USDA (2006), Dr. W.J. Zielinski (pers. comm., 8 Sept 2006) stated that Pacific Southwest survey data from 1996 through 2002 appear to support the conclusion that Lassen National Park is the last holdout for the Sierra Nevada red fox.

Nonetheless, there is suitable habitat within the project area for Sierra Nevada red fox. Therefore, it is possible that the project activities could disturb any Sierra Nevada red fox in or near the project area as a result of the human presence, mechanical activity, and noise. If they are present, individuals are likely to alter their behavior by avoiding the project area during construction activities (e.g., construction of new channel and

filling old channel). Because this species is sensitive to human presence, this displacement could extend beyond the immediate area of construction for an unknown distance. Impacts from the project could occur at construction sites and access roads used for transport of people and materials. The likelihood of individuals experiencing mortality from construction vehicles is extremely low because this species has not been documented in the Basin. Any impacts would be temporary in duration and would persist only as long as construction is taking place at a given location. Once construction is completed, any red fox could return. Because project activities are scheduled to occur over three years, this seasonal disturbance (May through October) could extend the period of time that Sierra Nevada red fox would not occupy the project area.

Small mammals preyed on by the Sierra Nevada red fox might also be subject to individual behavioral changes or mortality during implementation. Small mammals generally reproduce quickly and following project completion, their populations would be expected to recover, although a shift in species, such as fewer gophers to more shrews and voles, is likely.

Indirect effects to Sierra Nevada red fox could occur due to temporary alteration of habitat. However, in the long term, the habitat changes expected as a result of the restoration project are likely to improve habitat for Sierra Nevada red fox through increased vigor and cover of riparian and meadow vegetation. The project area is used by a variety of recreationists, is adjacent to an Airport, and is near neighborhoods, and busy Highway 50. Because this species is sensitive to human disturbance, the likelihood of this species ever occupying the project area is remote (Wildlife Resource Consultants 2007).

American Marten

No alteration of forest structure or canopy would occur as a consequence of the project. No project construction activities are scheduled in suitable marten habitat (e.g., construction of new channel). The project includes vehicle traffic (e.g., hauling equipment, transport of fill) that might pass in or near suitable habitat. Traffic from construction activities would not be expected to increase the risk of fatality to martens from vehicle collisions since speed limits are reduced in construction areas. Because the amount of suitable habitat is so small compared to the total project area, the likelihood of any direct effects from the project, such as disturbance during project construction due to human presence, mechanical activity, and noise, are unlikely to adversely affect martens.

If martens are present, they may alter their behavior by avoiding the project area during implementation. This displacement could result in a temporary spatial redistribution of individuals or habitat-use patterns during implementation. However, once the activity ceases, the martens could return. Project activities are scheduled to occur over several years; this seasonal disturbance (May to October) could extend the period of time that martens might avoid the project area. Because

construction would occur during the day, disturbance to individuals active at night would not occur.

While few project activities would occur in forest habitat (e.g., vehicle traffic), it is possible that marten prey species could be affected by the project. Prey species associated with marten may be subject to individual behavioral changes or vehicle mortality during implementation. Any potential effects to prey are unlikely to adversely affect foraging marten because the affected area is small relative to the available, surrounding forest habitat.

No adverse effects to marten reproduction are expected since this species has not been detected in the forested habitat adjacent to the project area. If a den site is detected in the project area before or during project activities, an LOP will be implemented from May 1 to July 31 within 100 acres surrounding the den site (Wildlife Resource Consultants 2007).

Great Basin Rams-horn Snail
No direct effects are anticipated because this species has never been recorded in the UTR. However, no specific surveys for this species have been conducted and it is possible the Great Basin rams-horn snail does inhabit the project area, but has merely been undetected. In such a case, individuals could experience physical injury or death when flow is diverted and the old river channel is filled. Snails could re-occupy the newly constructed river reaches by migrating up or down stream. The new river channel is likely to provide better fish spawning habitat due to the gravel substrate. One of the risk factors that may harm this species is mitigation measures for sucker species such as adding spawning gravels that smother soft mud habitats. It is possible the newly constructed river habitat would not provide suitable mud habitat for this species.

4.6.4.2 Impact Significance

While no direct effects to any of the special status species listed above is expected, there could be short-term impacts during construction to foraging habitat for these species. However, upon completion of the project the foraging habitat for bald eagle, Northern goshawk and great grey owl is expected to improve. Willow flycatcher habitat is expected to benefit due to increases to riparian habitat once construction is completed. Protocol surveys would be necessary prior to construction to determine the presence of nesting birds. LOPs would be implemented as needed. Habitat is also expected to improve for the mallard, mule deer and Sierra Nevada red fox. As discussed in Section 4.7 Vegetation, riparian vegetation is expected to increase in the project area as a direct result of project implementation.

The project is consistent with local Habitat Planning Documents including the City of South Lake Tahoe General Plan, the El Dorado County General Plan, the TRPA Thresholds Evaluation Report (2001) and the EIP. The project is for the purpose of restoration and is consistent with goals and policies defined by these documents to increase SEZ area, riparian habitat and wetlands in the Tahoe Basin.

Environmental Commitments and mitigation measures are identified in Section 4.6.6 that would bring construction impacts to wildlife to a less-than-significant level and it is anticipated that no permanent impacts would result to wildlife in the project area. TRPA IEC questions specific to wildlife impacts are all answered either "No" or "No with mitigation." It is expected that upon completion of the project, wildlife resources in the area would benefit by increasing the amount of wetland area as discussed in Section 4.8 Wetlands and revegetation with riparian species to provided better wetland function. Therefore, implementation of Alternative 2 with environmental commitments and mitigation measures proposed would be a less than significant impact on wildlife and a benefit to wildlife habitat once the project is completed.

4.6.5 Cumulative Impacts

Cumulative impacts take into account past, present, and reasonable foreseeable future projects. Confirmed and proposed projects considered for cumulative impacts (Section 4.1) would not likely lead to adverse cumulative impacts on wildlife within the region. Most of the projects are not close enough to affect study area wildlife. The closest project is one proposed alternative for the South Tahoe Greenway Project; a multi-use trail that lies immediately east of the river restoration site. Although the Greenway Project would likely require temporary grading activities during construction, compliance with the applicable regulations would require mitigation of significant impacts.

Cumulative effects to the special status species listed in this section are included in the *Upper Truckee River Restoration Project Middle Reaches 3 and 4 Biological Assessment/Biological Evaluation* (Wildlife Resource Consultants 2007). No adverse cumulative effects are expected from implementation of the project to bald eagles, California spotted owl, northern goshawk, American marten or the Sierra Nevada red fox. Willow flycatcher habitat could be affected in conjunction with implementation of other river projects at the same time; however, in the long-term this project and the other projects would ultimately improve willow flycatcher habitat. Environmental Commitments and mitigation measures identified in Section 4.6.6 would reduce potential cumulative impacts from the project to a less-than-significant level.

The Airport Reach project, in conjunction with other projects planned on other reaches of the river, could potentially contribute to adverse cumulative effects for the Great Basin rams-horn snail. However, these impacts are theoretical until focused surveys are conducted to determine whether or not this species is present in the UTR.

Therefore, implementation of the project with the environmental commitments and mitigation measures identified in Section 4.6.6 would reduce the project's cumulative effect on wildlife to a less-than-significant level.

4.6.6 Environmental Commitments and Mitigation Measures

As analyzed in section 4.6.4 the project could have short-term impacts on wildlife during construction. The environmental commitments and mitigation measures listed

below shall be implemented to bring potential significant project impacts to less than significant (Wildlife Resource Consultants 2007).

- Any sighting of listed species, sensitive species, or location of nest or dens of these species will be reported to a USFS or TRPA biologist. These nest or den locations will be protected in accordance with the SNFPA (2000) and the Environmental Threshold Carrying Capacities for the Lake Tahoe Region guidelines (TRPA 1982).

- The project proponent will consult with agency biologists (e.g., TRPA, LTBMU) to determine whether information on northern goshawk nesting is available. If no agency surveys have been performed, pre-project surveys will be conducted to determine the location of any active nests.

- An annual protocol level willow flycatcher survey will be performed. If willow flycatchers are detected nesting in the project area, an agency mandated protected activity center will be delineated and a limited operating period will be applied.

- If special status wildlife species with agency-mandated protected activity centers and LOPs are found breeding in the project area, a protected activity center will be delineated by a LTBMU or TRPA wildlife biologist and a LOP will be implemented.

- Any management activities that require removal of trees and shrubs should be conducted outside the avian nesting season (April 1 through August 15) unless a qualified biologist determines that no nesting is occurring. The project proponent shall retain a qualified biologist to conduct a focused survey for active nest sites of migratory birds covered by the MBTA within a 1/8 mile radius prior to (i.e., within 15 days) the onset of construction activities initiated during the nesting season (April 1 through August 15). If active nests are located during the preconstruction surveys, the biologist shall consult with CDFG and/or USFWS to determine an appropriate buffer around the nest. The buffer will be implemented until the juveniles fledge or the adults abandon the site if the nest fails. The size of the buffer will depend on various factors such as vegetation and topographic screening and the type of project activities in the nest's vicinity.

- All trash created during construction will be properly contained (wildlife-proof containers) and removed at the end of each day.

4.6.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not have any direct adverse impacts on wildlife in the study area. However, wildlife habitat quality in the area, especially along the river banks, could continue to degrade due to the lack of habitat restoration efforts. Alternative 2 would temporarily remove and disturb foraging habitat, but would provide an overall benefit to study area wildlife habitat with the proposed improvements to local hydrology.

4.7 Vegetation

This section presents the condition of existing plant communities and riparian areas along the UTR corridor Airport Reach. The assessment of extant plant communities is based on surveys conducted in early September 2006 as well as review of the following background information:

- *Upper Truckee River Restoration Project Wetlands Delineation Report* (CDM 2006);
- *Final Report of the Upper Truckee River Reclamation Project, Assessment, Feasibility Report, and Conceptual Plans* (TRCD 2003);
- California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2003);
- Baseline botanical survey completed by Western Botanical Services, Inc. for Global Environment and the California Tahoe Conservancy (WBS 1995);
- *Lake Tahoe Watershed Assessment* (USFS et al. 2003);
- *Existing Conditions Report for the Sunset Stables Restoration and Resource Management Plan* (California Tahoe Conservancy 2004); and,
- *Biological Evaluation and Assessment*, *Upper Truckee River Middle Reach Restoration Project* (Western Botanical Services, Inc. 2007).

4.7.1 Existing Conditions

The following excerpt from the *Biological Evaluation and Assessment* conducted by Western Botanical Services Inc., in 2007 documents the existing plant species within the study area.

4.7.1.1 Methodology

On September 11, 12, and 13, 2006, a senior botanist and assistant performed field surveys of proposed improvements as defined by the three proposed alternatives. The survey began on the west side of the channel, surveying in a zigzag pattern to cover all potential disturbance with particular attention paid to areas with potential habitat for special interest, proposed, endangered, threatened, and sensitive plant species. The survey continued on the east side of the project area. Only public lands were surveyed (Western Botanical Services Inc. 2007).

4.7.1.2 Characterization

The project vicinity is mountainous with a semi-arid climate. Annual precipitation occurs mostly in the form of winter snow and/or spring rain. Summers typically are dry and warm, with average daytime temperatures in the 80-degree (F) range. Elevation of the project study area ranges from approximately 6,239 to 6,265 feet (Western Botanical Services Inc. 2007).

A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) assessment indicated two potential community types for this project area: the Mountain Alder (*Alnus incana ssp. tenuifolia*) Series (with mixed willows [*Salix spp.*]) along the river and the Jeffrey Pine Series on slopes above the river.

Mountain Alder Series

As described by Sawyer and Keeler-Wolf, mountain alder is the dominant shrub in this series. Other shrubs include a number of species not found on the project site, such as Jepson willow (*Salix jepsonii*) and mountain maple (*Acer glabrum*) (Western Botanical Services Inc. 2007).

Jeffrey Pine Series

As described by Sawyer and Keeler-Wolf, Jeffrey pine is the dominant species in the overstory of this series. Other species mentioned include many not found on the project site (Western Botanical Services Inc. 2007).

Neither of these community types neatly describes the existing vegetation in the project study area (Western Botanical Services Inc. 2007). The existing riparian corridor is dominated by native willows (*Salix spp.*) and alders (*Alnus incana ssp. tenuifolia*) in the overstory. The herbaceous community includes many non-natives, such as intermediate wheatgrass (*Elytrigia intermedia*). This erosion control species was widely used in Lake Tahoe Basin during the 1970's and early 80's and is a dominant component of the plant community. Additionally, a third community can be described as riparian herbaceous and includes native and non-native graminoids and forbs (Western Botanical Services Inc. 2007).

4.7.1.3 Observed Conditions

The vegetative cover appears to be doing well considering the current level of use, poor soil nutrients, high elevation, and other climate conditions. However, throughout the study area particular signs of drought are apparent, including pedestalling, plant species composition, etc. The plant cover, plant vigor, and rejuvenation appear to be suffering from drought. Several of these areas suffering from drought conditions also have a greater amount of litter. This could be a result of reduced moisture in those areas, a difference in their dominant species, and/or their management. The species identified within the study area are listed below in Table 4.7-1.

Table 4.7-1 ***Species Identified Within Proposed Improvements*** ***(Western Botanical Services Inc. 2007)***		
Family	***Scientific Name***	***Common Name***
Amblystegiaceae	*Drepanocladus (unicatus)*	drepanocladus moss
Apiaceae	*Heracleum lanatum*	cow parsnip
Asteraceae	*Achillea millefolium*	Yarrow
	Agoseris glauca	false dandelion
	Arnica chamissonis	chamisso arnica
	Artemisia douglasiana	Douglas' sagebrush
	Artemisia tridentata var. vaseyana	mountain sagebrush
	Aster eatonii	Eaton's aster
	Chyrsothamnus nauseosus	Rabbitbrush
	Cirsium foliosum	elk thistle
	Cirsium vulgare	bull thistle
	Lactuca serioloa	prickly lettuce
	Madia elegans	common madia
	Madia glomerata	Tarweed
	Solidago canadensis	Canada goldenrod
	Tragopogon dubius	oyster plant
	Wyethia mollis	mule's ears
Bartramiaceae	*Philonotis fontana*	
Brassicaceae	*Lepidium densiflorum*	peppergrass
	Lepidium latifolium	perennial pepperweed
Caryophylaceae	*Dianthus armeria ssp armeria*	Deptford pink
Chenopodiaceae	*Chenopodium sp.*	pigweed, lamb's quarters
Convulvulaceae	*Convulvus arvensis.*	morning glory
Cyperaceae	*Carex athrostachya*	slenderbeak sedge
	Carex praegracilis	slender sedge
	Carex lanuginosa	wooly sedge
	Carex nebrascensis	Nebraska sedge
	Carex utriculata	beaked sedge
	Eleocharis acicularis	needle spike-rush
	Eleocharis macrostachya	spike-rush
	Scirpus microcarpus	panicled bulrush
Equisetaceae	*Equisetum arvense*	field horsetail
Fabaceae	*Astragalus cicer*	cicer milkvetch
	Lupinus lepidus var. *ramosus*	dwarf lupine
	Lupinus polyphyllus	Tahoe lupine
	Melilotus sp.	sweet-blossom clover
	Trifolium longipes	long-stalked clover
	Trifolium sp.	clover
	Vicia americana	American vetch
Grossulariaceae	*Ribes cereum*	wax current
Hydrophyllaceae	*Phacelia hastata*	phacelia
Hypericaceae	*Hypericum, perforatum*	Klamath weed
Junaceae	*Juncus balticus*	Baltic rush
	Juncus ensifolius	equitant rush
	Juncus nevadensis	Nevada rush
	Luzula spicata	spiked woodrush
Lamiaceae	*Mentha arvensis*	field mint
Liliaceae	*Smilacina stellata*	false Solomon's seal
Malvaceae	*Sidalcea oregana*	bog mallow
Onagraceae	*Epilobium brachycarpum*	wilowherb
	Epilobium ciliatum	fringed willowherb

4.7.1.4 Invasive Species

The California Department of Food and Agriculture defines noxious or invasive species as any "troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture or important native species and they are difficult to control or eradicate" (California Tahoe Conservancy 2004). Also, the California Invasive Plant Council notes noxious or invasive species as any "aggressive pest plant that displaces native plants and natural habitats" (California Tahoe Conservancy 2004).

As noted in the Existing Conditions Report for the Sunset Stables Restoration and Resource Management Plan, there are 29 species of invasive and noxious weeds identified as having potential to occur in the study area (California Tahoe Conservancy 2004). However, due to specific species ranges in elevation, only 11 of them are likely to be present. During plant surveys conducted by Western Botanical Services, Inc., only 2 species of noxious weeds were identified. The locations of these species are listed in Table 4.7-2.

Table 4.7-2
Noxious Weed Locations

Species	*Coordinates*	*Quantities*
Perennial pepperweed	11 S 0240710 UTM 4310116	1 plant
Perennial pepperweed	11 S 0240676 UTM 4310489	20 plants
Perennial pepperweed	11 S 0240671 UTM 4310822	40 plants
Klamath weed	11 S 0240652 UTM 4309777	12 plants

4.7.1.5 Special Status Species

For a species to be considered special status, it must either be: (1) Federally listed as endangered or threatened; (2) considered a candidate species for listing; (3) protected by the state of California as endangered, threatened, or rare; (4) be a state candidate species for listing; or, (5) be a species listed as "rare, threatened, or endangered in California" by the CNPS. Species listed as sensitive by the LTBMU are also be included (California Tahoe Conservancy 2004). The LTBMU has become the authority on TES in the Lake Tahoe basin since they include CDFG, USFWS, TRPA special status species. The LTBMU was contacted in 2006 to obtain a current list of special interest, threatened, endangered, proposed and candidate species that may be present within the project area (Table 4.7-3). The documents reviewed do not indicate observance of special status species within the study area. No special status species were identified during the recent surveys conducted by Western Botanical Services, Inc.

Table 4.7-3
Potential Special Interest, Proposed, Endangered, Threatened, and Sensitive Plant Species for the Proposed Project Area
(Source: Michelle Coppoletta, LTBMU, 2006)

Species	*Common Name*	*Status*	*Known occ. in project*	*Potential Habitat*	*No Habitat*	*Habitat Unsuitable Based on Following:*
Arabis rigidissima var. demota	Galena Creek rock cress	S, SC 1,2	No	No	Yes	Species is found in open, rocky areas along forest edges of conifer and/or aspen stands. Usually found on northerly aspects above 7,500 feet (ft).
Arabis tiehmii	Tiehm's rock cress	S	No	No	Yes	Species is found on high elevation metavolcanic or decomposed granite ridges and steep slopes.
Botrychium ascendens	Upswept moonwort	S, SC 1,2	No	Yes	No	Botrychium species share similar preferences in habitat, i.e. wet or moist soils such as marshes, meadows, and along the edges of lakes and streams. They generally occur with mosses, grasses, sedges, rushes, and other riparian vegetation.
Botrychium crenulatum	Scalloped moonwort	S, SC 1,2	No	Yes	No	See above
Botrychium lineare	Slender moonwort	C, S	No	Yes	No	See above
Botrychium lunaria	Common moonwort	S, SC 1	No	Yes	No	See above
Botrychium minganense	Mingan moonwort	S	No	Yes	No	See above
Botrychium montanum	Western goblin	S	No	Yes	No	See above
Bruchia bolanderi	Bolander's candle moss	S	No	Yes	No	Montane meadows and stream banks are favored habitat. This moss tends to grow on bare, slightly eroding soil where there is little competition from other vegetation.
Dendrocollybia racemosa	Branched collybia	S	No	No	Yes	Grows solitary or in small groups from grain-like sclerotium on the decayed remains of decayed mushrooms or in the duff of mixed hardwood-conifer woods.
Draba asterophora var asterophora	Tahoe draba	S, SI, SC 2	No	No	Yes	Species is found in rock crevices and open granite talus slopes at high elevations between 8,000 to 10,200 ft on north-east facing slopes.
Draba asterophora var macrocarpa	Cup Lake draba	S, SI	No	No	Yes	This species is found on steep, gravelly or rocky slopes at elevations of 8,400 to 9,235 ft.
Epilobium howellii	Subalpine fireweed	S	No	Yes	No	Plants are known from wet meadows and mossy seeps at 6,500 to 9,000 ft in subalpine coniferous forest.
Erigeron miser	Starved daisy	S	No	No	Yes	Plants are known from granitic rock outcrops above 6,000 ft.

Table 4.7-3
Potential Special Interest, Proposed, Endangered, Threatened, and Sensitive Plant Species for the Proposed Project Area
(Source: Michelle Coppoletta, LTBMU, 2006)

Species	*Common Name*	*Status*	*Known occ. in project*	*Potential Habitat*	*No Habitat*	*Habitat Unsuitable Based on Following:*
Eriogonum umbellatum var. torreyanum	Torrey's or Donner Pass buckwheat	S, SC	No	No	Yes	This species grows in dry gravelly or stony sites, often on harsh exposures such as ridge tops or steep slopes.
Helodium blandowii	Blandow's bog moss	S	No	Yes	No	This moss is found is a glacial relic moss species and is found in swamps and wet meadows, also in wet areas dominated by willows .
Hulsea brevifolia	Short-leaved hulsea	S, SC 1	No	No	Yes	This species is found on gravelly soils within montane and mixed conifer forests, often with red fir between elevations of 4,900 and 8900 ft.
Lewisia kelloggii ssp. Hutchisonii	Hutchison's lewisia	S	No	No	Yes	Species prefers sandy granitic to erosive volcanic soils with granitic boulders. It is found on ridge tops or flat open areas in partial to full sun.
Lewisia kelloggii ssp kelloggii	Kellogg's lewisia	S	No	No	Yes	Plants prefer open, gravelly or sandy flats within mixed conifer forest and subalpine forest.
Lewisia longipetala	Long-petaled lewisia	S	No	No	Yes	This species occurs on the northerly exposures on slopes and ridge tops at elevations between 8,000 and 12,500 ft.
Meesia triquetra	Three-ranked hump-moss	S, SC 2	No	No	Yes	This moss prefers bogs and fen habitats, but is also found in very wet meadows.
Meesia uliginosa	Broad-nerved hump-moss	S	No	No	Yes	This moss prefers bogs and fen habitats, but is also found in very wet meadows.
Peltigera hydrothyria	Veined water lichen	S	No	No	Yes	Species is found in cold unpolluted streams in mixed conifer forests.
Rorippa subumbellata	Tahoe yellow cress	S	No	No	Yes	This species grows within the shore zone of Lake Tahoe.
LTBMU Special Interest						
Aribis rectissima var simulans	Washoe Trail rock cress	LSI	No	No	Yes	This species occurs on dry, deep, sandy, granitic or andesitic soils on gentle slopes in PIJE-ABCO forests between 6035 and 7335 feet. Endemic north half Carson Range.
Meesia longiseta	Meesia moss	LSI	No	Yes	No	This species occurs primarily in high elevation fens, but is also found along streams.
Myurella julacea	Myurella moss	LSI	No	No	Yes	This species occurs on soil over rocks or in crevices in alpine boulder and rock field, subalpine coniferous forest/damp rock soil.

Table 4.7-3
Potential Special Interest, Proposed, Endangered, Threatened, and Sensitive Plant Species for the Proposed Project Area (Source: Michelle Coppoletta, LTBMU, 2006)

Species	*Common Name*	*Status*	*Known occ. in project*	*Potential Habitat*	*No Habitat*	*Habitat Unsuitable Based on Following:*
Orthotrichum praemorsum	Orthotrichum moss	LSI	No	No	Yes	This species occurs on rock outcrops up to 2500 m.
Orthotrichum shevockii	Shevrock's moss	LSI	No	No	Yes	Habitat for this species is dry granite rock outcrops.
Orthotrichum spjutii	Spjut's bristle-moss	LSI	No	No	Yes	Habitat for this species is dry north-east facing rock faces.
Pohlia tundrae	Tundrae pohlia moss	LSI	No	No	Yes	Habitat for this species is gravelly damp soils in alpine boulder and rock fields..
Sphagnum spp.	Sphagnum species	LSI	No	No	Yes	These species are found in fens and bogs, normally in acidic conditions. They are occasionally found in very wet non-acidic conditions, or along streams.

[a]Status explanations

- List revised February 2006
- No species in LTBMU are currently listed as "Endangered" by USFWS under ESA.

C = USFWS "Candidate species" for listing as threatened or endangered under ESA
SC = USFWS "Species of Concern" ([1] California SC, [2] Nevada SC)
S = USFS LTBMU Sensitive Species, Regional Forester's Sensitive Species List, Amended 2005
SI = TRPA Special Interest Species, Regional Plan for the LTBMU: Goals and Policies (1986) and Code of Ordinances (1987)

4.7.1.6 Regulatory Framework

Threatened and endangered species are managed under the authority of the Federal Endangered Species Act (PL 93-502, as amended) and the National Forest Management Act (PL 94-588). The Endangered Species Act requires federal agencies to ensure that all federal actions are not likely to jeopardize the continued existence of any threatened and/or endangered species. It also includes species identified or proposed for listing by the USFWS and species designated as sensitive by the Regional Forester as well as those identified by the TRPA in accordance with the standards established in the TRPA Code of Ordinances (Chapter 78.3C) (Western Botanical Services Inc. 2007).

U.S. Forest Service

The LTBMU Land Resource Management Plan provides management guidelines which incorporate Regional direction for each species (Western Botanical Services Inc. 2007).

General Forest Service direction for threatened, endangered and sensitive species is summarized below (Western Botanical Services Inc. 2007).

FSM 2670.31 Threatened And Endangered Species

1. Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.

2. Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the USFWS, and other Federal agencies.

3. Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the USFS to determine their potential for effect on threatened and endangered species and species proposed for listing.

4. Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effect totally through alternatives identified in a biological opinion rendered by the USFWS; when an exemption has been granted under the act, or when the USFWS biological opinion recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their Federal status is being determined.

5. Initiate consultation or conference with the USFWS when the USFS determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when USFS projects are for the specific benefit of a threatened or endangered species

6. Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered,

threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

FSM 2670.32 Sensitive Species

1. Assist States in achieving their goals for conservation of endemic species.

2. As part of the NEPA process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species.

3. Avoid or minimize impacts to species whose viability has been identified as a concern.

4. If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

5. Establish management objectives in cooperation with the States when a project on National Forest System lands may have a significant effect on sensitive species population numbers or distribution. Establish objectives for Federal candidate species, in cooperation with the USFWS and the States.

TRPA

TRPA maintains several standards for biological resource thresholds carrying capacities.

- Increase plant and structural diversity of forest communities through appropriate management practices as measured by diversity indices of species richness, relative abundance, and pattern.

- Provide for the Nondegradation of the natural qualities of any plant community that is uncommon to the Region or of exceptional scientific, ecological, or scenic values. This threshold shall apply but not be limited to (1) the deep water plants of Lake Tahoe, (2) Grass Lake (sphagnum bog), (3) Osgood swamp, (4) the Freel Peak Cushion Plant community, (5) Hell Hole, (6) Upper Truckee Marsh, (7) Taylor Creek Marsh, and (8) Pope Marsh.

- Maintain a minimum number of population sites for the Rorippa subumbellata.

- Maintain 75 miles of excellent, 105 miles of good, and 38 miles of marginal stream habitat as indicated by the map on page 76 of the EIS for the Establishment of Environmental Thresholds (TRPA, 1983).

4.7.2 Significance Criteria and Assumptions

4.7.2.1 NEPA and CEQA

Biological impacts are significant under NEPA and CEQA if the project would:

- Have a substantial adverse effect on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California DFG or USFWS;
- Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California DFG or USFWS;
- Conflict with any local policies or ordinances protecting biological resources; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.7.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of project impacts on vegetation resources. For the purposes of this analysis, a significant impact would result if one or more of the IEC questions are answered "yes". The TRPA IEC was completed for the Recommended Alternative, Alternative 2. The results of the checklist questions are discussed in the analysis. A copy of the TRPA IEC is included in Section 5.

4.7.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The No Action/No Project Alternative would not result in a direct disturbance to vegetation within the project area. In the absence of the project, existing vegetation would continue to grow or decline based on factors such as weather and human disturbance. However, the No Action/No Project Alternative also includes the most likely future conditions in the absence of the project, including other projects in and adjacent to the project area. Of the currently proposed projects, the only project that could potentially directly affect vegetation in the area of one of the proposed alternatives for the South Tahoe Greenway Project. This alternatives proposes to develop a 9.6 mile multi-use trail from Meyers to Stateline that runs immediately east of the project. However, because this project is within the same regulatory setting, this project would also be required to replant disturbed vegetation and mitigate identified impacts on vegetation.

Therefore, the No Action/No Project Alternative would not have any significant impacts on vegetation. However, in the absence of the project there would also be no benefit to vegetation that could result with implementation of the project.

4.7.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

Construction of the project would disturb the riparian, floodplain, and meadow areas temporarily. Riparian areas downstream of the project site would also be affected as well as some upland areas that are already disturbed. The proposed staging areas contain very little vegetation.

As explained in the project description, vegetation must be removed in order to excavate a new channel and fill in the existing channel. Approximately 463 lodge pole pine trees 6 inches dbh or greater would be removed although 60 of these trees have already been topped as part of the airport tree removal project to comply with FAA requirements. Approximately 100 trees will be used for the restoration effort for stabilization measures and to construct inchannel habitat structures. All salvageable vegetation would be stockpiled until it is ready for replanting. Although that habitat in the area is sensitive habitat, none of the species that would be impacted are identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California DFG or USFWS (Western Botanical Services Inc. 2007).

Overall, the project would benefit both the quality and quantity of vegetation in the project area with its inclusion of BMPs and ecologically motivated objectives. Specific measures that would improve vegetation health and overall acreage include:

- bank stabilization with salvaged and newly planted willow trees and additional new plantings accompanied by irrigation and monitoring during construction;
- excavation of the fill and added flow resistance provided by in-channel hydraulic structures increasing the frequency of over bank flows onto the new floodplain;
- creation of small undulations in the new floodplain allowing for the survival of more niche species;
- removal and replanting of west bank rip-rap enhancing streambank riparian vegetation;
- porous rock weirs and engineered large wood jams creating backwater effects that could locally elevate surface water levels and provide the conditions necessary for improved riparian vegetation;
- sediments bars created at engineered large wood jams allowing for colonization by riparian vegetation; and,
- raising groundwater levels enhancing riparian habitat.

These design measures would also raise groundwater levels which in turn would improve riparian and wet meadow vegetation growth and sustainability.

In addition, the project would include removal of existing noxious weeds during construction, which would be a benefit to the establishment of native vegetation and SEZ vegetation in this area.

The project is consistent with local Habitat Planning Documents including the City of South Lake Tahoe General Plan (1999), the El Dorado County General Plan (2004), the TRPA Thresholds Evaluation Report (2001), and the EIP. The project is for the purpose of restoration and is consistent with goals and policies defined by these documents to increase SEZ area, riparian habitat, and wetlands in the Tahoe Basin.

Environmental commitments and mitigation measures are identified in Section 4.7.6 that would reduce construction impacts on vegetation to a less-than-significant level and it is anticipated that no permanent impacts would result. TRPA IEC checklist questions specific to vegetation impacts were all answered either "No" or "No, with mitigation." It is expected that upon completion of the project, vegetation resources in the area would benefit by increasing the amount of wetland area (see Section 4.8 Wetlands) and revegetation with riparian species to provided better wetland function. Therefore, implementation of Alternative 2 with environmental commitments and mitigation measures proposed would have a less than significant impact on vegetation and would benefit vegetation once the project is completed.

4.7.5 Cumulative Impacts

Cumulative impacts take into account past, present, and reasonably foreseeable future projects. Confirmed and proposed projects considered for cumulative impacts (Section 4.1) would not likely lead to adverse cumulative impacts on vegetation within the region. Most of the projects are not close enough to affect study area vegetation. The closest project is one of the two proposed alternatives for the South Tahoe Greenway Project. This alternative would construct a multi-use trail that lies immediately east of the river restoration site. Although the Greenway Project would likely require temporary removal of vegetation during construction, compliance with applicable regulations would require replanting of vegetation and mitigation of significant impacts.

Also, during construction of future upstream river restoration projects, construction activities could cause water quality impacts that may affect vegetation along the Airport Reach. However, it is assumed that these projects would implement water quality BMPs exceeding TRPA and Lahontan standards. Additionally, measures would be implemented to prevent major flooding or reduce flow to a degree that could affect vegetation in the Airport Reach. Therefore, the cumulative projects discussed here, in combination with this project, would not result in cumulative impacts on vegetation.

4.7.6 Environmental Commitments and Mitigation Measures

Environmental commitments and mitigation measures will be implemented to mitigate for construction impacts on vegetation. The following measures address revegetation and water quality as they apply to the health of vegetation.

- During construction, upland and riparian native vegetation would be removed and native riparian vegetation of good quality shall be stockpiled and replanted once the new channel is constructed. Specifications for this work will be included in the plans and specifications.
- The vegetation shall be irrigated and soil amendments added while it is being stockpiled. Soil amendments and irrigation shall also be used to help with plant establishment after replanting. Specifications for this work will be included in the plans and specifications.
- Over-plant new vegetation or provide fence protection of new vegetation to help prevent beaver browsing under the direction of the City's Construction Manager.
- Disturbed areas shall be revegetated or stabilized where needed once construction is complete. Specifications for this work will be included in the plans and specifications.
- The stockpile site shall be regraded to the natural contours and revegetated at the completion of the project. Specifications for this work will be included in the plans and specifications.
- Noxious and invasive weed control shall be identified in the plans and specifications.

4.7.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not have any direct adverse impacts on study area vegetation. However, the vegetation quality in the area, especially along the river banks, could continue to degrade due to the lack of restoration efforts. Alternative 2 would temporarily remove and disturb vegetation, but overall would benefit vegetation in the project area with the proposed hydrologic improvements.

4.8 Wetlands

The US Army Corps of Engineers (USACOE) enforces Section 404 of the CWA, which regulates activities in all waters of the U.S. and adjacent wetlands. Such waters and wetlands, known as "Jurisdictional Waters of the U.S.", include but are not limited to rivers, lakes, streams, wetlands, harbors, bays, stock ponds, and irrigation ditches.

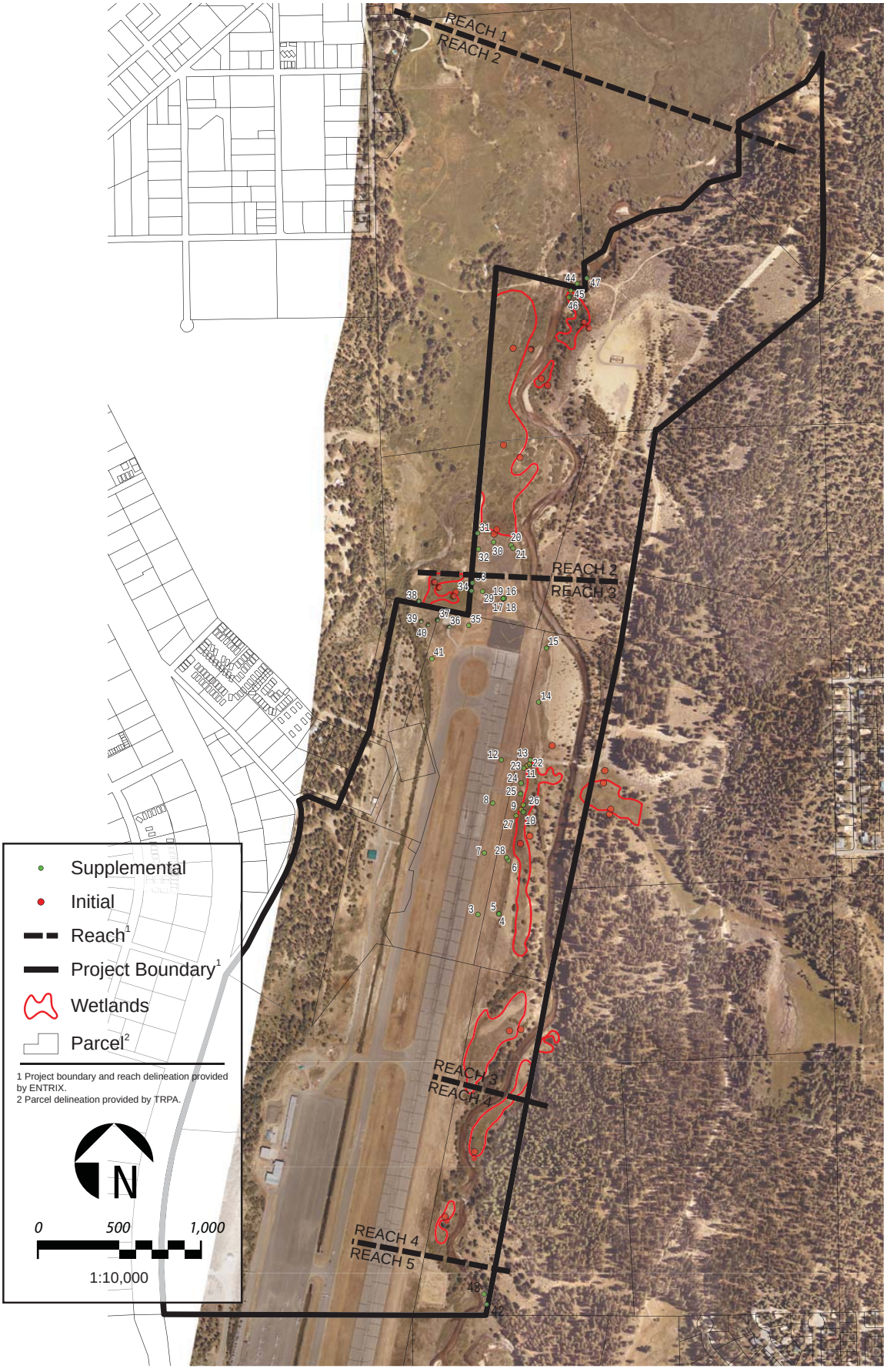
The portion of Waters of the U.S. considered as jurisdictional by the USACOE usually consists of those areas contained below the ordinary high water mark (OHWM). The ordinary high water mark is defined as the line where the incised portion of the bank meets the terrestrial vegetation. Wetlands are defined as areas inundated or saturated by surface water or ground water long enough to support vegetation typically adapted for life under saturated soil conditions. In order to qualify as a wetland, three wetland criteria must be met: presence of hydric soils, wetland hydrology, and at least 50% of the dominant plant species designated as obligated, facultative wet, or facultative.

A wetlands delineation using the three criteria listed above was conducted in 2004 to determine onsite wetlands that may be affected by implementing planned ecological improvements. Since the 2004 delineation was completed, project boundaries changed necessitating a supplemental delineation, conducted on June 23 and 24, 2005. (CDM 2006) The *Upper Truckee River Restoration Project Wetlands Delineation Report* (May 2006) prepared by CDM documents the 2004 and 2005 delineations and includes an analysis of findings for Airport Reach within our project area. A copy of this report is kept as part of the project record at the City and portions are included within this section. Approximately 14.6 acres of wetlands were identified within the project area during these two delineations (Figure 4.8-1). Additionally, there are wetlands and waters of the U.S., including the Truckee Marsh and Lake Tahoe downstream of the project area that may be affected indirectly by the project and should be considered as part of this analysis. Section 4.8.1 discusses the condition of these wetland habitats based on the three wetland criteria: hydrology, vegetation, and soils. Section 4.8.2 presents the impact analysis for the recommended alternative.

4.8.1 Existing Conditions

4.8.1.1 Hydrology

Prior to the Comstock Era in the late 1800's, the UTR within the project area was likely a freely meandering river flowing through a broad floodplain meadow. During annual peak snowmelt in the late spring and also during less frequent rain-on-snow events, high flows would overtop the River's banks and flood portions of adjacent meadows; and in the process recharge groundwater levels, deposit fine sediment onto the floodplain, and rejuvenate vegetation with nutrients. Since the beginning of the Comstock Era a culmination of watershed and site scale land use activities (logging, mining, urbanization, and grazing) and direct channel disturbances (channel relocation and channelization) have led to degradation of the UTR channel and floodplain by disrupting the hydrologic and sediment load that maintains dynamic channel stability.



W:\REPORTS\Upper Truckee River\Graphics\Wetlands Map frm May 06 Wetlands Delin Fig 4.8-1.ai 11/9/07 TC

Figure 4.8-1
Wetlands Map from May 2006 Wetlands Delineation

CDM

The site lies within the 100-year floodplain of the UTR, the main influence on wetland hydrology in the project area. Many of the project area wetlands contain small topographic depressions throughout a relatively level meadow. These depressions, a hydrologic feature of the various wetlands within the study area, facilitate the retention and storage of surface water. In many cases these depressions are connected through topographic swales. The amount of topographic variation in the study area differs in each meadow. The quantity of water retained varies seasonally, depending on the amount of moisture received. This characteristic of the project area has allowed for vegetation and soils associated with wetlands to exist in even relatively low water years. However, wetlands in the project area have been degraded by surrounding agricultural practices and construction and maintenance of the Airport. The quantity, consistency, and frequency of surface flooding, a high water table and the input of runoff have impaired the ability that delineated wetlands will function as they have historically. Overall, wetland hydrology has been altered to the point that the wetlands no longer store or retain water at a level allowing for the maintenance and expansion of their boundaries.

According to the USACOE Manual, the requirement for wetland hydrology is met if the soil is inundated or saturated to the surface continuously for at least 5% of the growing season in most years (USACOE 1987). Field data was collected during the growing season, and a number of the observation points from the 2004 delineation had either saturated soil, standing surface water, or water in the top 18" of the soil profile. No observation points from the 2005 delineation showed evidence of wetland hydrology.

4.8.1.2 Vegetation

Vegetation along the UTR corridor has been documented in several prior studies including the recent ECAM (2005) for the Airport Reach Restoration Project. This report noted the presence of three predominant habitats in the project area: (1) meadow; (2) riparian; and (3) mixed conifer forest. Both meadow and riparian vegetation will be discussed below as part of the overall wetlands discussion.

Perennial grasses including several rushes and sedges dominate the meadow cover. Baltic Rush (*Juncus balticus*) is the dominant herbaceous species. Perennial forbs are intermixed, co-dominate within the meadows, and include yarrow (*Achillea millefolium*), arnica (*Arnica chamissonis*), dandelion (*Taraxacum officinale*), long-stemmed clover (*Trifolium longipes*), and Mountain mules ear (*Wyethia mollis*). These species are also found in riparian habitats along with several species of willow (Lemmon willow [*Salix lemmonii*] and Geyer's Willow [*Salix geyeriana*]). Conifer species include Jeffery Pine (*Pinus jefferyi*) and Lodgepole Pine (*Pinus contorta*). In general, the site has a minimal amount of regeneration with regard to woody species. It should also be noted that there is not a definite separation between riparian and wetland habitat; many species occur in both habitat types. In several cases, the delineated wetland is within riparian habitat. Even in these riparian wetlands, it is unclear whether or not plant communities are currently dependent on ground water or surface water. Table 4.8-1 lists vegetation species observed in the project area.

Table 4.8-1
List of Vegetation Species Encountered within the Airport Reach

Scientific Name	Common Name	Scientific Name	Common Name
Achillea millefolium	Yarrow	*Lupinus polyphyllus*	Tahoe Lupine
Arnica chamissonis	Arnica	*Luzula spicata*	Spike Woodrush
Artemisia ludoviciana	Silver Wormwood	*Madia glomerata*	Tarweed
Artemisia tridentata	Vassey Sagebrush	*Melilotus alba*	White Blossom Sweetclover
Aster occidentalis	Aster	*Mentha arvensis*	Mint
Calyptridium umbellatum	Pussypaws	*Mimulus guttatus*	Monkeyflower
Camassia quamash	Blue Camas	*Muhlenbergia richardsonis*	Mat Muhly
Carex athrostachya	Slender-Beak Sedge	*Penstemon rydbergii*	Penstemon
Carex nebrascensis	Nebraska Sedge	*Phalaris arundinacea*	Reed Canarygrass
Carex praegracilis	Clustered Field Sedge	*Phleum alpinum*	Alpine Timothy
Carex utriculata	Beaked Sedge	*Phleum pretense*	Timothy
Castillgea miniata	Red Paintbrush	*Pinus contorta ssp. Murrayana*	Lodgepole Pine
Ceanothus prostratus	Mahala Mat	*Pinus jeffreyi*	Jeffrey Pine
Cirsium arvense	Canada Thistle	*Plantago major*	Common Plantain
Collinsia parviflora	Blue Eyed Mary	*Poa pratensis*	Kentucky Bluegrass
Collinsia torreyi	Collinsia	*Polemonium occidentale*	Jacobs Ladder
Deschampsia	Hairgrass	*Polygonum arenastrum*	Common Knotweed
Digitaria radicosa	Crabgrass	*Potentilla gracilis*	Cinquefoil
Downingia montana	Calicoflower	*Pseudotusuga menziesii*	Douglas Fir
Eleocharis macrostachya	Spikerush	*Purshia tridentate*	Bitterbrush
Epilobium angustifolium	Fireweed	*Ribes cereum*	Wax Currant
Epilobium ciliatum	Slender Willow-Herb	*Rorippa curvisiliqua*	Cress
Epilobium glaberrimum	Willow Herb	*Rosa woodsii*	Woods Rose
Eriogonium ovalifolium	Oval-leaf Buckwheat	*Rumex acetosell*	Sheep Sorrel
Erodium cicutarium	Filaree	*Rumex crispus*	Curly Dock
Fragaria virginiana	Wild Strawberry	*Salix exigua*	Coyote Willow
Gentiana calycosa	Mountain Gentiana	*Salix geyeriana*	Geyer's Willow
Geum macrophyllum	Big-leaved Avens	*Salix lemmonii*	Lemmon Willow
Geum macrophyllum	Big-leaved Geum	*Scirpus microcarpus*	Small Fruit Bulrush
Gilia capitata	Globe Gilia	*Sidalcea oregano*	Checker Mallow
Gilia leptalea	Blue Gilia	*Sisymbrium altissimum*	Tumble Mustard
Glyceria elata	Mannagrass	*Sisyrinchium idahoense*	Blue-Eyed Grass
Gnaphalium palustre	Cudweed	*Smilacina stellata*	False Solomon's Seal
Heracieum lanatum	Cow Parsnip	*Solidago Canadensis*	Canada Goldenrod
Hoary cress	Whitetop	*Symphoricarpos rotundifolius*	Snowberry
Hordeum brachyantherum	Squirrel-Tail Barley	*Taraxacum officinale*	Dandelion
Ipomopsis aggregata	Scarlet Gilia	*Thalictrum fendleri*	Meadow Rue
Juncus balticus	Baltic Rush	*Trifolium longipes*	Long-Stemmed Clover
Lepidium densiflorum	Peppergrass	*Trifolium pretense*	Red Clover
Limosella aequalis	Mugwort	*Trifolium repens*	White Dutch Clover
Linum lewisii	Blue Flax	*Verbascum thapsus*	Mullein
Lotus corniculatus	Birdsfoot Trefoil	*Wyethia mollis*	Mules Ear
Lupinus lepidus	Dwarf Lupine		

Plant species identified throughout the study have: (1) migrated from adjacent sites; (2) been introduced through the presence and use of cattle grazing; and (3) existed prior to any on-site or surrounding disturbance. Degraded hydrology significantly

influences both the type and amount of vegetation present in the project area. Plant communities appear to be in transition with the influence of species of vegetation adapted to upland sites, dry climates, and disturbance.

No special status species were observed.

4.8.1.3 Soils

The U.S. Department of Agriculture/Soil Conservation Service (USDA/SCS) soils survey identifies three soil types in the project area which are defined and characterized as follows:

- Loamy alluvial land (Lo) makes up approximately 60% of the City owned property in the project area. Alluvial soils types are characterized by the presence of surface or subsurface water and are usually adjacent to stream channels and in meadows. The soil profile of Loamy alluvial land starts with a surface layer of "dark grayish-brown to dark-brown, slightly acid to medium acid sandy loam to silty loam" (USDA/SCS 1974). Below the surface layer is a "stratified, mottled sandy loam to silty clay loam" (USDA/SCS 1974). "The substratum, at a depth of more than 48 inches is gravel, lake sediment, or loamy alluvium" (USDA/SCS 1974).

- Jabu sandy loam (JgC) originates from the toe slope of old lateral moraine deposits and can be found on either side of the airport property. This soil type is only a small portion of the project area. The first six to ten inches of the JgC soil profile ranges between a "brown to grayish brown and from coarse sandy loam to fine sandy loam" (USDA/SCS 1974). The subsoil ranges from "pale brown to white" and the substratum or lake sediment is of "clay loam to clay texture" (USDA/SCS 1974).

- Pits and dumps soils (Px) are located at the very northeastern portion of the project area. Px consists of sand and gravel pits, refuse dumps, and rock quarries.

Table 4.8-2 presents the important characteristics of the soils found in the project area and Figure 4.10-1 illustrates the locations of each soil type.

Table 4.8-2
Soil Characteristics

Map Symbol	*Soil Name*	*Approximate Percentage of Area*	*Runoff Speed*	*Permeability*	*Hydrologic Group*	*Erosion Hazard*
Lo	Alluvial loamy land	60%	slow	moderately	D	Slight
JgC	Jabu sandy loam, moderately fine subsoil variant, 0 to 9 percent slopes	10%	slow	unknown	C	Slight
Px	Pits and dumps	30%	varies	Varies	D	Variable

Approximately 17 acres of the soils delineated as Lo in the USDA/SCS soil survey consist of fill placed during construction of the Airport runway. This area is approximately bounded by the river channel to the east and the Airport property fence line to the west. This soil was not listed on the hydric soils list (USDA 1974). However, as NRCS wetland scientist Karen Fullen noted in her previous work, this seems to be an error (TRCD 2003). For a soil to be included on the list it must have a water table within 12 inches. It is apparent that this soil did form under such conditions, prior to the UTR channel being moved to the edge of the floodplain. The historic relocation of the river altered the natural hydrology and consequently lowered the water table. Thus, the loamy alluvial soil classification should probably have been included on the local hydric soils list. In addition, the redoximorphic features and saturated soil at various observation points, during the collection of field data, indicated that in some locations the water table had somewhat recently been within 12 inches of the surface.

4.8.1.4 Regulatory Framework

Section 404 of the Federal CWA requires authorization from the Secretary of the Army, acting through the USACOE, for the discharge of dredge or fill material into all waters of the United States. A USACOE permit is required whether the work is permanent or temporary. Before issuing a permit for the discharge of dredge or fill material, the USACOE requires a delineation of Waters of the U.S. Waters of the U.S. are defined as (33 CFR Part 328):

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands;

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or,

    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or,

    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under the definition;

5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this sections;

6. The territorial seas;

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section. Waste treatment systems, including treatments ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

8. Water of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

The UTR flows northward into Lake Tahoe. Lake Tahoe is divided by the state boundary of California and Nevada and is classified as a Water of the U.S. as identified in paragraph (2) above. The UTR would also be classified as a Water of the U.S. as identified in paragraph (5) above. Additionally, any wetlands adjacent to the UTR would be classified as Water of the U.S. as identified in paragraph (7) above. The project proponent would apply for a Tahoe Basin General Permit 16 for projects located in the Lake Tahoe Basin.

In California any work that involves the discharge of dredged or fill material would also require 401 Water Quality Certification from the State Water Resources Control Board (SWRCB) or a waiver in accordance with Section 401 of the CWA. The project proponent would apply to the agency for this permit. The USACOE would require 401 Water Quality Certification prior to giving final approval of the 404 permit.

The Lahontan RWQCB would also regulate waste discharge requirements for construction activities in the Lake Tahoe Basin under a NPDES General Permit. The project proponent would apply for this permit which would include a plan to implement BMPs to reduce stormwater pollution to a less than significant level.

4.8.2 Significance Criteria and Assumptions

4.8.2.1 NEPA and CEQA

Impacts to wetlands are significant under NEPA and CEQA if the project would:

- Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the CWA.

4.8.2.2 TRPA

TRPA maintains several standards for biological resource thresholds carrying capacities. For the purposes of this analysis, a significant impact would result if the project would fail to meet one or more of the following applicable standards.

- Maintain 75 miles of excellent, 105 miles of good, and 38 miles of marginal stream habitat as indicated by the map on page 76 of the EIS for the Establishment of Environmental Thresholds.

- A non-degradation standard shall apply to significant wildlife habitat consisting of deciduous trees, wetlands, and meadows while providing for opportunities to increase the acreage of such riparian associations.

4.8.2.3 Assumptions

The project proponent would submit a 404 Permit application to the USACOE and 401 Water Quality Certification application to the California SWRCB. Construction would begin upon approval from the USACOE, SWRCB, and other permitting agencies.

The project is listed as an EIP project. It is assumed that TRPA and other EIP cooperating agencies included this project on the EIP list because it would be beneficial to the surrounding wetland area.

4.8.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The May 2006 Wetlands Delineation report referenced in this section provides a delineation of wetlands in the project area. The No Action/No Project Alternative would not result in a direct disturbance to wetlands within the project area. However, the No Action/No Project Alternative also includes the most likely future conditions in the absence of the project, including other UTR Restoration projects proposed upstream of the project area. Recommended alternatives and project descriptions have not been developed for these projects. Given that these actions are restoration projects it is unlikely that they would have a significant impact on existing wetlands downstream of their project reaches. Each project would be required to consider its indirect effects with regards to downstream wetlands. It is likely, that if an indirect effect on downstream wetlands would occur, mitigation measures would be identified and implemented to reduce impacts to a less-than-significant level. Therefore, effects on wetlands from the No Action/No Project Alternative would be less than significant.

4.8.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

The effect of various disturbances, overall fragmentation, and the absence of hydrologic continuity between the UTR and the floodplain has degraded existing wetlands significantly. This is particularly apparent in the area east of the airport and west of the UTR. In addition, several locations have historically had previous fill and removal activities (construction of the sewer line and the airport). Notwithstanding these factors the hydrology to the site is still readily identifiable and available such that delineated wetlands are present. Although the majority of the wetland habitat is

degraded, 14.6 acres of wetlands were delineated out of the entire City property within the project area (Figure 4.8-1).

The UTR Restoration Project proposes to place fill or excavate the majority of the wetlands within the project area. A wetland fill and removal permit would be required to alter, dredge, or fill any of these wetlands. Approximately 52,000 cubic yards of fill would be removed in the area east of the Airport fence to the UTR and to construct the new channel. Approximately, 35,000 cubic yards of this material would be placed into the existing channel once the new channel is ready for use. Riparian vegetation would also be removed in the excavation area and plant material of good quality would be stockpiled to be replanted in the new floodplain. As a result of this grading and construction of a channel with a more natural sinuosity, the amount of floodplain would increase.

The new floodplain area would be revegetated with salvaged riparian plant material and new riparian vegetation as needed. The elevation of the fill placed in the existing channel would be at the same elevation as the new floodplain. The existing delineated wetland area is comprised of approximately 14.6 acres within the project boundary. Upon completion of the project, the wetland area is expected to increase to approximately 27 acres over time as flooding occurs more frequently and riparian vegetation is established. Approximately 4.3 acres of existing wetlands would be disturbed and approximately 5.2 acres of existing river channel would be filled. Approximately 17 acres of fill area would be disturbed for construction of the new channel and floodplain. This area includes the 4.3 acres of existing wetlands that would be disturbed. Upon completion of the project, the 17-acre area would be planted with riparian vegetation and flood more frequently. With the removal of the fill, the groundwater level will be higher in the area thus creating the potential for this area to meet the USACOE criteria for wetlands in the future.

In order to qualify as a jurisdictional wetland, the hydrology, vegetation, and soils of an area must meet the criteria outlined in the USACOE Manual. These criteria includes: (1) being seasonally or permanently inundated by surface or groundwater, (2) having vegetation adapted for hydric conditions that qualified for life in anaerobic soils, and (3) having soils characterized by field indicators of development under reducing (anaerobic) conditions and/or be listed on the national or local hydric soils list (USACOE 1987).

Excavation of the Airport fill would transform a terrace surface that floods approximately once in every 3 to 5 years to a floodplain surface that floods more frequently occurring approximately once every 1.5 years. Overbanking onto the floodplain would slightly increase downstream of the excavation area due to the increased hydraulic roughness and resultant rise in the water surface elevation created by the constructed in-channel structures.

The hydrologic connection between the channel and newly created floodplain where the Airport fill is removed would be improved and may indirectly improve riparian

vegetation. Excavation of the fill and added flow resistance provided by placement of in-channel hydraulic structures would increase the frequency of overbank flows onto the new floodplain. Small depressions would be constructed in the meadow to create seasonal wetland habitat. Additionally, the floodplain would be graded with small undulations to provide the topographic gradation necessary for establishment and survival of niche species. These restoration activities would raise groundwater levels, which in turn would improve riparian and wet meadow vegetation growth and sustainability. Streambank riparian vegetation may be enhanced by removal of the west bank rip-rap and replanting. Furthermore, porous rock weirs and engineered large wood jams would create backwater effects that could locally elevate water levels and provide the conditions necessary for improved riparian vegetation. The sediment bars created at engineered large wood jams would potentially be colonized by riparian vegetation.

The excavated soil that would be placed into the existing channel is the same soil type that was identified as the soil type of the delineated wetland soil. The riparian vegetation used for revegetation of the new floodplain and river channel would be many of the same species identified as wetland species.

The improvements proposed as part of the project description would likely increase the amount of area that would eventually meet the criteria for jurisdictional wetlands as defined by the USACOE. The improvements would also help to maintain the hydrologic conditions necessary to maintain the wetlands in the future. Therefore, the project would result in a benefit to wetlands in the project area by potentially increasing the amount of wetland area by 54 percent and allow the area to sustain itself as a functioning wetland.

The project would impact existing wetlands between the Airport fence and the river during construction. The project would not impact the other wetland areas identified on Figure 4.8-1. As explained in Section 4.8.1.4, a USACOE permit would be required for the placement of dredge or fill material into waters of the U.S. which includes wetlands and all surface waters. The USACOE may authorize this work for the purpose of restoration of stream channels and wetlands with minimal individual and cumulative impacts to the water of the United States. BMPs described in section 3.3.5 would help to reduce impacts on water quality to a less-than-significant level.

The California SWRCB is responsible for issuing or denying CWA Section 401 Water Quality Certification for USACOE Nationwide Permits. The USACOE would need this 401 Water Quality Certification prior to issuing a 404 permit for the project. The California SWRCB may grant 401 Water Quality Certification if the project would comply with water quality standards.

Overall Alternative 2 would have a beneficial effect on wetlands.

4.8.5 Cumulative Impacts

As explained in Section 4.8.4, the project would have a beneficial effect on wetlands by ultimately improving the quality and function of some existing wetlands, as well as creating new wetlands. Therefore, this project would not have a cumulative negative effect to wetlands.

4.8.6 Environmental Commitments and Mitigation Measures

The environmental commitments and mitigation measures listed in Sections 4.10, Geology and Soils and 4.12, Hydrology and Water Quality along with the measure listed below will help to avoid or reduce potential impacts during construction.

- Place construction fencing around wetland areas identified on the Wetlands Delineation Map (Figure 4.8-1) that are located outside of proposed disturbance to avoid direct impacts during construction.

4.8.7 Comparative Analysis of Alternatives

The No Action/No Project Alternative would not have either a direct impact or a beneficial effect on wetland habitat. However, Alternative 2 would have a beneficial effect on wetlands; therefore, if the goal of the project is to improve riparian habitat, then Alternative 2 does more to meet this goal than the No Action/No Project Alternative.

4.9 Cultural Resources

This section describes the cultural resources that have been identified in the project area and the historical significance of those resources. An analysis of potential impacts resulting from the No Action/No Project Alternative and Alternative 2, the Recommended Alternative, is discussed in this section.

The area of influence (Area of Potential Effect) is the portion of Airport Reach proposed to be disturbed. The UTR Airport Reach project area of influence is located in Lake Valley, South Lake Tahoe, El Dorado County, California, between State Route 50 and Pioneer Trail, about one mile south and east of the Tahoe Y (Figure 3-2). The project is located predominantly in Section 9, as well as in the SE ¼ of Section 4, and the north portion of Section 16, T12N, R18E, MDBM, as depicted on the South Lake Tahoe Quadrangle, at about 6240 foot elevation (Figure 4.9-1; USGS 1992). The UTR Middle Reach consists of the area east of the Lake Tahoe Airport and meanders northerly to near State Route 50 on the lake shore (Figure 3-1). These areas span the river, adjoining floodplain areas and upland areas within the project boundary. Reaches 3 and 4 span the east side of the Lake Tahoe Airport. Reach 2 is located north of Reaches 3 and 4 and runs along the east side of Mosher meadow a cattle grazing area. (Marvin and Thorpe 2007)

4.9.1 Existing Conditions

Prior cultural resource studies may be found within the following documents and have been incorporated into this document by reference. The latest report is included in Appendix G of this document.

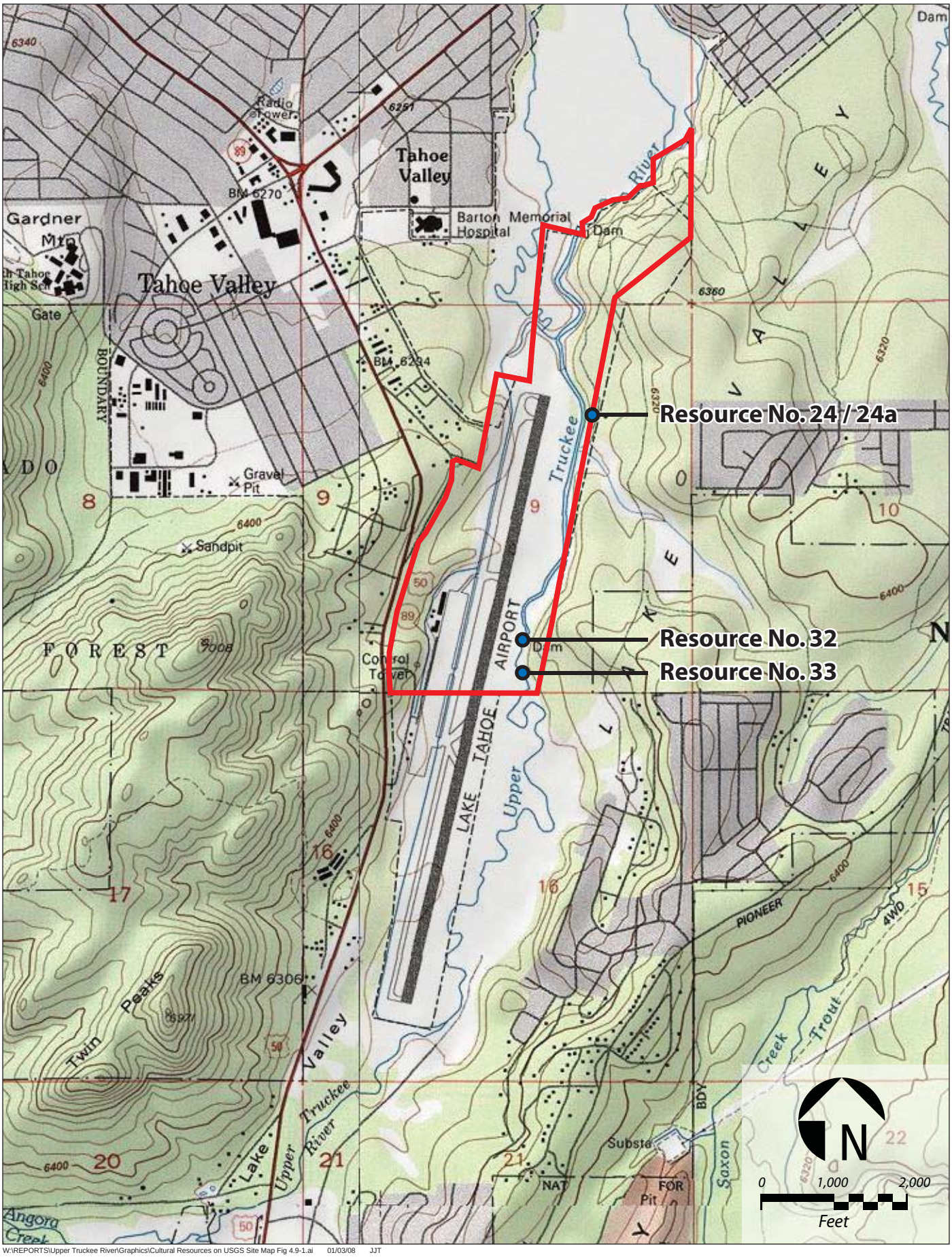
- *Final Report Upper Truckee River Reclamation Project Environmental Assessment, Feasibility Report and Conceptual Plans*, Tahoe Resource Conservation District, January 2003.

- *Upper Truckee River Restoration Project Existing Conditions Report*, CDM, January 2005.

- *Upper Truckee River Middle Reach Preliminary Restoration Alternative South Lake Tahoe, El Dorado County, California Report of Historical Significance of Cultural Resources*, Judith Marvin and Linda Thorpe, Foothill Associates, October, 2007.

Archaeologist, Susan Lindstrőm and ethnographer, Penny Rucks conducted an archaeological field survey of the project area in August of 2005, resulting in the identification of Native American resources, water management resources, transportation resources, habitation resources, fence line resources, miscellaneous isolated historic features, and miscellaneous isolated historic artifacts (Lindstrőm 2005).

In August of 2006, historian, Judith Marvin was contracted by Susan Lindstrőm, Consulting Archaeologist, to conduct one or more of the following tasks to evaluate the historic resources: formal field recordation, archival and oral history research, complete an architectural evaluation, photo documentation and measured drawings,



W:\REPORTS\Upper Truckee River\Graphics\Cultural Resources on USGS Site Map Fig 4.9-1.ai 01/03/08 JJT

Figure 4.9-1
Cultural Resources on USGS Site Map

CDM

and prepare a final report of findings on two historic-period dams, two 19th and 20th century refuse deposits, as well as stream fords and fence posts that were later determined to be less than 50 years of age (Lindstrőm 2005). The sites were visited by Judith Marvin and archaeologist, Linda Thorpe on September 3, 2006, and the historic-period sites were recorded in the field. The formal recordation was not completed, however, as the project was halted on September 27, 2006. (Marvin and Thorpe 2007) The project was reactivated in August of 2007 and this final report and State Record Forms (Department of Parks and Recreation 523) completed.

4.9.1.1 Methodology

Archival and oral-history research for the project overview and specific site history was conducted by Judith Marvin. Research for this evaluation was conducted in the files of Susan Lindstrőm, in previously published materials relating to the area, and with informants with information about the project area.

4.9.1.2 Initial Findings

A total of 40 heritage resources have been previously inventoried within the project area along the Upper Truckee River in Reaches 2, 3 and 4. Table 4.9-1 provides a list of the resources found at the UTR. Heritage themes encompass: Native American resources (5); water management resources (7); transportation resources (9); habitation resources (6); fence line resources (6); miscellaneous isolated historic features (2); and miscellaneous isolated historic artifacts (2).

A map depicting the location of the heritage resources identified during the Lindstrom/Rucks survey in August of 2005 within the project area was prepared and is in the archival record for preparation of this joint NEPA/CEQA/TRPA document.

Table 4.9-1
List of Upper Truckee River Site Archaeological Studies, Previously Recorded Heritage Resources, Locations, And Potential Impact Under Alternative 3 Requiring The Maximum Amount of Disturbance

Report Reference	*Resource No.(1)*	*Resource Description*	*Resource Location*	*Potential Impact(2)*
Native American Resources				
Lindström and Rucks 2002	15	obsidian waste flake/quartz chunk	Reach 2	None
"	23	chert waste flake	Reach 2	None
"	25	basalt waste flake	Reach 2	None
"	29	obsidian waste flake	Reach 3	None
Lindström 2005	F	milling stone fragment (problematical)	Reach 2	None
Water Management Resources				
Lindström and Rucks 2002	16(17)	bridge and dam (dirt road)	Reach 2	None
"	18	dam and diversion wall	Reach 2	None
Lindström 2005	18a	charred post at end of diversion wall	Reach 2	None
"	18b	wood "curb" (?) on diversion wall alignment	Reach 2	None
"	L	2 large culverts/drainage crossing (modern)	Reach 2	None
Lindström and Rucks 2002	32	dam	Reach 4	Remove
"	33	dam	Reach 4	None

Table 4.9-1
List of Upper Truckee River Site Archaeological Studies, Previously Recorded Heritage Resources, Locations, And Potential Impact Under Alternative 3 Requiring The Maximum Amount of Disturbance

Report Reference	*Resource No.(1)*	*Resource Description*	*Resource Location*	*Potential Impact(2)*
Transportation Resources				
Lindström and Rucks 2002	17(16)	dirt road (bridge and dam)	Reach 2	None
"	19	stream ford (and/or dam?)	Reach 2	None
"	22	dirt road	Reach 2	None
"	26	stream ford (and/or dam?)	Reach 3	Bury
"	27(28)	stream ford (and dirt road)	Reach 3	Bury
"	28(27)	dirt road (and stream ford)	Reach 3	None
"	30	stream ford (?)	Reach 3	Bury
"	31	stream ford (?)	Reach 3	None
Lindström 2005	D	dirt road	Reach 2	None
Habitation Resources				
Lindström and Rucks 2002	20	19th c. refuse deposit (recently obliterated)	Reach 2	None
Lindström 2005	B	unidentifiable metal fragment	Reach 2	None
"	C	unidentifiable metal fragment	Reach 2	None
"	E	refuse deposit	Reach 2	None
Lindström and Rucks 2002	24	glass and ceramic fragments	Reach 3	None
Lindström 2005	24a	19th-20th c. refuse deposit	Reach 3	None
Fence Line Resources				
Lindström and Rucks 2002	40	fence post (fence line)	Reach 4/5 boundary	None
"	41	fence post (fence line)	Reach 4/5 boundary	None
"	43	fence post (fence line)	Reach 3	Remove
"	44	fence post (fence line)	Reach 2	None
Lindström 2005	44a	fence line (wood/metal posts, cattle guard)	Reach 2	None
"	G	fence line	Reach 2	None
Miscellaneous Isolated Historic Features				
Lindström and Rucks 2002	21	footbridge with utility conduit (modern)	Reach 2	None
Lindström 2005	K	concrete footing	Reach 3	Remove
Miscellaneous Isolated Historic Artifacts				
Lindström and Rucks 2002	42	historic bottle fragment	Reach 4	Remove
Lindström 2005	A	wire rope fragment	Reach 2	None

(1) numbered heritage resources are keyed to heritage resource location map
(2) potential impact –None = No impact; Remove = Resource would be removed; Bury = Resource will be buried.

A complete listing of all 40 artifacts found on the site is listed within the *Upper Truckee River Restoration Project Existing Conditions Report,* CDM, January 2005.

4.9.1.3 Regulatory Framework

NEPA Federal Standards: National Register Criteria

According to National Register criteria, the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded, or may be likely to yield, information important in prehistory or history.

CEQA State Standards: California Register Criteria

CEQA criteria of significance (Section 15064.5) are one means of determining whether a site is a historical resource. The criteria are modeled upon guidelines established by the National Register of Historic Places (NRHP). For the purposes of CEQA, a significant heritage resource is one which:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

In general, CEQA provides protection to "historical resources" and to "archaeological resources" that are "important" and/or "unique." An "important archaeological resource" must meet one or more of the above CEQA criteria. A "unique archaeological resource" must qualify under one of the first three CEQA criteria [Public Resources Code Section 21083.2(g)]. Public Resources Code Section 21084.1, which is part of CEQA, provides additional guidelines for the designation and additional protection of heritage resources classified as "historical resources." Resources that must be treated as "historical" are:

- Those resources listed in, or determined to be eligible for listing in, the California Register of Historical Resources;
- Those resources presumed to be historical in the absence of a preponderance of evidence indicating otherwise and that may be included in a local register of historical resources, as defined in Public Resources Code section 5020.1(k);

- Those resources deemed significant pursuant to criteria set forth in Public Resources Code Section 5024.1(g); and/or

- Those heritage resources that an agency, going beyond the minimum call of statutory duty, has freely chosen to consider "historical."

TRPA

In compliance with federal and state significance criteria, the Tahoe Regional Planning Agency (TRPA) has also adopted guidelines to determine the significance of cultural properties within the Lake Tahoe Basin as follows.

- 29.5A Resources Associated with Historically Significant Events and Sites: Resources shall exemplify the broad cultural, political, economic, social, civic, or military history of the region, the state, or the nation, or be associated with events that have made a significant contribution to the broad patterns of history, including regional history. Such resources shall meet one or more of the following criteria:

  - Associated with an important community function in the past;
  - Associated with a memorable happening in the past; or
  - Contain outstanding qualities reminiscent of an early stage of development in the region.

- 29.5B Resources Associated with Significant Persons: Resources that are associated with the lives of persons significant in history, including regional history, include:

  - Buildings or structures associated with a locally, regionally, or nationally known person;
  - Notable examples, or best surviving works, of a pioneer architect, designer, or master builder; or
  - Structures associated with the life or work of significant persons.

- 29.5C Resources Embodying Distinctive Characteristics: Resources that embody the distinctive characteristics of a type, period, or method of construction, that possess high artistic values, or that represent a significant and distinguishable entity but whose components may lack individual distinction, are eligible. Works of a master builder, designer, or architect also are eligible. Resources may be classified as significant if they are a prototype of, or a representative example of, a period style, architectural movement, or method of construction unique in the region, the states, or the nation.

- 29.5D State or Federal Guidelines: Archaeological or paleontological resources protected, or eligible for protection, under state or federal guidelines, are eligible.

- 29.5E Prehistoric Sites: Sites where prehistoric archaeological or paleontological resources, which may contribute to the basic understanding of early cultural or biological development in the region are eligible.

Significant heritage resources are also acknowledged on a number of local registers. Eligibility criteria for the heritage registers generally incorporate the basic tenets of criteria established in the National Register and the California Register. However, these criteria have been modified in order to include a broader range of resources that better reflect the history of California at the local level. For example, the State Historic Landmark Program and the Point of Historic Interest Program also recognize buildings, sites, and objects of local or statewide importance.

4.9.2 Significance Criteria and Assumptions

4.9.2.1 NEPA and CEQA

The effect to cultural resources would be significant if the project would have any of the following effects.

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Section 15064.5.
- Cause a substantial adverse change in significance of an archaeological resource pursuant to CEQA Section 15064.5.
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- Disturb any human remains, including those interred outside of formal cemeteries.

4.9.2.2 TRPA

TRPA maintains several environmental criteria for establishing the significance of impacts of a project for cultural resources. For the purposes of this analysis, a significant impact would result if the project would result in one or more of the IEC questions answered Yes. The TRPA IEC was completed for the Recommended Alternative, Alternative 2. The results of the checklist questions are discussed in the analysis. A copy of the TRPA IEC is included in Section 5.

4.9.2.3 Assumptions

- Identified heritage resources found in the project area would not be impacted by the project unless the area was to be graded.
- All heritage resources that would be unaffected by grading or other site disturbances were eliminated from further study.

4.9.3 Environmental Consequences/Environmental Impacts of the No Action/No Project Alternative

The No Action/No Project Alternative would result in no physical changes or land use changes to the project area. Therefore, there would be no direct impacts to identified heritage resources in the area from the No Action/No Project Alternative. However, future projects could be constructed in or near the project area, but these

projects are located outside of the project area and therefore would not disturb any of the heritage resources identified in the project area. Therefore, the No Action/No Project Alternative would have a less than significant effect to heritage resources.

4.9.4 Environmental Consequences/Environmental Impacts of Alternative 2 – New Channel East of the Airport (Recommended Alternative)

Proposed grading activities resulting from construction of the project, could disturb heritage resources that exist in the project area. The map of the 40 heritage resources identified within the project area boundary prepared by Susan Lindstrom was used to determine resources that had the potential to be disturbed by proposed grading activities resulting from the project. Out of the 40 heritage resources identified in 2005, seven resources were included on the list of heritage resources that would be disturbed by grading or construction activities from Alternative 2. The heritage resources on this list were then studied as to their potential significance (Table 4.9-1). The determination of significance is based upon guidelines established by federal (National Register of Historic Places), state (California Register of Historic Resources), and regional (TRPA, Section 29) standards.

The resources found to be potentially significant and impacted by construction are described below. (TRCD 2003)

4.9.4.1 Upper Truckee River Reach 3

Artifact No. 26- Stream ford consists of two granite boulders (4 to 5 feet diameter) enhanced by numerous smaller cobbles covering an area approximately 15 feet wide; both stream banks are rip-rap at this point; little remains of the feature and its function as a ford is problematic.

Artifact No. 27- Stream ford constructed of poured slip/formed concrete with river cobbles cemented in the matrix; concrete is about 30 inches thick and 20 feet wide; the ford carries dirt road (Artifact No. 28) across the river.

Artifact No. 30- Stream ford consists of rock alignment in river formed by four boulders (three feet wide) sparsely interspersed with smaller boulders; the feature is not well defined and there is no apparent continuation of rock on either bank or associated roadbed.

Artifact No. 43- Fence post is formed by a cut-off railroad tie and may be part of recent fencing made of stamped-metal "T" posts and barbed wire across the river; four concrete piers (recent) parallel the river bank north of the fence post and may relate to Airport activities.

Artifact K – Concrete footing.

4.9.4.2 Upper Truckee River Reach 4

Artifact No. 32- A large and collapsed concrete dam has been undercut on the river's east bank so that part of the river runs behind or east of the feature; concrete is about six inches thick with four-foot concrete wings on either side; although cracked and partly collapsed, the dam is largely *in situ*; a poured concrete slab (20 feet wide) is downstream of the dam; below this, a huge boulder is pedestaled in the stream and sits high and dry on the west river bank; the dam trends 200° across the river; the dam appears on modern maps.

Artifact No. 42- Three artifacts consisting of one amethyst bottle fragment (with cork closure and double bead finish), two pieces of hotel ware and one semi-porcelain fragment; artifacts are located in a highly disturbed area near the Airport fence.

4.9.4.3 Historical Significance of Artifacts

A study to determine the historical significance of the 7 artifacts listed above was undertaken in late summer of 2006. Judith Marvin and Linda Thorpe visited the project area on September 3, 2006. Two concrete dams (Resource Nos. 32 and 33) on the Upper Truckee River and two refuse deposits were recorded (Resource Nos.24 and 24a, recorded as one site). The other identified resources were determined either to be too recent in age (water crossings), or to be insignificant elements of undetermined age (fencing segments), and were therefore not recorded. (Marvin and Thorpe 2007)

None of the three recorded resources appear eligible for listing on the NRHP under any of the applicable criteria, nor to be historical resources for the purposes of CEQA or TRPA. The resources were recorded on State Record Forms (Department of Parks and Recreation 523). All forms are included in Appendix G, and have been filed at the North California Information Center at California State University, Sacramento. (Marvin and Thorpe 2007)

Complete resource descriptions of these artifacts are included in the *Upper Truckee River Middle Reach Preliminary Restoration Alternative South Lake Tahoe, El Dorado County, California* Report of Historical Significance of Cultural Resources in Appendix G.

The conclusions of Judith Marvin and Linda Thorpe, consulting archaeologists, is that the dams do not appear to be eligible for listing on the National Register, nor to be historical resources for the purposes of CEQA or TRPA. Under Criterion A/1, although they are associated with livestock grazing in Lake Valley, they are not significant contributors to that important event, nor are they associated with any persons important in history (Criterion B/2). Under Criterion C/3, they are typical examples of common resource types, not the work of a master, nor do they possess high artistic values. They are also lacking in integrity, having collapsed into the river. Their information potential (Criterion D/4) has been exhausted through their recordation in this report. (Marvin and Thorpe 2007)

Refuse Deposits, Artifact numbers 24 and 24a, in Reach 3 are probably from Fallen Leaf Lake Lodge, the deposits are lacking in any temporal or important associations and do not appear to be able to answer questions important in history (Criterion D/4) beyond their recordation for this report (Appendix G). (Marvin and Thorpe 2007)

The fences are not significant under NEPA, CEQA or TRPA, and were not formally recorded. (Marvin and Thorpe 2007)

The project could potentially disturb unknown heritage resources during construction. Environmental commitments and mitigation measures have been identified in Section 4.9.6 to be implemented during construction in the event that artifacts are discovered during construction and grading activities.

All TRPA IEC Archaeological/Historical resource questions were answered "No" or "No, with mitigation" (Section 5). Based on the determination that no known significant heritage resources would be disturbed during construction activities and with environmental commitments and mitigation measures implemented during construction; Alternative 2 would have a less than significant impact to cultural resources.

4.9.5 Cumulative Impacts

Grading and construction activities are limited to the project area of the Airport Reach project. Therefore, implementation of this project would not result in any direct impacts to heritage resources located within the project area boundaries of the cumulative projects considered and would not add to a cumulative effect to cultural resources in the surrounding area. The Airport Reach restoration project would result in no impacts to heritage resources or the cultural significance of the UTR area. Therefore, there will be no cumulative impacts to cultural resources resulting from the project.

4.9.6 Environmental Commitments and Mitigation Measures

It has been determined that the project impacts to cultural resources would be less than significant. However, during construction buried or concealed resources could be disturbed during grading and construction activities. An environmental commitment and mitigation measure is identified below to bring this potential impact to a less than significant level.

- In the event of fortuitous discoveries of buried or concealed heritage resources, ground disturbance activities should cease in the area of the find and the project sponsor should consult a qualified archaeologist for recommended procedures. If human remains are inadvertently discovered, California law requires that work must stop immediately and the county coroner must be notified. If the remains are Native American, AB 297 makes it mandatory that the coroner notifies the members of the Washoe Tribe to insure that proper treatment is given to the burial site.

4.9.7 Comparative Analysis of Alternatives

No impacts to cultural resources are expected to any identified or unidentified heritage resources from the No Action/No Project Alternative. No impacts to known heritage resources would result from Alternative 2. During grading and construction activities, buried heritage resources could be discovered. However, environmental commitments and mitigation measures have been identified to bring the potential for impacts to discovered heritage resources to a less than significant level.