Chapter 7

Vegetation and Wetland Resources

7.1 Introduction

This chapter provides information on vegetation and waters of the United States located in the project area. Impacts on these resources resulting from implementation of the proposed project or its alternatives are discussed in conjunction with mitigation measures that would reduce or avoid significant impacts on the environment. Impacts and mitigation measures that address hydrology and water quality are discussed separately in chapters 3 and 4.

7.2 Affected Environment

For the purpose of this chapter, the affected environment includes the project construction and operation areas.

7.2.1 Sources of Information and Study Methods

7.2.1.1 Sources of Information

A Jones & Stokes botanist reviewed existing reports and database information before conducting a field survey for the project; this literature review was conducted to develop a list of special-status plants and sensitive plant community types that could occur in, or have been reported from, the project region. The review helped to determine the location and types of botanical resources that could exist in the project area. Sources of information included:

- DFG's California Natural Diversity Database (CNDDB) (2000),
- California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California—6th Edition (2000),
- California Department of Agriculture's (CDA's) noxious weed list, and
- current scientific literature.

There is little published data about the basic ecology of the Truckee River, a situation typical of many of the major rivers of the western United States (Caicco 1998). Publications are usually infrequent and of narrow focus. Some recent publications reviewed for preparation of this chapter include documents produced by USFWS, as well as publications by local experts (Stromberg and Patten 1990; Caicco 1998).

7.2.1.2 Study Methods

Floristic surveys were conducted to locate special-status plants in the project area. Floristic survey methods are based on DFG's recommended guidelines and involve identifying all species to the level of detail necessary to determine whether they qualify as special-status plants or whether they are plant species with unusual or significant range extensions (California Department of Fish and Game 2000a).

Depending on the terrain and habitat type, surveys included random meandering and transects in areas that contained suitable habitat for special-status plants. Survey intensity varied depending on species richness, habitat type and quality, and the probability that special-status plants would grow in a particular habitat type. The general purposes of the field surveys were to

- locate and map occurrences of special-status plants;
- map and characterize plant communities;
- identify potential riparian enhancement or revegetation sites in the project area;
- map noxious weed infestations; and
- quantify proposed vegetation removal, including removal of woody riparian vegetation in the construction footprint.

7.2.2 Regional Setting

The proposed project is situated in the transition zone between the Sierra Nevada and the Great Basin geographical provinces (Hickman 1993).

The Truckee River has a long history of modification by human activities, such as the conversion of the river's floodplain terraces to urban and agricultural uses, irrigation, reservoir impoundment and water diversion, roadbed construction, and grazing by domestic livestock. Previous disturbance in the project area includes construction of the original weir and associated flume, construction of Old Highway 40 (upslope from the project area), leaking water from the existing flume, construction and maintenance of the Union Pacific Railroad (UPRR), and construction and maintenance of I-80 (including construction of bridges over the Truckee River).

7.2.2.1 Vegetation

7.2.2.1.1 Vegetation Communities

Vegetation communities in the project construction area were mapped in the field onto aerial photographs (scale: 1 inch = 300 feet). Vegetation communities in the project operation area were not mapped. The descriptions and names of communities used are based on field surveys and descriptions found in Holland (1986) and Sawyer and Keeler-Wolf (1995). Although the system of Sawyer and Keeler-Wolf represents the most recent treatment and includes greater community detail than the system of Holland, it is incomplete for many geographical areas in California. Some of the plant communities described in this report do not fit well into those defined by either Sawyer and Keeler-Wolf or Holland. Therefore, some community type descriptions have been developed based on Jones & Stokes field observations and professional judgment. The 5 plant communities that are located in the project construction and operation areas (table 7-1) are described below, with a discussion of the sensitivity of each (based on Holland and DFG).

Table 7-1. Vegetation Communities in the Project Area

Vegetation Community	Construction Area (acres)	Operation Area[a] (present)
Big sagebrush scrub	4	yes
Montane riparian scrub	0.06	yes[b]
Montane black cottonwood riparian forest	0	yes
Jeffrey pine forest	0	yes
Ruderal habitat	3	yes

[a] Vegetation communities in the operation area were not mapped.
[b] 0.5 acre was identified in association with the flume from field notes and aerial photo interpretation.

7.2.2.1.1.1 Big Sagebrush Scrub

Big sagebrush scrub is a common plant community that occupies approximately 4.0 acres of the project construction area. In general, it is located on the canyon slopes above riparian areas and on higher terraces near Jeffrey pine forest. Big sagebrush scrub intergrades complexly with Jeffrey pine forest on terraces with deeper soil, and transitions into riparian forest/scrub upslope from the river.

Big sagebrush scrub is dominated by big sage (*Artemesia tridentata*), with subdominants of rabbitbrush (*Chyrsothamnus nauseosus*), choke cherry (*Prunus virginiana*), and bitterbrush (*Purshia tridentata*). Barren openings between shrubs support an uneven cover of grass and herbaceous species. Common herbaceous species often include buckwheat (*Eriogonum nudum* var. *deductum*),

large-flowered collomia (*Collomia grandiflora*), squirreltail (*Elymus elymoides*), needlegrass (*Achnatherum* sp.), and cheatgrass (*Bromus tectorum*).

Big sagebrush scrub is common in the area and region, and is not considered by DFG to be a sensitive plant community in California.

7.2.2.1.1.2 Montane Riparian Scrub

Montane riparian scrub is a dominant plant community along the Truckee River; it is found in approximately 0.06 acre of the project construction area. Riparian scrub also forms a mosaic with black cottonwood forest along several stretches of the river and is found associated with the flume in the project operation area.

Sandbar willow (*Salix exigua*) and yellow willow (*S. lucida*) dominate montane riparian scrub, with groundcover abundant to sparsely vegetated. Common herbaceous species include bluegrass (*Poa pratensis*), Nebraska sedge (*Carex nebrascensis*), and common spikerush (*Eleocharis macrostachya*).

Riparian vegetation thrives where it is high enough in the channel to survive the scouring floods of winter/spring but low enough to tap the summer water supply. Such sites typically occur on gravel bars, channel banks, and the floodplain.

Riparian vegetation has hydrologic functions, such as increasing hydraulic drag on flood flows, reducing flow velocities, and inducing fine-sediment deposition. Riparian scrub is indicative of a hydric environment. Most of these scrub communities are probably inundated by river water on an annual basis (U.S. Fish and Wildlife Service 1993b).

While the montane riparian scrub at the study site is dominated by hydrophytic vegetation, and supports positive indicators of wetland hydrology, there is insufficient duration and frequency of floodwaters for hydric soils to be present. Because the montane riparian scrub lacks one of the 3 mandatory criteria, it would not be considered a wetland by USACE. The willow scrub would, however, qualify as an other water of the United States because it is within the ordinary high-water mark (OHWM) of the Truckee River, and would be subject to USACE jurisdiction under Section 404 of the CWA. In addition, Holland and DFG list montane riparian scrub as a sensitive community. Because it is a riparian community, DFG's mandated "no-net-loss" policy for riparian habitats (discussed below, under "Regulatory Setting") would apply.

7.2.2.1.1.3 Montane Black Cottonwood Riparian Forest

Montane black cottonwood riparian forest is a common plant community type along the Truckee River and dominates the project operation area downstream from the project construction area. This community type is typically well developed near large streams in the region and occurs in areas constrained by steep canyon walls (Holland 1986). The high terraces on which these communities are found are only infrequently inundated by floodwaters. Hydrologic data suggests a recurrence flood interval of approximately 10–25 years (U.S. Fish and Wildlife Service 1993b).

Montane black cottonwood riparian forest is dominated by black cottonwood (*Populus balsamifera* ssp. *trichoscarpa*), with scattered pines in the overstory and scattered shrubs in the understory. Common shrubs include willow (*Salix exigua*), interior rose (*Rosa woodsii*), western chokecherry (*Prunus virginiana*), and western raspberry (*Rubus leucodermis*). Common herbaceous species include Nebraska sedge (*Carex nebrascensis*), creeping ryegrass (*Leymus triticoides*), common spikerush (*Eleocharis macrostachya*), rushes (*Juncus* sp.), spring monkey-flower (*Mimulus guttatus*), and field mint (*Mentha arvensis*).

Some studies on streamflow diversion in the Eastern Sierra have shown that negative riparian forest changes can be associated with stream diversion; these changes include reduced leaf areas of riparian communities, a shift toward aging populations with little successful recruitment of juveniles plants, and a possible loss of riparian species from streamside environments (Stromberg and Patten 1990; Smith, Wellington, and Fox 1991). Reduced leaf area refers to reduced leaf size, and reduced leaf area per unit branch length.

Holland and DFG list montane black cottonwood riparian forest as a sensitive community. Because it is a riparian community, DFG's mandated "no-net-loss" policy for riparian habitats would apply (discussed below, under "Regulatory Setting"). This community is located above the OHWM of the river and therefore would not be regulated under Section 404 of CWA (discussed below, under "Regulatory Setting").

7.2.2.1.1.4 Jeffrey Pine Forest

Jeffrey pine forest is common in the project operation area and merges with montane black cottonwood riparian forest and big sagebrush scrub on terraces above the river floodplain.

Jeffrey pine forest is characterized by an overstory of Jeffery pine (*Pinus jeffreyi*), with scattered big sagebrush and bitterbrush in the understory. Herbaceous understory species include species listed above under big sagebrush scrub.

Jeffrey pine forest is common in the area and region; it is not considered by DFG to be a sensitive plant community in California.

7.2.2.1.1.5 Ruderal Habitat

Ruderal habitat occurs on approximately 3.0 acres of the project construction area: near the existing diversion structure and on previously disturbed areas. This community is typically dominated by nonnative species, and is considered to have low habitat value from an ecological standpoint. Common species encountered include some native shrubs, including big sagebrush and rabbitbrush, with nonnative herbaceous species dominating the understory. Common herbaceous species include cheat grass (*Bromus tectorum*), common peppergrass (*Lepidium densiflorum* ssp. *ramosum*), tumble mustard (*Sisymbrium altissimum*), orchard grass (*Dactylis glomerata*), and white sweet clover (*Melilotus alba*).

This community type is common in the area and region; it is not considered by DFG to be a sensitive plant community in California.

7.2.2.1.2 Special-Status Plants

Eleven special-status plants were identified during the pre–field survey investigation as having the potential to grow in the project area (table 7-2 and table G-1 in appendix G). None of these special-status plants has been documented previously in the project area or was observed during the floristic surveys. The area is in the floodplain of the river and in previously disturbed areas upslope from the river; special-status plants in the vicinity of the project area do not occur in this type of habitat. Based on surveys conducted by Jones & Stokes and Harding Lawson Associates (Harding Lawson Associates 1998), and on the habitat requirements of special-status plants located in the region, the area was determined to have no potential to support special-status plants; therefore, special-status plants are not discussed further in this report.

Table 7-2. Special-Status Plants with Potential to Occur in the Project Area

Common Name	*Scientific Name*
Carson Range rock cress	*Arabis rigidissima* var. *demota*
Fell fields claytonia	*Claytonia megarhiza*
English sundew	*Drosera anglica*
Starved daisy	*Erigeron miser*
Donner Pass buckwheat	*Eriogonum umbellatum* var. *torreyanum*
Sierra Valley ivesia	*Ivesia aperta* var. *aperta*
Dog Valley ivesia	*Ivesia aperta* var. *canina*
Plumas ivesia	*Ivesia sericoleuca*
Webber's ivesia	*Ivesia webberi*
Long-petaled lewisia	*Lewisia longipetala*
Tahoe yellow cress	*Rorippa subumbellata*

7.2.2.1.3 Wetlands and Waters of the United States

Based on a field survey and a USACE site-visit no wetlands, as defined under Section 404 of CWA, were located in the project area (Kang pers. comm.). However, the Truckee River is considered a water of the United States and is subject to jurisdiction under Section 404 of CWA. Riparian scrub habitat is found in the project operation area in a corridor along the bank of the Truckee River and in the associated river floodplain. Riparian habitats often qualify as waters of the United States because they have a prevalence of hydrophytic vegetation and may have wetland hydrology and hydric soils. Species encountered in this habitat include sandbar willow, black cottonwood, and other scattered willow species. Under and adjacent to the flume in the operation area, there is approximately 0.5 acre of other waters.

7.2.2.1.4 Noxious Weeds

Surveys for noxious weeds were conducted in conjunction with the floristic botanical surveys. Four noxious weed species were located in the project area: bull thistle (*Cirsium vulgare*), musk thistle (*Carduus nutans*), Russian thistle (*Salsola tragus*), and cheat grass. These weed species are considered ubiquitous in California and are no longer targeted for eradication and control. These species are common in the project area and in the Truckee River region.

7.2.3 Regulatory Setting

7.2.3.1 Vegetation Communities

For the purpose of this EIR, sensitive natural communities are those that are especially diverse, regionally uncommon, considered sensitive natural communities (as defined by Holland 1986), or regulated by federal or state agencies. Most sensitive natural communities are given special consideration because they provide important ecological functions. Some communities support a unique or diverse assemblage of plant or wildlife species and therefore are considered sensitive from an ecological standpoint.

7.2.3.2 California Endangered Species Act (Section 2081 et. seq. of the California Fish and Game Code)

The framework for California endangered species protection is established by CESA. CESA prohibits the "take" of plant and animal species designated by the California Fish and Game Commission as either endangered or threatened. *Take* includes hunting, pursuing, catching, capturing, or killing, or attempting any such activity. No special distinction is made in CESA between state-owned and private property.

7.2.3.3 Special-Status Plants

Special-status plants are species legally protected under CESA, ESA, or other laws, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purpose of this document, special-status plants are defined to include species in the following categories:

- determined by USFWS to be endangered or threatened because they are sufficiently similar in appearance to endangered or threatened species (50 Code of Federal Regulations [CFR] 17.12 [listed plants] and various notices in the *Federal Register* [FR] [proposed species]);

- plants that are candidates for possible future listing as threatened or endangered under ESA (64 FR 57533–57547, October 25, 1999);
- plants listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5);
- plants that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2, July 6, 2000, available at www.cnps.org/rareplants/inventory/6thEdition/htm);
- plants listed by CNPS as plants about which more information is needed to determine their status; and
- plants of limited distribution (Lists 3 and 4 in Skinner and Pavlik, July 6, 2000, available at www.cnps.org/rareplants/inventory/6thEdition/htm), which may be included as special-status species on the basis of local significance or recent biological information.

7.2.3.4 Waters of the United States, including Wetlands, and Riparian Zones

7.2.3.4.1 Waters of the United States, including Wetlands

Waters of the United States is an encompassing term used by USACE for areas that would qualify for federal regulation under Section 404 of CWA. For the purpose of this EIR, waters of the United States are distinguished as either wetlands or other waters of the United States.

Wetlands are defined as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3 [b], 40 CFR 230.3). For a wetland to qualify as jurisdictional by USACE and therefore be subject to regulation under Section 404 of CWA, the site must support a prevalence of 3 conditions: hydrophytic vegetation, hydric soils, and wetland hydrology. In addition to federal regulation by USACE, wetlands are regulated by DFG, which has adopted a no-net-loss policy for wetlands (Executive Order 11990, California Fish and Game Commission 1987).

Other waters of the United States are bodies of water that typically lack one or more of the 3 indicators identified above. USACE defines "other waters" as follows (33 CFR 328.3):

> intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetland sloughs, prairie potholes, wet meadows, playa lakes, or natural pools, the use, degradation, or destruction of which could affect interstate or foreign commerce...

7.2.3.4.1.1 Section 1600 California Fish and Game Code—Streambed Alteration Agreement. Any person, government agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake, or proposing to use any material from a streambed, must first notify, consult, and obtain a streambed alteration agreement from DFG. As a general rule, this requirement applies to any work undertaken within the ordinary high-water mark (OHWM) of a wash, stream, or lake that contains or once contained fish and wildlife or supports or once supported riparian vegetation.

7.2.3.4.2 Riparian Zones

Riparian vegetation has a variety of functions, such as providing bank stabilization, erosion control, and wildlife habitat. Substantial statewide decline of riparian communities in recent years has increased concerns about dependent plant and wildlife species, leading state and federal agencies to adopt policies to arrest further loss. DFG has adopted a no-net-loss policy for riparian habitat value. In addition, USFWS mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 FR 7644, January 23, 1981).

7.2.3.5 Noxious Weeds

For the purpose of this EIR, a noxious weed is a plant that has the potential to displace native plants and natural habitats, affect the quality of forage on rangelands, or affect cropland productivity. High-priority noxious weeds include all the California Department of Food and Agriculture A-rated species. Some B- and C-rated species were included in this analysis because they were identified by the county agricultural commissioner as target noxious weeds. Additional weeds were included if considered to have great potential for displacing native plants and damaging natural habitats and are not considered too widespread to be effectively controlled.

Two federal acts and one executive order direct weed control: the Carlson-Foley Act of 1968, Federal Noxious Weed Act of 1974, and a federal executive order on invasive species (February 3, 1999). Local counties are also concerned about noxious weed infestation and dispersal on private and public lands.

7.3 Impact Assessment Methodology

7.3.1 Analytical Approach

Impacts were assessed using published information, aerial photos, field surveys, state and federal regulations, and conversations with knowledgeable individuals. Vegetation and waters of the United States could be directly and indirectly affected by the proposed project. Impacts were reported as either construction-related or operation-related.

Construction impacts on vegetation resources could result from all aspects of constructing the new diversion structure, including construction of temporary structures, access roads, and equipment staging areas. Construction-related impacts could result in the temporary (short-term) or permanent (long-term) loss of vegetation and riparian resources in the project construction area.

Operation-related impacts on vegetation and riparian resources could result from operation and maintenance of the completed diversion structure. Like construction impacts, operational impacts could result in the temporary (short-term) or permanent (long-term) loss of vegetation and riparian resources in the project operation area.

7.3.2 Criteria for Determining Impact Significance

The following contexts were considered in determining whether an impact on vegetation or waters of the United States would be significant:

- federal and state legal protection of the resource or species;
- federal, state, or local agency regulations and policies; and
- documented resource scarcity and sensitivity, both local and regional.

Based on the State CEQA Guidelines, impacts on vegetation resources were considered significant if the project would

- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- substantially disturb native vegetation;
- cause long-term degradation of a vegetation type as a result of substantial alteration of landform or site conditions (e.g., alteration of hydrology);
- cause direct loss or substantial disturbance of sensitive vegetation types (e.g., riparian vegetation); or
- introduce new noxious weed species or spread noxious weed species in the project area.

7.4 Impacts and Mitigation Measures of Alternative A: Proposed Project

Implementation of the project could result in impacts on vegetation in the project area. Impacts that would result from construction and operational activities are discussed below in detail.

7.4.1 Construction-Related Impacts

Impact 7-1: Loss or Disturbance of Big Sagebrush Scrub Habitat as a Result of Construction of the Diversion Structure

Construction activities could result in loss or disturbance of up to 4.0 acres of big sagebrush scrub from the construction area. Based on the construction drawing provided by SPPC, it is anticipated that the direct loss of big sagebrush scrub would be less than 1.5 acres. The big sagebrush community present on the site is common locally and regionally; therefore, disturbance of this community is considered ***less than significant.*** No mitigation is required.

Impact 7-2: Loss or Disturbance of 0.06 Acre of Woody Riparian Vegetation as a Result of Construction along the Banks of the Truckee River

Construction activities could result in the loss or disturbance of approximately 0.06 acre of woody riparian vegetation (e.g., willows). This woody vegetation consists of young willows in 2 isolated patches in the project construction area. Based on the design drawing provided by SPPC, use of the construction area would require removal of a small number of these willows. The no-net-loss policy established by DFG and the USFWS for riparian vegetation refers to the habitat value of the vegetation. Based on the local abundance of willows downstream from the construction area, the habitat value of these small isolated patches, the small number of willows present in the construction area, and the revegetation measures outlined in the restoration plan in the project description, this impact is considered ***less than significant.*** No mitigation is required.

Impact 7-3: Loss or Disturbance of Ruderal Habitat during Construction

Construction activities could result in the loss or disturbance of ruderal habitat from the diversion site. Ruderal communities present on the site are common

both locally and regionally and are considered undesirable from an ecological standpoint. Therefore, disturbance of these communities is considered to be a ***less-than-significant*** impact. No mitigation is required.

Impact 7-4: Loss or Disturbance of Protected Trees Greater than 6 Inches in Diameter at Breast Height as a Result of Construction Activities

Construction activities could result in the loss or disturbance of 3 pine trees greater than 6 inches dbh. These trees are common locally and regionally and are not likely providing substantial cover or nesting habitat for wildlife species because of their proximity to the road. The loss of these trees would not substantially disturb native vegetation; therefore, this impact is considered ***less than significant***. No mitigation is required.

Impact 7-5: Introduction of New Noxious Weeds or Spread of Existing Noxious Weed Infestations

Existing noxious weeds in the project area are common locally and regionally, and no control methods are recommended for these species. Ingress and egress of construction equipment could introduce new noxious weed species into the area, creating an impact on native vegetation communities. This impact is considered ***significant.***

Implementation of Mitigation Measure 7-1 would reduce this impact to a less-than-significant level.

Mitigation Measure 7-1: Avoid dispersing noxious weeds into the project area

To avoid introducing or spreading noxious weeds into previously uninfested areas, the project proponent will implement the following measures as part of the proposed project:

- *Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weeds.*
- *Clean equipment at designated wash stations before entering the project construction area.*
- *Seed used to stabilize soil will consist of a certified weed-free native mix.*

- *Conduct a follow-up inventory after construction to verify that removal activities have not resulted in the introduction of new noxious weed infestations.*
- *Mulch used to stabilize soil will consist of certified weed-free straw.*

7.4.2 Operation-Related Impacts

Impact 7-6: Potential Long-Term Loss of Riparian Scrub as a Result of Changes in Instream Flow

Long-term changes in streamflow as a result of human-made diversions can occur in riparian communities if the water table is lowered below the rooting zone of riparian species (Smith, Wellington, and Fox 1991). Such an alteration of the water table typically creates a water-stressed environment for species poorly adapted to tolerate water stress (i.e., willow and alder).

Because the structure of the Truckee River in the project operation area is mostly an incised channel with a shallow soil layer and a shallow bedrock layer, the groundwater level is typically close to the surface level of the river, as described in chapter 3, "Hydrology." The groundwater level is therefore not expected to change significantly as a result of streamflow diversion. Small decreases in the groundwater level could result in selective mortality of juvenile riparian plants with poorly established root systems. Over the long term, low flows will be smaller in magnitude, effectively reducing the surface area of the river and exposing new areas that are inundated under the existing hydrological regime. This exposure may have the effect of shifting the riparian recruitment area lower in the channel and creating new recruitment areas for willow and alder species. Although a shift in the location of the riparian community to an area lower in the channel is expected, overall, no long-term loss of riparian habitat functions and values at the site is anticipated. The loss of riparian scrub is considered ***less than significant*** because it would not be substantial and new recruitment would occur. No mitigation is required.