

## **3. Affected Environment and Environmental Consequences**

### **3.1 Introduction**

The affected environment and environmental consequences sections of this EA/IS were prepared in accordance with NEPA and CEQ regulations and guidelines, and CEQA and the CEQA Guidelines.

The affected environment sections provide an environmental baseline of each resource category and the conditions on and next to the project area at the time this document was prepared. The region of influence varies by resource and is defined, where appropriate, for each resource. The regulatory framework—applicable laws, ordinances, regulations, and guidance pertinent to the resource category—is also presented, where appropriate. Section 1.4 provides an additional overview of legal authorities relevant to the proposed project.

The environmental consequences discussion provides an analysis of the potential adverse and beneficial environmental impacts that could result from implementing the Proposed Action compared to the No Action Alternative. Direct, indirect, and cumulative impacts are analyzed for each resource. Direct impacts are caused by the proposed action and occur at the same time and place as the proposed action. Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Examples of indirect impacts are growth-inducing effects and ecosystem impacts. Cumulative impacts result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

Impact criteria are presented at the beginning of each resource section. The impact criteria are used to assess the severity of the environmental impacts of the proposed action. NEPA does not proscribe specific significance criteria but rather states that the environmental impacts should be evaluated in terms of their context, intensity, and duration. The CEQA Environmental Checklist does proscribe specific significance criteria for common resource categories. The significance criteria presented here are a combination of those defined in the CEQA Environmental Checklist and others that help to provide a benchmark for the context, intensity, and duration of the environmental impacts.

The environmental impacts are classified as negligible, less than significant, or significant.

- A significant impact would cause a substantial adverse change in the environment that would exceed the defined significance criteria;
- A less than significant impact would cause an adverse change in the environment that does not meet or exceed the defined significance criteria; and
- A negligible impact would cause a slight adverse change in the environment, but one that generally would not be noticeable.

Impacts may also be beneficial; meaning the change in the environment would generally be regarded as an improvement over current conditions.

Mitigation measures that will be incorporated into the project to reduce impacts are described in each applicable resource section (Section 3.2 through 3.16).

The resources discussed in the sections that follow are:

- Biological resources,
- Recreational resources,
- Cultural resources,
- Geology and soils,
- Water resources,
- Hazardous materials,
- Public health and safety,
- Utilities,
- Transportation,
- Air quality,
- Noise,
- Land use,
- Visual resources,
- Socioeconomics, and
- Environmental justice.

## 3.2 Biological Resources

### 3.2.1 Affected Environment

This section is a description of the biological resources within the proposed Camp Berryessa site, including observations made during a site reconnaissance in August 2010. The discussion of biological resources includes vegetation, wildlife, wetlands and sensitive habitats, and special status species that are found in or potentially found in the project site.

#### **Plant Communities**

The project site contains four natural vegetation community types, as described by the California Natural Diversity Database (CNDDDB 2010; Sawyer and Keeler-Wolf 1995). Terrestrial communities at the project site include blue oak woodland, annual grassland, California mixed chaparral, and chamise chaparral. These communities have the potential to support a variety of wildlife. There has been some disturbance of these communities from the site's previous use as a Boy Scout Camp.

Blue oak woodland is the dominant habitat type surrounding the lake and within the project site. The understory of this community is associated with annual grassland habitat. Blue oak woodland is characterized by a relatively open canopy of trees dominated by blue oak (*Quercus douglasii*), with foothill pine (*Pinus sabiniana*) and valley oak (*Q. lobata*) occurring as associate species. Shrubs are scattered throughout this community type, including buckbrush (*Ceanothus cuneatus*) and coyote brush (*Baccharis pilularis*). There is a dense layer composed of mainly nonnative annual grasses and forbs. However, several native grass species were observed, such as blue wild rye (*Elymus glaucus*) and purple needlegrass (*Nassella pulchra*).

Annual grassland occupies the understory layer of the blue oak woodland community and is also found in previously disturbed areas, such as the former roads and parking areas. The annual grassland community is dominated by nonnative grass and forb species, such as wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum* ssp. *Gussoneanum*), and yellow star thistle (*Centaurea solstitialis*). Some native grass species were observed, such as blue wild rye and purple needlegrass.

California mixed chaparral can be found on the Camp Berryessa site, along the lake and gently sloping north-facing slopes. This community is associated with the blue oak woodland and annual grassland communities. Dominant chaparral plant species include manzanita (*Manzanita* sp.) and coyote brush (Questa Engineering 2010).

A chamise chaparral community was observed at the Camp Berryessa site primarily on south-facing slopes. It is composed almost entirely of chamise (*Adenostoma fasciculatum*) interspersed with few manzanita. The distinction between the California

mixed chaparral plant community and the chamise chaparral community is determined by the presence and dominance of chamise.

**Wildlife**

The project site supports a variety of wildlife associated with woodland, grassland, and chaparral habitats. Mammals in the Lake Berryessa area include black-tailed deer (*Odocoileus columbianus*), mountain lion (*Felis concolor*), coyote (*Canis latrans*), black bear (*Ursus americanus*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), and various other small animals (Questa Engineering 2010).

Over 80 species of birds can be found in the Lake Berryessa vicinity. Representative avian species include the turkey vulture (*Cathartes aura*), great horned owl (*Bubo virginianus*), belted kingfisher (*Ceryle alcyon*), bald eagle (*Haliaeetus leucocephalus*), Cooper’s hawk (*Accipiter cooperi*), golden eagle (*Aquila chrysaetos*), Aleutian Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), California quail (*Callipepla californica*), osprey (*Pandion haliaetus*), and wild turkey (*Meleagris gallopavo*) (Questa Engineering 2010).

Amphibians and reptiles found in the Lake Berryessa area include the western pond turtle (*Emys marmorata*), the western rattlesnake (*Crotalus oreganus*), and the western fence lizard (*Sceloporus occidentalis*) (Questa Engineering 2010).

**Special Status Species**

Table 3.2-1 lists state and federal threatened, endangered, and candidate species and species of concern considered in this document. This list is based on species identified by the USFWS, the CNDDB, the Bureau of Land Management (BLM), and the California Native Plant Society (CNPS) as potentially occurring within the Walter Springs, Brooks, Chiles Valley, and Lake Berryessa US Geological Survey (USGS) 7.5-minute quadrangles. The Camp Berryessa project site is in the Walters Springs quadrangle.

**Table 3.2-1  
Sensitive Plant or Wildlife Species Occurring or Potentially in the Walter Springs, Brooks, Chiles Valley, and Lake Berryessa USGS 7.5-Minute Quadrangles**

Scientific Name	Common Name	Preferred Habitat	Federal/ State/BLM/ CNPS Status	Likelihood of Occurrence in the Action Area
<b>Plants</b>				
<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	Jepson’s milk vetch	Woodland, valley and foothill grassland, chaparral	--/--/S/1B.2	P
<i>Erigeron greenei</i>	Greene’s narrow- leaved daisy	Chaparral	--/--/--/1B.2	U

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<b>Scientific Name</b>	<b>Common Name</b>	<b>Preferred Habitat</b>	<b>Federal/ State/BLM/ CNPS Status</b>	<b>Likelihood of Occurrence in the Action Area</b>
<i>Fritillaria pluriflora</i>	Adobe-lily	Chaparral, cismontane woodland, foothill grassland	--/--/S/1B.2	U
<i>Hesperolinon bicarpellatum</i>	Two-carpellate western flax	Serpentine chaparral	--/--/1B.2	P
<i>Hesperolinon</i> sp. nov. " <i>serpentinum</i> "	Napa western flax	Chaparral	--/--/S/1B.1	P
<i>Layia septentrionalis</i>	Colusa layia	Chaparral, cismontane woodland, valley and foothill grassland	--/--/S/1B.2	U
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	Chaparral, cismontane woodland	--/--/1B.2	U
<i>Navarretia rosulata</i>	Marin County navarretia	Closed-cone coniferous forest, chaparral	--/--/1B.2	U
<i>Streptanthus breweri</i> var. <i>hesperidis</i>	Green jewel-flower	Chaparral, cismontane woodland	--/--/1B.2	P
<b>Amphibians</b>				
<i>Emys marmorata</i>	Western pond turtle	Permanent or nearly permanent water in a variety of habitats	--/SC/S/--	U
<i>Rana boylei</i>	Foothill yellow-legged frog	Partially shaded shallow streams with a rocky substrate	--/SC/S/--	U
<b>Birds</b>				
<i>Agelaius tricolor</i>	Tricolored blackbird	Open water with a protective nesting substrate	--/SC/S/--	U
<i>Aquila chrysaetos</i>	Golden eagle	Rolling foothills, mountain areas, sage-juniper flats and desert	--/FP/--/--	P
<i>Athene cunicularia</i>	Burrowing owl	Open dry perennial or annual grassland, deserts and scrublands	--/SC/S/--	U
<i>Falco mexicanus</i>	Prairie falcon	Dry open terrain, either open or hilly	--/--/1B.2	P
<i>Haliaeetus leucocephalus</i>	Bald eagle	Nests in large trees, esp. Ponderosa pine & esp. near water	--/E/--/--	P
<i>Riparia riparia</i>	Bank swallow	Riparian habitat	--/T/--/--	U
<b>Mammals</b>				
<i>Antrozous pallidus</i>	Pallid bat	Open dry habitats with rocky areas for roosting	--/SC/S/--	U
<i>Myotis evotis</i>	Long-eared myotis	Brush, woodlands and forests	--/--/S/--	U

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Sensitive Plant or Wildlife Species Occurring or Potentially in the Walter Springs,  
Brooks, Chiles Valley, and Lake Berryessa USGS 7.5-Minute Quadrangles**

Scientific Name	Common Name	Preferred Habitat	Federal/ State/BLM/ CNPS Status	Likelihood of Occurrence in the Action Area
<i>M. yumanensis</i>	Yuma myotis	Open forests and woodlands with sources of water	--/--/S/--	U

Sources: USFWS 2010, CDFG 2010, CNPS 2010

**Notes:**

E = Endangered

T = Threatened

C= Candidate

- = No Listing

SC= California species of special concern

FP= California fully protected

U= unlikely

P= potential

C= Confirmed

BLM Status

S = BLM sensitive species

CNPS Status

- = No Listing

1B.1= seriously endangered in CA, rare or endangered elsewhere

1B.2= fairly endangered in CA, rare or endangered elsewhere

2.2= fairly endangered in CA, more common elsewhere

3 = Need more information on this species

**Plants**

No federally-listed or state-listed plant species were considered to have the potential to occur in the Walter Springs, Brooks, Chiles Valley, and Lake Berryessa USGS quadrangles.

Nine CNPS listed 1B plants could occur within the Walter Springs, Brooks, Chiles Valley and Lake Berryessa USGS quadrangles: adobe-lily, Colusa layia, green jewel-flower, Greene’s narrow-leaved daisy, Jepson’s leptosiphon, Jepson’s milk-vetch, Marin County navarretia, Napa western flax, and two-carpellate western flax. All of these species have suitable habitat on the project site. However, due to the lack of recent occurrences and distance from the project site, many are not likely to occur within there. Green jewel-flower, Jepson’s milk-vetch, two-carpellate western flax, and Napa western flax are the only species with the potential to occur within the project site.

**Wildlife**

No federally listed animal species were considered to have the potential to occur in the Walter Springs, Brooks, Chiles Valley, and Lake Berryessa USGS quadrangles.

Bald eagle, which is state-listed as endangered, and bank swallow, which is state-listed as threatened, were identified by the four-quadrangle CNDDDB search as occurring near the project site. Bald eagles nest in old-growth or dominant live trees with open branchwork, most frequently in stands with less than 40 percent canopy. Nests are usually located near a permanent water source (CDFG 2010). Suitable habitat for this species exists in the oak and pine trees within the project site. Bank swallow habitat occurs in open riparian areas. Nests are in steep sand, dirt or gravel banks, or in burrows dug near the top of the bank

(CDFG 2010). Suitable habitat for this species is not found within the project site, and it is considered unlikely to occur.

Six state species of special concern were identified as occurring in the Walter Springs, Brooks, Chiles Valley, and Lake Berryessa USGS quadrangles: tricolored blackbird, pallid bat, golden eagle, burrowing owl, western pond turtle, and foothill yellow-legged frog. There is no potential habitat within the project site for tricolored blackbird, pallid bat, western pond turtle, and foothill yellow-legged frog, and these species are considered unlikely to occur.

Burrowing owls nest in old burrows of ground squirrels or other small mammals. They are residents of open dry grassland, shrubland, and desert habitats (CDFG 2010). Suitable habitat for this species exists in the grassland and shrub habitats. No recent occurrences of burrowing owls in the area have been documented, and no ground squirrel burrows were observed on the project site. This species is considered unlikely to occur.

Golden eagles are most common in rugged open country, bisected by canyons where there are ample nesting sites and food. These raptors nest on cliffs of all sizes or in the tops of large trees. The project site supports suitable foraging habitat for golden eagles, so this species has the potential to occur.

Other special status species are those tracked by CNDDDB due to rarity, restricted distribution, population decline, and threats to habitat. Potentially occurring species are prairie falcon, long-eared myotis, and Yuma myotis. Foraging habitat is present on-site for the prairie falcon, which has the potential to occur on the project site. The long-eared myotis and Yuma myotis do not have suitable habitat within the project site and are considered unlikely to occur.

An osprey nest was identified on top of a power pole in the project site during a site visit on September 2, 2010. Ospreys are not a federal- or state-listed species and are not considered a species of special concern, but they are tracked by CNDDDB. No ospreys were seen using the nest. The four-quadrangle CNDDDB search did not result in any osprey occurrences in the area, but ospreys are known to nest regularly at Lake Berryessa (Questa Engineering 2010).

### **Wetlands**

Due to yearly fluctuations in lake elevations, there are no true wetlands at Lake Berryessa. The lake's shoreline does not support typical wetland vegetation or aquatic life that requires saturated soil conditions for growth and development (RAMP 1992). There is no obvious wetland habitat present at the Camp Berryessa site. No creeks, streams, or drainage channels occur within the project site. However, the shoreline is considered an open water feature and is therefore considered a Water of the United States.

### 3.2.2 Environmental Consequences

#### ***Impact Criteria***

Impacts may be considered significant if they were to result in permanent loss of habitat to the extent that a population of a given wildlife species were lost or degraded so that the species became considered for listing or attained other status as a species of concern. Impacts would also be considered significant if they were to result in any of the following:

- Substantial loss or degradation of a plant community and associated wildlife habitat;
- Fragmentation or isolation of wildlife habitats, especially riparian and wetland communities;
- Long-term loss or degradation of a sensitive plant community because of substantial alteration of landform or site conditions (e.g., alteration of wetland hydrology);
- “Take” of a listed species, which includes harassment, death, disruption of breeding or feeding cycle, or loss of active nests;
- Substantial disturbance or displacement of wildlife, resulting from human activities;
- Disruption of natural wildlife movement corridors;
- Avoidance by animals of biologically important habitat for substantial periods; such avoidance may increase mortality or reduce reproductive success;
- Violations of the MBTA or federal or state ESAs;
- Reduction in local population size attributable to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation of special status species, especially those that are state or federally listed or proposed for listing as threatened or endangered; of portions of local populations that are candidates for state or federal listing and federal and state species of concern; or of species that qualify as rare and endangered under CEQA;
- Change in the abundance, geographic range, or seasonal timing of any species life stage; or
- Substantial reduction or elimination of species diversity or abundance.

## ***Proposed Action***

### *Plant Communities*

The implementation of the proposed action would result in both temporary and permanent impacts on all four vegetation communities identified within the project site. Temporary impacts would be from clearing for staging or trampling by workers or heavy machinery. Long-term direct impacts would result from permanent vegetation removal where new facilities and infrastructure would be located, including the removal of several trees and shrubs. Additionally, any trees adjacent to the clearing and grading or staging areas may be affected through damage to roots from excavation and heavy equipment. Once construction has been completed, revegetation would occur to restore vegetated areas disturbed during construction to pre-construction conditions, to the extent feasible. Native plant species used for revegetation would be selected based on existing vegetation in the project area and consultation with Reclamation's area Natural Resource Specialist. Impacts would be less than significant; however, Mitigation Measure BIO-1 would be implemented to further reduce impacts on native oak woodland vegetation.

### *Mitigation Measure BIO-1*

Tree protection measures would reduce impacts to trees during construction and may include the following measures:

- To avoid impacts on mature oak trees (those with a six-inch minimum diameter at breast height), orange construction barrier fencing would be installed at their drip lines. Where appropriate, the barrier fencing would be installed 20 feet outside their drip lines;
- Trees in designated construction areas would be removed only if they had been designated for removal. Removed oak trees would be replaced within the project boundaries at a 3:1 ratio. Replanting of other removed tree species would be determined after consultation with Reclamation's area Natural Resource Specialist;
- Where avoidance is not possible, long-term impacts on oaks would be minimized by trimming limbs and branches over access roads or construction zones and by avoiding parking and excavating in the root zone.

### *Wildlife*

Implementing the Proposed Action would result in both permanent and temporary impacts on wildlife. During construction, impacts due to increased noise, human presence, vegetation removal, and soil disturbance would occur. These indirect impacts would be temporary, and all habitats except previously disturbed communities would be recontoured and revegetated to their original condition after construction is completed. Permanent impacts would occur from habitat loss in those locations where vegetation is removed due to the construction of new structures and development. Implementing Mitigation Measure BIO-2 would ensure impacts would be less than significant.

### *Mitigation Measure BIO-2*

To the extent possible, removal of trees and potential bird breeding habitat in the project area would occur between September 1 and January 31, when birds are not expected to be nesting, in order to comply with the Migratory Bird Treaty Act. Prior to any tree removal and construction, a qualified biologist would conduct preconstruction field surveys in and adjacent to the project area for nesting migratory birds, including raptors. Surveys would be conducted during the season immediately preceding tree removal and grading operations when birds are building and defending nests or when young are still in nests and dependent on the parents. If no nests are found during the surveys, tree removal and grading may proceed. If nests are found, construction activities including tree removal shall not be conducted within a buffer zone designated by USFWS or the CDFG around the nest(s) until after the breeding season (typically February to the end of August).

In the longer term, wildlife disturbance and indirect alteration of habitat would occur from the use of Camp Berryessa by recreationists. Based on the relatively small capacity of Camp Berryessa, even at full buildout, impacts would be less than significant.

### *Special Status Species*

#### **Plants**

Construction would have short-term temporary and long-term permanent indirect less than significant impacts due to habitat disturbance and loss. Short-term disturbance to potential habitat would be reduced by revegetating and restoring it to its preconstruction condition. Reclamation would implement Mitigation Measure BIO-3 to ensure less than significant project impacts:

### *Mitigation Measure BIO-3*

Before construction begins and during the appropriate season, a qualified biologist would conduct a survey for Green jewelflower, Jepson's milk-vetch, two-carpellate western flax, and Napa western flax. If these species were observed during surveys, project features would be adjusted to the degree possible to avoid impacts. If it were not possible to adjust project features to avoid sensitive plants, appropriate conservation measures would be implemented to ensure that impacts were less than significant. Possible conservation measures include transplanting particular specimens to a location outside of the construction zone and replacing affected individuals with nursery stock in the same location after restoring the affected area.

#### **Wildlife**

Bald eagle, golden eagle and prairie falcon have the potential to occur within the project vicinity. Construction would have short-term indirect impacts on these species due to increased noise and human presence. This may deter some species from the project vicinity during construction, and disturbance during the breeding season could result in impacts to special-status birds from the incidental loss of fertile eggs or nestlings, or nest abandonment. With the implementation of Mitigation Measure BIO-4, impacts would be less than significant.

#### *Mitigation Measure BIO-4*

If construction activities must occur during the breeding season for special-status birds and/or bats (February 1 to August 31), a qualified wildlife biologist would conduct nesting-bird surveys within 500 feet of the project site. These surveys must be conducted within one week prior to initiation of construction activities at any time between February 1 and August 31. In addition, surveys for bald eagle nesting would be required prior to construction activity after December 1.

If no active nests or roosts are detected during surveys, then no additional minimization measures are required.

If special-status birds are found in the construction area or in the adjacent surveyed area, a no-disturbance buffer will be established around the nesting/roosting location to avoid disturbance or destruction of the nest site/roost site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late-June through mid-July). The extent of these buffers will be determined by a wildlife biologist in consultation with the applicable resource agencies (i.e., USFWS and CDFG) and will depend on the level of noise or construction disturbance, line of site between the nest/roost and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed and used by a qualified wildlife biologist to assist the USFWS and CDFG in making an appropriate decision on buffer distances.

#### *Wetlands and Sensitive Habitats*

No wetlands occur within the project site, so the Proposed Action would have no impact. The shores of Lake Berryessa do occur within the project site and would be directly impacted by the construction of two proposed canoe/kayak docks. The shoreline area is considered an open water feature and is therefore considered as a Water of the United States. Impact mitigation would be determined during the consultation process for CWA Section 404 and 401 and CDFG Section 1602 permits. Impacts would be less than significant.

#### ***No Action Alternative***

No new impacts on vegetation communities, wildlife, wetlands, or special status plants or wildlife would result from implementing the No Action Alternative.

## 3.3 Recreation

The region of influence (ROI) for recreation resources includes the project site and federal lands adjacent and in close proximity to the project site, including Lake Berryessa within Napa County, California. This section discusses current recreation activities and direction based on Reclamation's Future Recreation Use and Operations of Lake Berryessa FEIS (Visitor Services Plan) and 2006 federal ROD (Reclamation 2006).

### 3.3.1 Affected Environment

#### ***Lake Berryessa***

This man-made reservoir is approximately 26 miles long, 3 miles wide, and at capacity, can hold 1.6 million acre feet of water. Due to its size, it serves as a water-based recreation destination, serving the San Francisco Bay Area and the Sacramento Valley. Currently, Lake Berryessa offers varied recreation such as boating, swimming, fishing, wildlife viewing, and hiking.

Aquatic-based recreation is the primary activity at Lake Berryessa. Most boating activity occurs between April 1 and October 15, and the most common watercraft are runabout and ski boats (Reclamation 2005). Boat use on the lake has declined since Reclamation terminated its contracts with the private concessioners in 2008, and associated facilities have been removed. Pleasure Cove Marina continues to operate from the south end of the lake, and provides houseboat rentals and related marina services, rental cabins, and campground and RV sites. Primitive camping is also provided at Lupine Shores and Chaparral. Lupine Shores is located on the southern shoreline of the lake and Chaparral is located on the northern shoreline of the lake.

In addition to Pleasure Cove Marina, there are several areas where the public can access the lake for boating. The closest paid public boat launch is at Chaparral, south of the project site, and the closest free boat ramp is at Cappell Cove. There is a free hand launch area for canoes and kayaks at Oak Shores Day Use Area in Foxtail Flat and Coyote Knolls, and near the confluence of Eticuera Creek and the lake at the northern end of the lake (Napa County Regional Park and Open Space District 2010). Reclamation maintains day use facilities at Smittle Creek, Eticuera Creek, and Oak Shores.

There are two official trails at Lake Berryessa – Smittle Creek and North End. A third trail at Markley Cove is an informal social trail system that connects road-side parking areas with the shoreline.

#### ***Camp Berryessa Proposed Project Site***

The project site for the proposed Camp Berryessa is located on the northern end of the lake on a peninsula (i.e., surrounded by water on three sides) that extends into the Putah Creek arm of the lake. It has sandy gravel beaches. The project site proposed for

development is approximately 10 acres of undeveloped land, with only a few gravel roads, disconnected electrical service, and several utility poles equipped with lights remaining from the prior use as a Boy Scout Camp that closed in 2004. The project site is currently closed to the public.

### **3.3.2 Environmental Consequences**

#### ***Impact Criteria***

The Proposed Action was evaluated for adverse effects on people or the environment in the context of existing recreation resources within the ROI. Impacts to recreation would be considered significant if the Proposed Action caused any of the following:

- A decline in the quality or quantity of existing recreational facilities or services;
- Required the construction or expansion of recreation facilities that might have an adverse physical effect on the environment; and
- Exceedance of adopted state or local recreation planning standards, where applicable.

#### ***Proposed Action***

Under the Proposed Action, Camp Berryessa would primarily be managed as a group-camp and activity area on a short-term reservation basis. Camp Berryessa would include an array of day-use and overnight recreation activities. Day use activities would include picnic and BBQ areas, an activity center, amphitheatre that holds 40 to 50 people, archery target range, rope course, rock climbing feature, volleyball court, bocce ball courts, horseshoe pits, and hiking trails. Additional amenities would include an environmental education center, a covered dining area, meeting and educational spaces, and showers and laundry facilities. Water-based recreation would include swimming platforms, with a buoy line to separate boaters from swimmers, and two non-motorized boat launches to facilitate kayak and canoe use.

Overnight uses would include group camping by reservation only, shower and restroom facilities, covered food preparation and dining and meeting areas.

Proposed recreation activities at Camp Berryessa would impact the recreation resource of the area by offering an array of new recreation activities not currently offered at the project site. The Proposed Action would benefit the recreation experience by expanding the types of recreational activities offered at the lake. Because Camp Berryessa would not offer long-term services, the Proposed Action would benefit the short-term user seeking recreational activities such as camping, boating, and picnicking.

#### **Hiking and Trails**

Hiking at Camp Berryessa would be beneficially impacted from the development of the proposed trail network in and around the area. The primary trail would be ADA

compliant which would enable more user types to enjoy and achieve desired outcomes on Reclamation lands. Secondary paths would diverge from the primary path and provide easy access to Lake Berryessa at several locations within the project site. These trails would disperse users within the project site and connect to other trails along the lake.

#### *Aquatic-Based Recreation*

Swimmers would benefit from additional access to the lake from a buoyed swim area at Camp Berryessa and anglers may benefit from by gaining access, on a reservation basis, to preferred fishing spots. Two canoe or kayak docks are proposed to be located on the southeast and northwest shorelines of the project site. These docks would be for non-motorized boating. Permitting only non-motorized boating would enhance the recreational setting for those seeking a more peaceful setting without noise from motor boats. This would contribute to a more serene experience.

#### *Lodging*

Lodging at Camp Berryessa would enhance the overall recreation experience because proposed facilities would offer four informal tent camping areas near the lake shore, several tent cabin areas with picnic tables and running water, and a permanent sleeping structure near the center of the Camp. This variety of lodging accommodates a variety of desired recreation experiences, even if these experiences differ within the same group.

#### *Education*

Implementation of an interpretative trail, in and around the project site, and environmental education programs would have significant beneficial impacts within the ROI. These programs would increase public awareness and appreciation of the local natural environment, awareness of the activities that impact the environment, and possibly foster long-term preservation and respect of the land and recreation settings offered at Camp Berryessa. Additionally, environmental education programs would educate visitors about proper land use etiquette, possibly resulting in greater compliance with public lands regulations at Camp Berryessa. This would enhance the overall recreation experience for all users and likely contribute to a reduction in impacts to other resources and preserve recreational settings over the long-term.

#### *Other Land-Based Recreation*

Implementation of an archery target range, ropes course, rock climbing feature, volleyball court, bocce ball courts, and horseshoe pits would contribute to the recreation experience by offering an array of shoreline recreational activities that complement the aquatic activities. These activities are generally considered to be easy to understand and participate in and can offer youth groups basic social and physical coordination skills. During the off-season, these activities can be considered family-friendly, which can provide the desired outcome of family bonding on public lands.

According to the District, there is a significant un-served or underserved market within school age populations in the region and the Proposed Action and project site can support a substantial amount of outdoor recreation use by both local residents and visitors. The

proposed Camp Berryessa would fill this niche and provide a significant social benefit to the region.

***No Action Alternative***

Under the No Action Alternative, the proposed Camp Berryessa would not be developed and the recreational improvements would not occur. The Camp Berryessa site would remain undeveloped until other projects were developed for the site.

## 3.4 Cultural Resources

### 3.4.1 Affected Environment

This section is a discussion of the potential for the Proposed Action to affect cultural resources. The term “cultural resources” is used to describe archaeological sites, illustrating evidence of past human use of the landscape; the built environment, represented by structures such as dams, roadways, and buildings; and traditional resources, such as sacred sites and traditional cultural properties (TCPs).

The National Historic Preservation Act (NHPA) of 1966 is the primary federal legislation that outlines the federal government’s responsibility to consider cultural resources. Other applicable cultural resources laws and regulations that could apply include the Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act. Section 106 of the NHPA requires the federal government to take into consideration the effects of an undertaking on historic properties listed on or eligible for listing on the National Register of Historic Places (NRHP), which are referred to as historic properties. A cultural resource that is greater than 50 years old qualifies for consideration as a historic property. The criteria used to determine whether a cultural resource is a historic property, and therefore eligible for inclusion on the NRHP, are defined in 36 CFR, Part 60.

The Section 106 process is outlined in the federal regulations at 36 CFR, Part 800. These regulations describe the process that a federal agency takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If so, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO) to seek concurrence on Reclamation’s findings.

The following discussion summarizes the prehistory, ethnography, and history of the project region, the study methods and results, and the effects of the Proposed Action on historic properties. The prehistoric, ethnographic, and historic context summarized in this section is primarily derived from the previous compilation of information found in Reclamation documents (2008 and 2009).

For the purposes of this project, Indian Trust Assets (ITAs) are discussed under the category of cultural resources. ITAs are legal interests in property held in trust by the US for federally recognized Indian tribes or individual Indians. An Indian trust has three components: the trustee, the beneficiary, and the trust asset. ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust

relationship are federally recognized Indian tribes with trust land; the US is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the US.

The ROI for cultural resources is equivalent to the APE defined by Reclamation for this project. The APE includes the 10-acre project area that will be developed into a public use facility, from the high water mark (440 feet MSL) up. It also includes the depths of excavation or other ground-disturbing activities associated with construction and operation. Portions of the APE were surveyed for the first time by Reclamation in consideration of the feasibility study completed for the wastewater treatment and disposal area. Results of this survey are discussed below.

### ***Prehistory***

The North Coast Range has been occupied by humans since the Pleistocene (before 10,550 calendar years before present [BP]). The firmest evidence of occupation in the area is associated with the Western Clovis Tradition (also referred to as the Post Pattern), roughly 13,500 to 10,500 BP. This was a widespread artifact pattern and included the distinctive Clovis fluted point. Other prehistoric cultural traditions that have been identified for this area include the Borax Lake Pattern (10,500 to 7,000 BP), the Mendocino Pattern (7,500 to 1,200 BP), the Berkeley Pattern (7,000 to 1,200 BP), and the Augustine Pattern (1,200 BP to the historic era).

### ***Ethnographic***

The project area falls within the ethnographic territory of the Topaidisel Band of Southern Hill Patwin. The Southern Patwins lived between what are now Suisun, Vacaville, and Putah Creeks. Several small tribelets were located in Napa, Solano, and Yolo Counties, including the Topaidisel in the Upper Putah Creek/Lake Berryessa area. Away from the Sacramento River and the Delta marshes, the Patwin historically settled in small valleys along the lower hills of the Vaca Mountains and Coast Range, with concentrations in the Long Indian, Bear, Capay, Cortina, and Napa Valleys. Large populations were ethnographically documented in the Berryessa Valley area, particularly at Cache and Putah Creeks. The main village of the Topai'idihi Band of Southern Hill Patwin, the historic tribelet associated with the modern Topaidisel Band of Southern Hill Patwin, was located in Berryessa Valley on a bank of Putah Creek. This site is referred to as Topai'idihi and has been recorded as the archaeological site CA-NAP-89.

### ***History***

Although contact between the Patwin and Europeans is likely, the earliest documented European intrusion into Berryessa Valley is the 1843 granting of the 36,000-acre Rancho Las Putas to Jose and Sisto Berryessa, which covered most of what would come to be known as Berryessa Valley. The brothers built two adobe houses, one of which was near the confluence of Pope and Putah Creeks. As with most ranchos in California, stock ranching was the main economic activity. In 1862, after California had become a state, the US General Land Office granted the land patent for Rancho Las Putas to Marie Anastasia Higuerrada de Berryessa and Maria Nicolosa de Berryessa. Following later land transfers, the rancho lands were divided into farm parcels. The town of Monticello

near the center of the valley was established by the “Land Company” (J. H. Lawly, J. Bostwick, and J. M. Hamilton) after it purchased the area in 1866. By 1870, Monticello was a burgeoning community and was a stop on a stage line running from Knoxville in the north to Napa.

With the Gold Rush in 1849 came a wave of American emigrants. When mining attempts failed, the dejected miners turned to the rich agricultural land of this hilly area to make a living. Many of these American miners settled in the region and became farmers or ranchers or planted orchards. Early agriculture in Berryessa Valley primarily consisted of dry farming grains, but soon improvements in irrigation allowed for planting orchards farther away from water channels. With the completion of the transcontinental railroad in 1869, local orchardists began to specialize in crops that could be shipped outside the region. Fruit drying became prominent in 1887. Several dehydrators were located in Berryessa Valley, with one immediately south of Monticello. By 1900 growing, drying, packing, and shipping fresh and dried fruit dominated the economy in the area. Monticello maintained a prominent position in the valley as a commercial center, until the town was razed in 1957 and the valley was cleared of trees, structures, and agricultural features to make way for the rising reservoir waters.

The site of the current Monticello Dam had been considered for a dam and reservoir as early as 1907, but plans were not formally developed until 1948 with the Solano Project. This was a cooperative plan between Solano County and Reclamation to provide water to Solano County for cities and irrigation through a system of canals and dams. Flooding of the Berryessa Valley began in 1957, and recreation management areas were established in 1958. The use of these areas has left an imprint on the landscape of the Lake Berryessa area that includes boat docks, waste processing facilities, official and unofficial trails, campsites, trailer pads, associated landscaping, and other service buildings and features.

### ***Indian Trust Assets***

Consistent with President Clinton’s 1994 memorandum, Government-to-Government Relations with Native American Tribal Governments, Reclamation assesses the effect of its programs on ITAs and federally recognized tribal governments. Reclamation is tasked to engage federally recognized tribal governments and to consult with such tribes on a government-to-government level (59 *Federal Register* 1994) when its actions affect ITAs. The Department of the Interior Departmental Manual Part 512.2 ascribes the responsibility for protecting ITAs to the heads of bureaus and offices (US Department of the Interior 1995). Reclamation will comply with procedures contained in Departmental Manual, Part 512.2, guidelines, which protect ITAs.

No ITAs are within the APE of the proposed project. The nearest ITA is the Rumsey Rancheria, which is 17 miles north-northeast of the project location (Rivera 2008).

### ***Reclamation Cultural Resources Survey for the Proposed Action***

As part of the Section 106 compliance for the feasibility testing for the wastewater treatment and disposal, Reclamation completed a Class III Cultural Resources Inventory (Reclamation 2009), including a pedestrian survey of the entire APE and subsurface

testing in the area of the proposed wastewater treatment and disposal system. Native Americans were also consulted as part of the preliminary effort. The resources inventory is also intended to serve as an identification report for future development at Camp Berryessa.

#### Previous Archaeological Research

The Lake Berryessa area was first investigated in 1948 before construction of Monticello Dam. One hundred fifty archaeological sites were recorded, most described as midden deposits, indicating a deposit of considerable significance. An outcome of this survey was the excavation and further survey of Berryessa Valley by Elsasser and Treganza in 1956 and in 1957-1958 by Arnold and Reeve. A total of 46 sites and three adobe structures were recorded or noted, and six sites were excavated and reported. Aside from the three aforementioned adobe structures, all the archaeological sites within a one-mile radius of the western shore concession areas are noted as middens. Shortly after these surveys were conducted and the sites excavated, the reservoir was filled.

D. L. True and M. A. Baumhoff conducted an archaeological survey of several areas along the western shore of Lake Berryessa between 1976 and 1982 and identified a range of archaeological sites. The result of this survey showed a wider range of archaeological sites than previously recorded. The sites found along the waterline and low water zone of the lake contained groundstone, lithic or flake artifacts, cobble artifacts, and formal artifacts, such as projectile points. These artifacts were spread across the landscape in loose association. It was surmised that this pattern exhibited a subsistence technology previously overlooked, possibly an older cultural horizon now termed the Northern Milling Stone Horizon (True, Baumhoff, and Hellen 1979). Several small-scale archaeological investigations have been conducted during the 1980s and 1990s, with a few isolated prehistoric artifacts, one lithic scatter, and a historic work camp noted but not formally recorded.

One archaeological site, CA-NAP-0655, was previously recorded as being next to the APE and is described as cobble tools and flakes along the high water line. Another archaeological site, CA-NAP-654, is immediately south of the APE and is also described as consisting of cobble tools and flakes. Artifacts at these locations were collected at the time of their recordation. Other archaeological sites identified relatively close to the APE are CA-NAP-0652, CA-NAP-0653, CA-NAP-0656, and CA-NAP-0657. No resources were recorded as being above the high-water mark in this area. It has been theorized that native soils are being deflated from the shoreline as a result of wave action and reservoir movement, causing the diffuse scatter of artifacts along the surface next to the shoreline.

#### Native American Consultations

Representatives of the Cortina Rancheria, Rumsey Rancheria, and Middletown Rancheria were invited to identify any sites of religious or cultural significance, in accordance with 36 CFR, 800.4, and to identify any concerns about the Proposed Action.

### Results of Survey

At Camp Berryessa, Reclamation cultural resources staff have conducted two additional studies in 2009 and 2010 (Reclamation 2009, 2010). The 2009 pedestrian survey identified eight cultural resource locations along the high water line. Despite previous collection of artifacts at CA-NAP-0655, the artifacts identified by the survey appear to coincide with that archaeological site; however, concentrations appear to be more westerly than those previously documented. This may be due to mapping errors by the earlier study that recorded the site or due to water disturbance. As a result of this survey, Reclamation has revised the site boundaries to be below the high water line of Lake Berryessa, next to the APE, primarily because attempts to identify artifacts above the high water mark were unsuccessful. Reclamation has concluded that CA-NAP-0655 is not eligible for listing on the NRHP, based on consensus by SHPO.

The 2009 pedestrian survey failed to identify any cultural resources above the high water mark and within the APE. No cultural resources were recovered during subsurface sampling. The deepest sample was 25 centimeters (less than ten inches) below the ground surface, confirming the notion of thin soils in this area.

Since the Proposed Action falls outside the identifiable boundary of CA-NAP-0655 and because the site is not eligible for listing on the NRHP, Reclamation concluded that the proposed long term development of Camp Berryessa would have no effect on historic properties, in accordance with 36 CFR 800.4. The SHPO concurred with this finding in a letter dated February 4, 2011.

Based on subsequent geoarchaeological research conducted by Reclamation, it has been found that the soils of the landform on which Berryessa sits span the entire period of human occupation in California. Further, the soils and sediments appear to be deflating, revealing artifacts that subsequently are transported by natural processes to the lake shoreline. Therefore, there is potential for unidentified resources to exist within the APE (Nickels 2010).

## **3.4.2 Environmental Consequences**

### ***Impact Criteria***

The proposed project would have an adverse impact on cultural resources if it were to conflict with the regulations, policies, and laws of Section 106 of the NHPA, other cultural resources related law and regulations, or Reclamation cultural resource policies.

Implementing the proposed project would also have a significant impact on cultural resources if it were to do any of the following:

- Cause a substantial adverse change in the significance of a historical resource, as defined in §15064.5;

- Cause a substantial adverse change in the significance of an archaeological resource, in accordance with §15064.5; or
- Disturb any human remains, including those interred outside formal cemeteries.

***Proposed Action***

No historic-era built-environment resources, cultural or historic landscapes, or ITAs have been identified within or near the APE. Therefore, the Proposed Action is not expected to have impacts on these types of cultural resources.

Native American consultations for the Proposed Action have been completed. No Native American resources, such as sacred sites or TCPs, were identified through the consultations.

One archaeological resource, CA-NAP-0655, has been identified next to the APE and has been determined to be ineligible for listing on the NRHP. Therefore, no significant impacts on known archaeological resources are anticipated.

In the event that previously unidentified cultural resources were encountered during construction or operation of the Camp Berryessa recreation facilities, Reclamation would comply with all applicable laws, including the Native American Graves Protection and Repatriation Act, in the event that human remains were identified. To avoid significant impacts on potentially buried or otherwise unanticipated cultural resources, Mitigation Measure CR-1 would be implemented.

***Mitigation Measure CR-1***

If previously unidentified cultural resources were discovered as a result of the Proposed Action, project activities within the vicinity of the find would be stopped and a Reclamation archaeologist would be consulted on how to proceed.

***No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and the site would be left in its current condition. Reclamation would continue to analyze impacts on cultural resources if actions on the ground constituted undertakings in accordance with Section 301(7) of the NHPA, which would initiate Section 106 review. Under existing conditions, Reclamation would continue to not use the Camp Berryessa area. The No Action Alternative would result in no impact on cultural resources.

## 3.5 Geology and Soils

### 3.5.1 Affected Environment

This section is a discussion of the potential for the Proposed Project to affect geologic resources and soils. The ROI for geology and soils is the 10-acre project area, including the depths of excavation or grading. The descriptions below of geological and soils resources are based on discussions in Reclamation documents (1992 and 2008).

#### ***Regulatory Setting***

##### *Clean Water Act*

The CWA includes provisions for reducing soil erosion that could reduce water quality. Unless a permit was obtained under its provisions, it is illegal to discharge pollutants from a point source, such as a construction site, into navigable waters. Proponents of construction projects that would disturb more than one acre must obtain a State General Permit for Stormwater Discharges Associated with Construction Activity and must prepare a Stormwater Pollution Prevention Plan (SWPPP).

##### *Clean Air Act*

The CAA includes provisions for reducing soil erosion that could reduce air and water quality.

##### *Asbestos Airborne Toxic Control Measure*

The Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17 CCR, Section 93105) contains the requirements for construction operations that would disturb any portion of an area in a geographic ultramafic rock (igneous and meta-igneous rocks with very low silica content) unit or one that has naturally occurring asbestos, serpentine, or ultramafic rock. Construction or grading operations on property where the area to be disturbed is greater than one acre require an asbestos dust mitigation plan to be submitted and approved by the appropriate air quality management district before the start of construction. The plan must be implemented at the beginning of construction and must be maintained throughout the operation.

#### ***Geology***

Camp Berryessa is in the eastern slopes of California's Coastal Range, where the geology is associated with the Great Valley Sequence of the Coastal Range. This sequence dates to the Jurassic and Cretaceous periods when large portions of the ocean floor were tilted upward to form steep slopes of sedimentary rocks. The Los Gatos series of soils, which consist of well-drained sediments, are mapped as being in and surrounding the ROI. This soils series can be found in upland areas of elevations between 400 and 2,500 feet and with slopes of 5 to 75 percent. Permeability of these soils is considered moderately slow.

Los Gatos soils are typical in areas used for wildlife habitat, watershed, and sometimes range (Reclamation 1992).

The Lake Berryessa area geology is dominated by sandstone and shale of the Great Valley Complex. The western lake shoreline, including Camp Berryessa, includes these geologic formations, as well as large masses of fractured or sheared, erodible serpentinite. An area of extensive geologic diversity along the Lake Berryessa shoreline is between Pope and Putah Creeks, immediately south of Camp Berryessa (Reclamation 2008).

### ***Seismicity***

The ROI is within a seismically active region, where a large number of faults have been mapped. However, only a very small number of these faults have been designated as active by the California Geological Survey, meaning most faults have not been active in the last 11,000 years. The two nearest faults to the ROI are the Wragg Canyon and Hunting Creek-Berryessa faults. The Hunting Creek-Berryessa fault is an active strike-slip fault with three segments. It is associated with the larger San Andreas Fault system. The Wragg Canyon fault is a 17-mile-long strike-slip fault. Both faults are viewed by the State of California as having a low probability of seismic activity in the foreseeable future (Reclamation 2008).

### ***Soils***

Eleven soil unit types and complexes have been identified at Lake Berryessa. Camp Berryessa overlies one of these units, the Henneke gravelly loam. The area is also described as having a 30 to 75 percent slope and a moderate to high erosion potential. A typical stratigraphic profile of this unit includes a thin gravelly loam over thin very gravelly clay loam over serpentine. The shallow overlying soil depths were confirmed by the subsurface cultural resources testing (Reclamation 2009) and the wastewater feasibility study (Questa Engineering 2009) completed for this project. The RAMP describes the steep slopes, low permeability, and shallow depth to rock in the Henneke gravelly loam unit as “undesirable” for construction of sanitary facilities (Reclamation 1992).

## **3.5.2 Environmental Consequences**

### ***Impact Criteria***

The Proposed Action was evaluated for adverse effects on people or the environment in the context of existing geologic and soils conditions at the project area. The proposed project would have a significant impact on geology and soils if it were not to comply with the applicable laws discussed or if it were to result in any of the following:

- Substantially erode soil or cause the loss of topsoil;
- Be located on expansive soil, as defined in Section 1802.3.2 of the Uniform Building Code (2007), creating substantial risks to life or property;

- Change substantially the topography or any unique geologic or physical features of the site;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Expose people or structures to geologic hazards, including seismic hazards; or
- Overwhelm soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

### ***Proposed Action***

Under the Proposed Action, all or portions of the 10-acre ROI would be cleared and minimally graded in preparation for construction of the new buildings, facilities, and utilities. As part of the clearing and grading, an unknown but likely small amount of topsoil would need to be removed. This soil would likely be reused or disposed of on-site. The wastewater treatment and disposal system would require imported sediments to raise the depth of soil. During construction, temporary erosion may occur in areas that have been cleared and graded. Soils in the equipment staging areas are subject to compaction from the use of heavy equipment and trucks. This may reduce soil infiltration capacity and, therefore, accelerate stormwater runoff from the disturbed areas to Lake Berryessa. After construction is complete, minimal native landscaping would be used to revegetate the disturbed area.

The project has incorporated the preparation and implementation of an SWPPP and an erosion control plan to reduce impacts from erosion and stormwater runoff. However, the ROI has naturally occurring asbestos in the form of serpentine, so an asbestos dust mitigation plan is also required under the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17 CCR, Section 93105). With proper implementation of these plans, impacts associated with loss of soil are expected to be negligible.

Soils within the ROI are not expansive, and construction would not pose substantial risks to life or property.

Grading of the ROI required for the Proposed Action is considered minor and would occur only for roads, trails, parking areas, building pads, and miscellaneous landscaping and fencing. Therefore, the project would not substantially change the topography or damage any unique geologic or physical features.

The ROI includes slopes of up to 75 percent, but the geologic unit and soils are considered stable. The potential for landslide, lateral spreading, subsidence, liquefaction, or collapse is considered minimal.

Although the ROI is within a seismically active area, the nearest faults are considered unlikely to exhibit seismic activity in the foreseeable future. As such, the Proposed Action is not expected to expose people or structures to geologic or seismic hazards, and impacts associated with seismicity are expected to be negligible.

Unmodified, the thin soils of the ROI would be incapable of adequately supporting the planned wastewater treatment and disposal system. In fact the RAMP identifies the soils as “undesirable” for construction of sanitary facilities (Reclamation 1992). However, in its On-Site Wastewater Feasibility Study (Questa Engineering 2009) and the Preliminary Engineering Study (Questa Engineering 2010) Questa Engineering designed a modified landscape, involving imported materials to support the disposal system that has been incorporated into the Proposed Action. Therefore, the soils in the area of the Proposed Action would be able to adequately support the planned wastewater treatment and disposal system.

Overall, the Proposed Action would have adverse impacts on geology and soils in the project area, namely soil excavation and compaction and disturbance of naturally occurring asbestos in serpentinite. With implementation of the planned SWPPP and erosion control plan, as well as the legally required asbestos dust mitigation plan, these effects would be considered less than significant in the short term and long term. Further, with incorporation of the wastewater disposal system design, the Proposed Action is expected to have negligible impacts on soils due to wastewater.

***No Action Alternative***

The No Action Alternative would not have any construction impacts, so no impacts on geology and soils would occur.

## 3.6 Hydrology and Water Quality

### 3.6.1 Affected Environment

Lake Berryessa is a long, relatively narrow body of water located on the eastern slope of California's Coast Range, in northeastern Napa County, about 40 miles west of Sacramento. The reservoir's drainage basin is along the eastern slope of the Coast Range in Napa and Lake Counties, northwest of Solano County (Reclamation 2005).

The climate of the basin is mild and has two seasons, a warm dry season from May through October and a cool wet season from November through April. Most of the precipitation occurs as rain during the cool wet season with only minor amounts of snow on the upper portions of the basin (Reclamation 1992).

Lake Berryessa is a water storage reservoir located among the hilly-to-steep slopes of the Coast Range. Lake Berryessa is fed by Putah and Pope Creeks and their tributaries. There are few perennial tributaries in the basin, as flow in most drainages significantly diminishes or disappears by late summer. In the winter, runoff from rain and snow pours almost immediately into the drainages because of the lack of snowpack or significant groundwater storage in the upper watershed. Winters are seldom stay cold enough to develop a snowpack, and there is little groundwater storage because porous sandstone and shale underlie the eastern shore and both ends of the lake (Reclamation 2005).

The reservoir is created by Monticello Dam, a 304-foot-high concrete structure that impounds Putah Creek where the creek crosses the eastern boundary of Napa County 9 miles west of Winters. The lake is approximately 23 miles long by 3 miles wide at its widest point, with a storage capacity of 1.6 million acre-feet. Commercial and non-commercial (i.e., Reclamation-operated) developments are located primarily along the western lakeshore, between Camp Berryessa to the north, Capell, Wragg and Markley Coves to the south, and the Putah Creek corridor below Monticello Dam to the southeast. Lake Berryessa is used for agricultural irrigation as well as drinking water, and is one of the largest bodies of fresh water in California. It is a major recreation destination, serving the San Francisco Bay Area and the Sacramento Valley, offering opportunities for boating and water sports, camping, fishing, hiking and other outdoor recreation (Reclamation 2005).

The Camp Berryessa site is approximately 10 acres of land on a peninsula (surrounded by water on three sides), with sandy gravel beaches, that extends into the Putah Creek arm of Lake Berryessa. (Questa Engineering 2010).

There are no obvious creeks, wetlands, springs, or seeps on the site.

According to Reclamation's 1992 RAMP, all permanent structures at Lake Berryessa should be located higher than 450 feet above MSL. The reservoir water level may

fluctuate from 455 feet above MSL to 253 feet above MSL. A water level of 309 feet above MSL is considered dead storage elevation. During the severe drought of 1977, the level was lowered to 388 feet above MSL. According to the RAMP, generally all existing structures and facilities, including those for long-term uses, located in the Base Floodplain (440 feet to 450 feet above MSL) will need to be flood-proofed per Reclamation instructions, or removed. The RAMP also prohibits storage of solid wastes, materials, equipment, and other inappropriate items in shoreline areas to protect water supplies, eliminate clutter and aesthetic incompatibility, improve public access, and minimize safety hazards. During preparation of the Camp Berryessa Operations, Design and Preliminary Engineering Study (Questa Engineering 2010), Reclamation senior staff interpreted the Visitor Services Plan to mean that all permanent structures and facilities at Camp Berryessa will need to be higher than 455 feet above MSL (1929 datum). This includes the wastewater disposal field facility. This is a more stringent requirement for locating permanent facilities than was contained in the 1992 RAMP (Questa Engineering 2010).

### **3.6.2 Environmental Consequences**

#### ***Impact Criteria***

The evaluation of potential impacts on water resources is based on the project's potential to affect water quality, surface water runoff volumes, drainage patterns, and flood hazards. The proposed project would have a significant impact on hydrology and water quality if construction of the project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Substantially alter the drainage pattern of the site or area, including altering the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially increase the potential for flooding or the amount of damage that could result from flooding;
- Create or contribute to runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- Otherwise substantially degrade water quality.

## ***Proposed Action***

### *Water Quality Regulations*

Projects in California involving construction activities (e.g., clearing, grading, or excavation) with land disturbance greater than one acre must file a Notice of Intent (NOI) with the applicable RWQCB to indicate their intent to comply with the State General Permit for Storm Water Discharges Associated with Construction Activity (General Permit). The General Permit establishes conditions to minimize sediment and pollutant loadings and requires preparation and implementation of SWPPP before construction. The SWPPP is intended to help identify the sources of sediment and other pollutants, and to establish best management practices (BMPs) for storm water and non-storm water source control and pollutant control. The Proposed Action would disturb an area greater than one acre, and would therefore require an NPDES permit from the Central Valley RWQCB. The proposed project would not have any point sources that would discharge contaminants or pollutants into water bodies. There would be less than significant impacts involving water quality standards or waste discharge requirements.

### *Groundwater*

According to *Camp Berryessa Operations, Design and Preliminary Engineering Study*, the site violated drinking water standards for coliform bacteria each year from 1999 until 2002, when the site was no longer used. The high coliform counts could be related to the lack of proper annular surface seal, possible well connectivity to the lake, or proximity to the now-abandoned on-site wastewater disposal system. Based on this information and the Study's field observations, the existing well is not suitable for potable use and should be reconstructed according to State Well Standards or re-drilled. The reconstructed well should have a 50-foot annular seal for protection against surface contamination that is the most likely cause of the historical water quality violations. Re-drilling and re-construction of the well near the existing borehole would probably be the most effective approach (Questa Engineering 2010). If needed, an appropriate treatment system would be constructed, based on water quality.

When the existing well is reconstructed or re-drilled nearby, a minimum 72-hour constant rate pumping test is recommended to further evaluate the production capacity of the well. The results of pumping drawdown and recovery during this test will provide a basis for estimating the sustainable yield. As a general guideline, for fractured rock wells, the sustainable yield is typically assumed to be no more than about 25 percent of the production rate during a short-term pumping test due to the uncertainties of fractured rock water storage and flow. This provides a conservative factor of safety. If the new well provides insufficient water to meet anticipated camp demands, then a second new well would be considered. A second well could be drilled in the same geologic formation and fracture pattern trend on the north side of the serpentine hilltop, adjacent to the loop road, about 500 feet to the north of the existing decommissioned well (Questa Engineering 2010).

According to the Study, the water supply needs of a campground facility are similar to its wastewater disposal requirements, and vary from about 20 to as much as 40 gallons per

day per person, with 30 gallons the typical expectation for periods of higher water usage (hot summer months). Assuming a camp population between 80 to 200 persons per day, this equates to a water supply demand of 1,600 to 8,000 gallons per day. Water storage should be equal to several days demand and water should be provided for emergency purposes and to even out the water demand during high and low usage periods. Should a second rock fracture well be needed, both wells could pump into the same hill-top storage tank (Questa Engineering 2010).

Typically a poor producing well in fractured rock (that produced just enough to warrant well development) produces 1 to 5 gallons per minute (gpm). A good producing well in an area of heavily fractured rock, and rock with some primary porosity produces 10 to 20 gpm. Although it is not a good idea to operate a well 24 hours a day, 365 days a year, without anticipating high maintenance and periodic failure, if a 3 gpm well was equipped with a suitable (3,000 to 5,000 gallon) storage tank, the well and storage tank system would be capable of producing about 2,100 gallons per day during a 12-hour pumping period. A well would only need to produce 11 or 12 gpm during the 12-hour pumping period (with adequate storage) to meet the needs of 200 users with a relatively high water demand of 40 gallons per day. Based on what is currently known about the old well, the water supply needs for Camp Berryessa would be met without substantially depleting groundwater supplies. Minimizing water use is a criterion in the general design guidelines for Camp Berryessa, and the facility's water consumption would be relatively small. In addition, there are no facilities with competing groundwater uses on adjacent lands. Further pump testing would be conducted to ensure the proposed project does not substantially deplete groundwater supplies, and ensure there would be less than significant impacts involving groundwater supplies. If necessary, based on water availability, some facilities could be eliminated from the proposed buildout to reduce water use.

### Surface Waters

The proposed project would not alter the course of a river or stream, and would make use of the existing contours of the topography as much as possible. The proposed site's landscaping would be enhanced to preserve and stabilize existing drainage patterns. There would be less than significant impacts involving erosion and siltation associated with the proposed site's drainage pattern.

The proposed site would be developed in a manner to prevent on-site flooding. Most importantly, the proposed project is adjacent to Lake Berryessa and, therefore, there are no developed areas downstream of the proposed project that could be affected by runoff from the proposed project. There would be less than significant impacts involving flooding from runoff.

The proposed project does not and would not have a stormwater drainage system. Stormwater would continue to drain into Lake Berryessa. There would be no impact involving creating or contributing runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

### General Water Quality

Runoff from the proposed project would enter Lake Berryessa. Runoff could be contaminated with pollutants found on the surface of parking lots and litter left on the ground. The proposed project would maintain sufficient receptacles with lids for disposing of garbage and recycling materials. Runoff from impervious surfaces would not be channeled directly into Lake Berryessa. There would be less than significant impacts involving substantially degrading water quality.

### Flood

The Base Floodplain is 440 feet to 450 feet above MSL. The reservoir water level may fluctuate from 455 to 253 feet above MSL. During preparation of the Camp Berryessa Operations, Design and Preliminary Engineering Study (Questa Engineering 2010), Reclamation senior staff interpreted the Visitor Services Plan to mean that all permanent structures and facilities at Camp Berryessa will need to be located higher than 455 feet above MSL (1929 datum). This includes the wastewater disposal field facility. All permanent structures and facilities, including the wastewater disposal field facility, would be at least five feet above the Base Floodplain. There would be no impact involving flooding.

### **No Action Alternative**

The proposed site would remain undeveloped. No new buildings, structures, or activities would be added to the proposed site. There would be no changes to water resources. There would be no impact involving water-related topics.

## **3.7 Hazardous Materials and Waste**

### **3.7.1 Affected Environment**

The ROI consists of the 10-acre project site that is primarily composed of oak woodland and shrubby vegetation and has no structures. The project site is on a peninsula that extends into the Putah Creek arm of Lake Berryessa and encompasses an area of naturally occurring asbestos from serpentine rock. Infrastructure remaining from past land use includes gravel roads, disconnected electrical service, a decommissioned water well, and utility poles with lights (Questa Engineering 2010). No hazardous materials or wastes are currently stored, used, or generated at the site.

#### ***Regulatory Setting***

Reclamation is responsible for the identification and proper management of hazardous materials and wastes on Reclamation lands in accordance with the Federal Resource Conservation and Recovery Act (RCRA), California's Asbestos Airborne Toxic Control Measure, and any other applicable state and local laws. Lessees and concessionaires on Reclamation lands are required to comply with all applicable provisions and laws that pertain to hazardous materials, solid and hazardous waste management, pollution prevention, and environmental protection (Reclamation 2008).

#### ***Federal Resource Conservation and Recovery Act***

Any hazardous waste generated or transported by facility owners and operators of treatment, storage, and disposal facilities must be handled according to RCRA standards. In California, RCRA compliance is administered by the California Department of Toxic Substances Control (DTSC), a branch of the California Environmental Protection Agency. Under RCRA, any substantial quantity of hazardous materials or waste generated, transported, or stored on site must be documented and submitted to DTSC for oversight.

#### ***Asbestos Airborne Toxic Control Measure***

The Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17 CCR Section 93105) contains the requirements for construction operations that would disturb any portion of an area that has naturally occurring asbestos, serpentine, or ultramafic rock. Under this regulation, any construction or grading operation where the area to be disturbed is greater than one acre would require an Asbestos Dust Mitigation Plan to be submitted and approved by the appropriate air quality management district prior to construction. The plan must be implemented at the beginning of construction and must be maintained throughout the duration of the operation.

#### ***Soil and Groundwater Contamination at Chaparral Cove Resort***

There is ongoing soil and groundwater remediation approximately one-half mile south of the project site at the Chaparral Cove Resort (Formerly Putah Creek Resort). Two 8,000-

gallon underground storage tanks were removed in 1995 after the presence of petroleum-contaminated soil was discovered in May 1993. Approximately 4,000 cubic yards of contaminated soil down to 23 feet deep was excavated and aerated during the tank removal. After groundwater monitoring wells, installed in 1999 and 2001, detected high levels of gasoline and methyl tertiary-butyl ether (MTBE) in groundwater, an oxidation system was installed in 2002 (RWQCB Staff Letter 2010) (Reclamation 2005). The oxidation system was operated until 2004 when it was replaced with a groundwater extraction system. The groundwater extraction system was operated from 2005 until 2008, when it was found to be ineffective and was discontinued. Reclamation has proposed additional investigation and further excavation and disposal of polluted soil (RWQCB Staff Letter 2010). The boundaries of the plume created by the gasoline contamination are limited to the former Putah Creek Resort location (RWQCB Staff Letter 2010).

#### ***Hazardous Sludge at Putah Creek***

Potentially hazardous sludge and clay lining from 19 wastewater treatment ponds was discovered at four concession areas at Lake Berryessa, including Putah Creek. The former Putah Creek Resort is approximately one-half mile south of the project site. Reclamation is undertaking the complete cleanup, safe disposal of hazardous materials, and contouring of the pond sites (Vignau 2010a).

### **3.7.2 Environmental Consequences**

The proposed project would have a significant impact on hazardous materials and waste if it would:

- Cause a violation of federal, state, or local standards or requirements regulating the handling, storage, treatment, or disposal of a hazardous material or waste;
- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; or
- Substantially increase the risk of accidental explosion or fire hazards.

#### ***Proposed Action***

Under the Proposed Action, a storage and maintenance area is proposed near the parking area to accommodate deliveries, service vehicles, storage of materials and supplies and maintenance activities (Questa Engineering 2010). The most potentially hazardous

substances at Camp Berryessa would likely be chemical landscaping aids, water and sewage treatment chemicals, paint, gasoline, and oil. The storage and use of these substances would be managed according to DTSC regulations and policies. All hazardous materials storage buildings would be placarded per Uniform Fire Code requirements noting the fire, health, and compatibility hazards of the materials stored. Small quantities of these materials would only be used for maintenance of the Camp Berryessa site, and not for daily activities or recreational use (Questa Engineering 2010). Impacts from long-term storage and use of hazardous substances for operations and maintenance would be less than significant.

### ***Construction***

Hazardous materials may be temporarily used and stored on site during the construction of recreational facilities, utilities, and transportation infrastructure. Common hazardous materials that would likely be found at the site during construction are petroleum products, solvents, and cleaners, primarily used for operation and maintenance of construction equipment. The temporary presence of these materials could increase the risk of a release of hazardous materials to the environment. Adverse impacts from hazardous materials and waste used and stored during construction would be less than significant because construction activities would comply with all applicable federal, state, and local regulations. Construction and full build-out of the project is anticipated to be accomplished in phases over a period of up to 10 years.

The ROI includes naturally occurring asbestos from serpentine rock. An asbestos dust mitigation plan would be required under the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (Title 17 CCR Section 93105). With proper implementation of this plan, impacts from airborne hazardous materials would be negligible.

### ***No Action Alternative***

Under the No Action Alternative no additional infrastructure would be built and use of the Camp Berryessa site would remain unchanged. Hazardous materials and waste would not be present at the site.

## 3.8 Public Health and Safety

This section addresses fire safety, water recreation safety, law enforcement, roadway safety, and flora and fauna safety. Because these topics involve stationary and mobile issues of concern, the ROI for public health and safety is both the proposed project site and the surrounding area.

The State of California, Napa County, and Reclamation monitor the water quality routinely, inspecting the sewage systems in the resorts and surrounding areas to ensure their safe operation (Reclamation 2005). Water quality is addressed in greater detail in Section 3.6, Water Resources.

Naturally occurring asbestos includes fibrous minerals found in certain types of rock formations. Naturally occurring asbestos can take the form of long, thin, separable fibers. Natural weathering or human disturbance can break down naturally occurring asbestos into microscopic fibers, easily suspended in air. There is no health threat if naturally occurring asbestos remains undisturbed and does not become airborne. When airborne naturally occurring asbestos is inhaled, these thin fibers irritate tissues and resist the body's natural defenses. Asbestos, a known carcinogen, causes cancers of the lung and the linings of internal organs, as well as asbestosis and other diseases that inhibit lung function. This topic is addressed in greater detail in Sections 3.5 (Geology and Soils), 3.7 (Hazardous Materials and Waste), and 3.11 (Air Quality).

### 3.8.1 Affected Environment

#### ***Fire Safety***

Lake Berryessa has been affected by several devastating human-caused wildfires that destroyed thousands of acres of oak woodland, killed wildlife, and threatened homes. Fireworks and wood fires are prohibited around Lake Berryessa at all times. Portable charcoal stoves are also prohibited around the lakeshore.

The primary fire hazard, which is typical for any development in the rural areas of California, is vegetation fires that occur near structures. The general area of Lake Berryessa has experienced vegetation-related fires in the recent past that have destroyed homes and burned many acres of land. Mitigation of this hazard includes meeting standards for road access, turnouts, and turnarounds, on-site fire protection water storage, and vegetation clearance requirements for individual structures and roadways. These are addressed under the Uniform Fire Code, the state's Public Resources Code, and the Napa County Fire Code (Reclamation 2005).

A 2001 survey by the Napa County Fire Department of the marina complexes on the lake indicates that six of the seven resorts do not comply with Public Resource Code (PRC) 4291 that requires a defensible space around structures. Defensible space is defined as the

area within the perimeter of a parcel, development, neighborhood, and community, where basic wildland fire protection practices and measures are implemented. This provides the key point of defense from an approaching wildfire or defense against an encroaching wildfire or escaping structure fire (Reclamation 2005). Although the Boy Scout camp that once occupied the proposed project site was not part of the 2001 survey, this fire information is provided here to characterize nearby fire conditions. A fire at these complexes could spread to the proposed project site.

The California Department of Forestry and Fire Protection (CAL FIRE) recommends two separate points of ingress/egress for each development. Nearly all of the resorts on the lake have only one point of ingress/egress (Reclamation 2005). Napa County code does not explicitly require two points of ingress/egress, but developments are subject to approval by the Napa County fire marshal. The new concessionaires would be responsible to provide at least two points of ingress/egress in larger concession areas (Vignau 2010c), but smaller developments may be able to provide suitable emergency access by alternate means, such as adequate road width and pullouts (Woodbury 2010).

The Napa County Fire Code requires that fire apparatus access roads have an unobstructed width of not less than 20 feet, an unobstructed vertical clearance of not less than 15 feet, and that street and road networks limit dead ends and provide reasonable widths, turnarounds, and turnouts for fire equipment. Exceptions to the road width requirement are possible if adequate turnouts and sight lines are provided. These minimum requirements should not be obstructed, including by parked vehicles. Firefighters, waiting for civilians to exit a narrow roadway, cannot provide the necessary fire suppression. Further, the lack of a reasonable access for emergency equipment and civilian evacuation concurrently can result in a major loss of life, property and natural resources (Reclamation 2005).

Many of the roadways in the resorts, due to their narrow design, contain obstacles and turns that are inaccessible to fire trucks. Dead-end roads do not include either a “hammerhead” (a T-shaped turnaround) or a terminus bulb (a circular turnaround), which are meant to provide a safe change of direction for emergency equipment. Speed bumps have been installed on many of the roadways within the resorts, thereby hindering the progress of fire engines responding to emergencies (Reclamation 2005).

Resorts lack uniform address and street signs. Many of the signs do not comply with state and local codes, and some are missing altogether. The Napa County Fire Code Sections 15.32.380 and 15.32.390 require that all new and existing buildings have addresses and those addresses must be plainly visible and legible from the street or road. Public Resource Code 4290 also has sign and building number requirements to facilitate locating a fire and to avoid delays in response (Reclamation 2005).

Water supply for fire suppression is a major concern at Lake Berryessa. When the resorts were designed, there were little, if any, allowances for water for fire protection. This has led to water supply problems on every fire that has occurred in the resort areas. Resorts

either have a limited number of hydrants or none at all. Current codes specify a water supply capable of providing the required flow for fire protection (Reclamation 2005).

When there is a fire on Reclamation lands at Lake Berryessa, it is the responsibility of CAL FIRE to suppress fires. CAL FIRE bills Reclamation directly for fire suppression costs (Vignau 2010b). Reclamation manages fuels capable of contributing to the spread of wildfires.

### ***Water Recreation Safety***

Some areas of the lake are marked with 5 mph spherical buoys in an effort to reduce boat speeds in narrow inlets and coves, to reduce boating accidents in congested areas, and to prevent undesirable shoreline erosion. These buoys may be moved as water levels fluctuate during the year. Waterway signs are used to warn boaters of such hazards as floating debris, reefs or shoals, and areas of congestion (Reclamation 2005).

Recreational vessel operators are required to carry specified safety equipment, which may vary according to type of propulsion, type of construction, area and time of use, and number of people aboard. Boating equipment requirements are outlined in the *ABCs of the California Boating Law* (California Department of Boating and Waterways 2010). Reclamation seeks to comply with boating laws and regulations, such as California Harbors and Navigation Code, Vehicle Code, Penal Code, and California Code of Regulations.

### ***Law Enforcement***

Basic responsibility for the health and safety of the visiting public is shared among the State of California, Napa County, and Reclamation. Though the reservoir is federally owned and managed, Reclamation ensures that county ordinances are enforced at all resorts at the lake. The county enforces Title 25 of the State Administrative Code, which regulates trailers and mobile home parks, and requires that all resort operators obtain a yearly operating permit from the county (Reclamation 2005).

For lake users, Reclamation and Napa County are engaged in a land and water safety program that emphasizes public education by making individual contacts and posting informational signs. Boating safety is a joint responsibility of the Napa County Sheriff's Department, which enforces state boating laws, and Reclamation, which uses boat patrols for similar activities (except for law enforcement). Reclamation, for example, has marked many man-made and natural navigational hazards with buoys (Reclamation 2005).

With the enactment of PL 107-69 on November 12, 2001, and the subsequent rule-making of June 4, 2002, Reclamation has legislative authority to use federal, state, and local law enforcement personnel to protect its facilities, water resources, surrounding lands, and visitors. Further, though Lake Berryessa operates under concurrent jurisdiction, Reclamation is permitted to enter into agreements where nonfederal authorities can be reimbursed for law enforcement services carried out on Reclamation property. Although uniformed Reclamation personnel can address certain minor violations through the use of warnings, they have no investigative or arrest authority and

must rely on the Napa County Sheriff's Office, the California Highway Patrol, and the CDFG to provide this level of enforcement (Reclamation 2005).

Reclamation also continues to rely on Napa County and CAL FIRE to address visitor safety, fire suppression, and medical emergencies, both on the water and in shore-based recreation sites. The enforcement of building and sanitation regulations is the responsibility of Napa County; fish and game regulations remain the responsibility of state game wardens (Reclamation 2005).

### ***Roadway Safety***

A significant cause of fatalities at Lake Berryessa is accidents on the winding and unpredictable roads, which are narrow and do not always have guardrails. Deer and other large animals frequently cross the roads, occasionally resulting in collisions. It is important to follow all posted speed limits in order to minimize risks (Reclamation, undated).

### ***Flora and Fauna Safety***

Poison oak is a deciduous plant which causes a blistering rash when it comes in contact with human skin. This versatile plant comes in many forms, including vines, shrubs, and bushes, and the color of the leaves may vary from light green, to dark green, to red, depending on the season (Reclamation, undated).

The western blacklegged tick, an inhabitant of high grasses, is a 0.25-inch bloodsucking insect. In rare occasions, ticks may transmit a serious illness, Lyme disease, the classic symptoms of which are a red target-like rash surrounding the site of the tick bite, fever, headache, lethargy, muscle pains, and inflammation (Reclamation, undated).

The only dangerous spider at Lake Berryessa is the black widow. It can often be found in cool, dry, and sheltered areas, such as storage rooms, or under ledges and thick brush (Reclamation, undated).

One out of more than 10 species of snakes found in the Lake Berryessa area, and the only one that poses a threat to humans, is the venomous rattlesnake. The western rattlesnake is one of many species of rattlesnakes that live in the US, and it is the only venomous snake native to California (Reclamation, undated).

Mountain lions, black bears, and coyotes are rarely seen around Lake Berryessa, but they are important members of the Lake Berryessa family, keeping prey animals like rodents, deer, and other animals in healthy balance in the ecosystem. Mountain lions have been sighted in many areas around Lake Berryessa, including around the roadside and at Oak Shores Park. Mountain lions feed primarily on deer. Black bears are extremely rare in Lake Berryessa's hot environment, but they have been sighted occasionally in remote areas, especially in the Cedar Roughs region, which is the last intact wild black bear habitat in Napa County. These creatures are generally seen only in the early summer mornings. In the winter, they usually hibernate in a sheltered area, such as a hollow tree,

ledge, or cave. The coyote, a member of the canine family, looks like a tan medium-sized dog with a bushy tail (Reclamation, undated).

### **3.8.2 Environmental Consequences**

#### ***Impact Criteria***

The proposed project would have a significant impact on public health and safety if it were to result in the following:

- Expose people or the environment to a potential health hazard;
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires; or
- Substantially increase safety risks to workers and the public.

#### ***Proposed Action***

##### *Fire Safety*

Planting and design would take into consideration clear zones for fire suppression and management. Use of native plant species would be emphasized and, where possible, vegetation would be planted in a manner to facilitate fire suppression and weed management. Structures would have appropriate fire suppression supplies, such as fire extinguishers. The main access road and roads and paths within the central portion of the site would be suitable for emergency access. A road width exception will be requested in order to minimize disturbance to soil and native vegetation. The internal circulation system would be designed to provide a firm and stable surface, with slopes and cross slopes, in compliance with regulations for ADA accessibility and to allow for emergency access. The proposed project would be required to comply with Reclamation fire restrictions and prohibitions, which would be enforced. The proposed project would involve recreation activities that are also found in other areas around Lake Berryessa. There would be less than significant impacts involving the ignition and spread of a fire.

##### *Water Recreation Safety*

Multiple access points would be provided for water-oriented recreation. The proposed project would be required to comply with water safety laws, codes, and regulations, which would be enforced. Also, Reclamation would not be allowed to provide water recreation opportunities without also monitoring and safely enforcing associated laws. There would be less than significant impacts involving water recreation safety.

##### *Law Enforcement*

The proposed project would develop facilities that would serve a range of constituents with a mix of outdoor education and recreation opportunities, with a primary focus on students, youth organizations, and nonprofit organizations. As part of the education program, the public would be informed, through signs and brochures, about activities that

are allowed and prohibited. Roads and paths within the central portion of the site would be suitable for emergency access. The internal circulation system would be designed to provide a firm and stable surface, with slopes and cross slopes, in compliance with regulations for ADA accessibility and to allow for emergency access. Also, Reclamation would not be allowed to develop facilities and programs without also monitoring and safely enforcing associated laws. There would be less than significant impacts involving law enforcement.

#### Roadway Safety

Initial development would likely include basic utility and transportation infrastructure, such as roads. Minor improvements, such as pullouts and new gravel, are proposed for the main camp access road, from Berryessa-Knoxville Road to the existing parking area and camp host site. Within the site, the camp access road would be improved from the parking area west to a proposed welcome kiosk and drop-off point. No public vehicular access would be allowed beyond the kiosk. Primary and secondary trails would be established for access to facilities in the central portion of the site. Roads and paths in the central portion of the site would be suitable for emergency access. A road width exception will be requested in order to minimize disturbance to soil and native vegetation. The internal circulation system would be designed to provide a firm and stable surface, with slopes and cross slopes, in compliance with regulations for ADA accessibility and to allow for emergency access. There would be less than significant impacts involving roadways.

#### Flora and Fauna Safety

The proponents of the proposed project would develop facilities that would serve a broad range of constituents, with a mix of outdoor education and recreation opportunities and a primary focus on students, youth organizations, and nonprofit organizations. As part of the education program, the public would be informed, through signs and brochures, about the characteristics of local flora and fauna, including potential hazards. There would be less than significant impacts involving flora and fauna.

#### **No Action Alternative**

The proposed site would remain undeveloped. No new buildings, structures, or activities would be added to the proposed site. There would be no changes involving fire safety, water recreation safety, law enforcement, roadway safety, and flora and fauna safety. There would be no impacts involving these public health and safety topics.

## 3.9 Utilities and Infrastructure

### 3.9.1 Affected Environment

This section describes the existing conditions of utilities and infrastructure at the Camp Berryessa site.

#### ***Previous Utilities and Infrastructure***

Camp Berryessa was established as a Boy Scout Camp. The property included the following facilities:

- Camp waterfront and aquatic access;
- Three shelters;
- One bathroom and shower facility;
- BB gun and archery ranges;
- A chapel;
- An amphitheater;
- A water well; and
- A single phase electrical system.

When the camp was closed in 2004, all structures were removed, and the water well was decommissioned in 2008.

#### ***Current Utilities and Infrastructure***

The infrastructure remaining at the project site includes:

- Gravel roads,
- Disconnected electrical service,
- Several utility poles equipped with lights, and
- A decommissioned water well.

The aboveground infrastructure, such as a pump and a tank, have been removed from the well site, but the well itself is still in place. This well is not suitable for reuse due a history of coliform contamination (Questa Engineering 2010; EPA 2010). There is

accessible groundwater under the property that could require treatment to be potable (Questa Engineering 2010).

There is no wastewater disposal system at the project site. Existing constraints to constructing a facility include shallow soils with somewhat slow percolation rates, a 200-foot required setback from the high water line of the lake, and a Reclamation stipulation that the wastewater disposal area be located above 455 feet elevation, which is further complicated by very shallow serpentine soils in the hilltop area (Questa Engineering 2010).

Overhead electrical lines from the previous facility are still in place, but the meter, electrical panel and other electrical components were demolished when the camp was dismantled (Questa Engineering 2010). The project site is located within the Pacific Gas and Electric Company (PG&E) service area.

Transportation infrastructure analysis is provided in Section 3.10 (Traffic and Transportation).

### **3.9.2 Environmental Consequences**

#### ***Impact Criteria***

The proposed project would have a significant impact on utilities and infrastructure if it would either:

- Increase demand in excess of utility system capacity and require substantial expansion or result in system deterioration due to improper maintenance or extension of service beyond its useful life; or
- Result in a violation of federal, state, or local standards or requirements regulating a public utility system, such as a violation of a NPDES permit.

#### ***Proposed Action***

Under the Proposed Action, the project site would be developed in phases depending on funding, permitting, and marketing demand. Infrastructure would be added over time, likely beginning with basic utility infrastructure including:

- Drilling an on-site well,
- Constructing an on-site water storage and distribution system,
- Constructing an on-site wastewater system, and
- Upgrading the electrical system that connects to the electrical line along Berryessa-Knoxville Road.

Water and wastewater utilities would be contained within the project site and would not affect the capacity of any local utility. Electricity demands would be relatively low for this small-scale, low-impact development and would have a negligible impact on PG&E or customers using PG&E power. An on-site solar power system that would reduce the demand on the power supply is planned. Communication utilities, such as telephone, internet, and cable television, could likely be brought into the site on the same poles as the electrical lines. Wireless phone service is available in the vicinity. Solid waste generation from this small-scale, low-impact development would have a negligible impact on waste disposal services and landfills.

***No Action Alternative***

Under the No Action Alternative infrastructure described for the Proposed Action would not be constructed and the site would be left in its current condition. Sites where previous infrastructure has been removed would gradually revegetate and the remaining access road could deteriorate if not maintained for other purposes. There would be no effect on local utilities or landfills.

## 3.10 Traffic and Transportation

### 3.10.1 Affected Environment

#### *Local Roadways*

Lake Berryessa can be accessed via six main roads from the nearby communities of Winters, Fairfield, Napa, and Rutherford, as follows:

- State Highway 121;
- State Highway 128;
- Berryessa-Knoxville Road (county);
- Pope Canyon Road (county);
- Steele Canyon Road (county); and
- Wragg Canyon Road (county).

These roads are primarily paved two-lane routes designed for speeds of 25 to 55 miles per hour. These roads are generally rural and serve commuter, commercial, and recreational functions. On weekdays, traffic is mostly commuter and commercial, with only a minor proportion being recreational. During weekends and holidays and during the peak recreation season, recreational traffic increases on these roads (Reclamation 1992, 2005, 2008).

Berryessa-Knoxville Road is a north-south-oriented county road that provides access to the west and north shores of the lake. It serves four resorts, two public day-use areas, a public launch ramp, several small stores, and three private residential developments. Two additional county roads of lesser importance that provide access to resorts are Wragg Canyon Road and Steele Canyon Road, the latter of which also serves local traffic to and from a private residential development. Pope Canyon Road intersects Berryessa-Knoxville Road at the northwest corner of the lake and serves Lake County and other northern areas. Wooden Valley Road, maintained in part by both Napa and Solano Counties, provides access from Vacaville and Fairfield. One section of Wooden Valley Road that is in Solano County is generally narrow and poorly developed, at one point narrowing to a single-lane bridge. East Side Road is a gravel road maintained by Reclamation, which serves the northern portion of the east side of Lake Berryessa. The road provides access to ranchers east of the lake and serves as a fire access route for CAL FIRE. Reclamation and the CDFG also use the road for management of the Lake Berryessa Wildlife Area. This road is closed to the public (Reclamation 1992, 2005, 2008).

In 1992 the CalTrans annual average daily traffic count showed 1,705 vehicles used Berryessa-Knoxville Road. In 2002, the number rose to 2,175 vehicles, an increase of 470 vehicles and a traffic increase of 27 percent. CalTrans and Napa County believe that the roads serving Lake Berryessa are still below capacity, except on weekends and holidays during the summer (Reclamation 2005).

Congestion around the lake is evident only during weekends and holidays during the summer. The accident rate for most sections of these roads is slightly lower than the state average, except along those stretches that are narrow and curving and have poor visibility. At those locations, the accident rate is slightly higher than average (Reclamation 1992, 2005, 2008).

No transportation projects proposed in *the Metropolitan 2035 Transportation Plan for the San Francisco Bay Area*, which includes Napa County, are in the Lake Berryessa vicinity (Metropolitan Transportation Commission 2009). Any improvements to the roadways servicing Lake Berryessa would occur when they reach traffic-bearing capacity (Reclamation 2005).

#### ***Project Site Roadways***

A compacted gravel access road is approximately 0.3 mile north of the bridge over Putah Creek. This road connects Berryessa-Knoxville Road with the interior of the project site. The road is oriented east-west and includes widened pull-offs. The road terminates roughly in the south-central portion of the peninsula, with a widened parking area and a road spur that continues a short distance north. A short spur road to the south in the eastern portion of the peninsula appears to have served as access to a boat ramp in a cove in the southeastern portion of the project site. A U-shaped dirt parking area is on the north side of the main access road, across from the boat access spur. While Reclamation has maintained the main access road, vegetation has grown over the parking area and road spurs since the closure of the Boy Scout Camp.

### **3.10.2 Environmental Consequences**

This section describes the impacts on traffic and transportation that could occur if the Proposed Action or No Action Alternative were implemented. No traffic study was conducted for this planning effort.

#### ***Impact Criteria***

The proposed project would have a significant impact on traffic and transportation if it would result in any of the following:

- Cause a substantial increase in traffic in relation to the existing traffic load and capacity of the local highways and roads;
- Exceed, either individually or cumulatively, a level of service standard established by the local county congestion management agency;

- Substantially increase hazards due to a design feature;
- Result in inadequate emergency access or inadequate parking capacity;
- Conflict with an applicable congestion management program; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation.

***Proposed Action***

Under the Proposed Action, the existing camp access road would be upgraded and parking and trails would be constructed, as described in Section 2.8.9 and depicted on Figure 2-1. Public vehicular access would be restricted to the camp access road and the main parking lot. Primary trails would be constructed to provide access to emergency and service vehicles. Thus, access to and within the project site would be improved over the existing condition once early phases of the project development were completed. The parking lot would have a maximum capacity of approximately 50 to 60 vehicles.

Implementing the Proposed Action would contribute to the overall volume in the vicinity of Lake Berryessa and especially onto Berryessa-Knoxville Road from increased recreational use. However, due to the limited capacity of the project site, this would be a relatively small, less than significant, increase and would likely reach a maximum volume similar to what existed when the Boy Scout camp was in operation. Use of the project site would increase the number of vehicle turns onto and off Berryessa-Knoxville Road at the camp access road, which could slightly increase accident rates in the vicinity of the intersection over existing conditions. However, these rates would likely be similar to rates that existed when the Boy Scout camp was present. This impact is expected to be less than significant.

A short-term, less than significant increase in trucks and heavy equipment using Berryessa-Knoxville Road would occur during construction of the project site. Construction equipment would be operated primarily within the project site and thus would have very limited impact on traffic on Berryessa-Knoxville Road.

Implementing the Proposed Action would not conflict with any transportation components of plans, policies, ordinances, or management programs.

***No Action Alternative***

Under the No Action Alternative, infrastructure described for the Proposed Action would not be constructed, and thus roadways at the project site would be left in their current condition and would likely deteriorate over time if the site were to remain undeveloped. Recreational use of the project site associated with developing facilities and programs would not increase. Thus, the project site would not contribute to traffic volume, patterns, or accident rates around Lake Berryessa.

## 3.11 Air Quality

### 3.11.1 Affected Environment

Air pollutants are often characterized as being primary or secondary pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates, and hydrogen sulfide). Secondary pollutants are those (such as ozone, nitrogen dioxide, and sulfate particles) formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants. Those compounds that react to form secondary pollutants are referred to as reactive pollutants, pollutant precursors, or precursor emission products. Some air pollutants (such as many organic gases and suspended particulate matter) are a combination of primary and secondary pollutants.

#### ***Air Quality Standards***

Federal and state air quality management programs have evolved using two distinct management approaches:

- The State Implementation Plan (SIP) process of setting ambient air quality standards for acceptable exposure to air pollutants, conducting monitoring programs to identify locations experiencing air quality problems, and developing programs and regulations designed to reduce or eliminate those problems; and
- The Hazardous Air Pollutant (HAP) regulatory process identifying specific chemical substances that are potentially hazardous to human health, and setting emission standards to regulate the amount of those substances that can be released by individual commercial or industrial facilities or by specific types of equipment.

#### **Criteria Air Pollutants**

Air quality programs based on ambient air quality standards typically address air pollutants produced in large quantities by widespread types of emission sources and that are a public health concern because of their toxic properties. The US Environmental Protection Agency (EPA) established ambient air quality standards for several different pollutants, often are referred to as criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, suspended particulate matter, and lead). Standards for suspended particulate matter have been set for two size fractions: inhalable particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>). Federal ambient air quality standards are based primarily on evidence of acute and chronic health effects. Federal ambient air quality standards apply to outdoor locations to which the general public has access.

Some states, including California, have adopted ambient air quality standards that are more stringent than the comparable federal standards or address pollutants that are not covered by federal ambient air quality standards. Ozone and suspended particulate matter

are the air pollutants of greatest concern in California as well as in most parts of the country.

Suspended particulate matter represents a diverse mixture of solid and liquid material having size, shape, and density characteristics that allow the material to remain suspended in the air for meaningful time periods. The physical and chemical composition of suspended particulate matter is highly variable, resulting in a wide range of public health concerns.

In addition to public health impacts, suspended particulate matter causes a variety of material damage and nuisance effects: abrasion; corrosion, pitting, and other chemical reactions on material surfaces; soiling; and transportation hazards from visibility impairment.

#### *Hazardous Air Pollutants*

Air quality programs based on regulation of other hazardous substances typically address chemicals used or produced by limited categories of industrial facilities. Federal air quality management programs for hazardous air pollutants focus on setting emission limits for particular industrial processes rather than setting ambient exposure standards.

California has an Air Toxics Control Measure (ATCM) program for establishing state regulations applicable to various hazardous air pollutants. In addition to industrial chemicals, the California ATCM program includes regulations intended to reduce exposure to diesel particulate matter and naturally occurring asbestos.

#### ***Air Quality Planning Programs***

The federal Clean Air Act requires each state to identify areas that have ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a SIP to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas.

The status of areas with respect to federal ambient air quality standards is categorized as nonattainment, attainment (better than national standards), unclassifiable, or attainment/cannot be classified. For most air pollutants, initial federal status designations are made using only two categories (either nonattainment and unclassifiable/attainment, or nonattainment and attainment/cannot be classified). For simplicity and clarity, the federal unclassifiable and attainment/cannot be classified designations will be called unclassified in this document. The unclassified designation includes attainment areas that comply with federal standards as well as areas for which monitoring data are lacking. Unclassified areas are treated as attainment areas for most regulatory purposes.

#### ***Regulatory Considerations***

In general, states have assumed primary responsibility for enforcing most federal industrial source emission standards and industrial source review requirements, with EPA exercising formal review and oversight responsibilities. In California, air quality regulation is a joint responsibility between the California Air Resources Board (CARB)

and local air quality management agencies. Local agencies are either a single county or a multi-county agency, typically called either an Air Pollution Control District (APCD) or an Air Quality Management District (AQMD). APCDs and AQMDs have primary responsibility for most air quality regulatory programs, with CARB exercising oversight responsibilities. CARB directly implements statewide regulatory programs for motor vehicles, portable equipment, and hazardous air pollutants. Napa County is part of a regional air quality management district, the Bay Area Air Quality Management District (BAAQMD).

### ***Clean Air Act Conformity***

Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. General conformity requirements are potentially applicable to many federal agency actions, but apply only to those aspects of an action that involve on-going federal agency responsibility and control over direct or indirect sources of air pollutant emissions.

The EPA conformity rule establishes a process that is intended to demonstrate that the proposed federal action:

- Would not cause or contribute to new violations of federal air quality standards,
- Would not increase the frequency or severity of existing violations of federal air quality standards, and
- Would not delay the timely attainment of federal air quality standards.

The EPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called de minimis levels. Emissions associated with stationary sources that are subject to permit programs incorporated into the SIP are not counted against the de minimis threshold.

### ***Existing Air Quality Conditions***

The air pollutants of greatest concern in Napa County are ozone and suspended particulate matter. The entire BAAQMD, including Napa County, is designated as a marginal nonattainment area for the federal 8-hour ozone standard and as a nonattainment area for the federal PM<sub>2.5</sub> standard (BAAQMD 2010a). Urbanized portions of the BAAQMD are considered maintenance areas for the federal carbon monoxide standard, but that designation does not apply to the Lake Berryessa portion of Napa County. CARB has designated the BAAQMD as nonattainment for the state ozone standards, the state PM<sub>10</sub> standards, and the state PM<sub>2.5</sub> standard.

The federal nonattainment designations for the BAAQMD means that federal agency actions in Napa County are subject to CAA conformity review requirements. The relevant CAA conformity de minimis thresholds are:

- 100 tons per year for nitrogen oxide emissions or for reactive organic compound emissions (as ozone precursors), and
- 100 tons per year for PM<sub>2.5</sub> emissions.

### ***Climate Change***

Climate represents a statistical description of weather patterns averaged over periods ranging from several months (for seasonal descriptions) to several decades (for long-term climate patterns). Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature and precipitation patterns, but also include wind, cloud cover, humidity, and sunlight intensity patterns.

Changes in climate conditions occur over a wide range of time scales. Climate change over time scales of tens of thousands to hundreds of thousands of years or longer are produced by natural factors such as:

- Continental drift and associated changes in ocean circulation patterns, with resulting changes to atmospheric circulation patterns and weather conditions;
- Continental uplift and tectonic activity forming mountain ranges and plateaus that alter atmospheric circulation patterns and weather conditions over land areas; and
- Variations in the shape of Earth's orbit around the sun and variations in the tilt of the Earth's axis, affecting the intensity of sunlight received at different locations.

Climate changes over shorter time scales are produced by natural factors such as:

- Variations in the sun's output of solar radiation;
- Volcanic eruptions releasing large quantities of carbon dioxide (CO<sub>2</sub>), sulfur compounds, and aerosols;
- Periodic changes in ocean circulation patterns and sea surface temperatures, which influence global weather patterns;
- Changes in the extent of snow and ice cover; and
- Other changes in land surface properties affecting the absorption and reflection of solar radiation.

Over the last few centuries, human activity has become a factor producing climate change through:

- Activities that generate CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and other greenhouse gas (GHG) emissions;
- Activities generating photochemical air pollutants, causing increases in ozone levels in the lower atmosphere;
- Activities that release chlorofluorocarbon compounds that cause depletion of stratospheric ozone;
- Activities generating solid and liquid aerosol air pollutants; and
- Changes in land surface properties affecting the absorption and reflection of solar radiation.

### Greenhouse Gases

GHGs are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that back toward the earth's surface, trapping heat and warming the earth's atmosphere. The most important naturally-occurring GHG compounds are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, ozone, and water vapor. CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are produced naturally by respiration and other physiological processes of plants, animals, and microorganisms; by decomposition of organic matter; by volcanic and geothermal activity; by naturally occurring wildfires; and by natural chemical reactions in soil and water. Ozone is not released directly by natural sources, but forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. Ozone in the lower atmosphere is so chemically reactive that it has a short residence time that limits its actual climate change effects. While water vapor is a strong GHG, its concentration in the atmosphere is primarily a result of, not a cause of, changes in surface and lower atmospheric temperature conditions.

Although naturally present in the atmosphere, concentrations of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O also are affected by emissions from industrial processes, transportation technology, urban development, agricultural practices, and other human activity.

The Intergovernmental Panel on Climate Change (IPCC) concluded that these changes in atmospheric composition are almost entirely from of human activity, not from changes in natural processes that produce or remove these gases (IPCC 2007).

### California Greenhouse Gas Programs

California began efforts to address GHG issues at a state level in 1988 when the California Energy Commission was directed to develop a statewide inventory of GHG emission sources. The California Climate Action Registry was established in 2000 to allow companies and government agencies to voluntarily record their GHG emissions in a database, in anticipation of possible future regulations that might allow credit for early GHG emission reductions. In 2002, Assembly Bill 1493 directed CARB to develop regulations to reduce GHG emissions from vehicles sold in California.

In 2006, Senate Bill 1368 created GHG performance standards for new long-term financial investments in base-load electricity generation facilities serving California customers. Also in 2006, California passed Assembly Bill 32 (the California Global Warming Solutions Act of 2006; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires CARB to design and implement regulations, emission limits, and other measures to reduce statewide GHG emissions to 1990 levels by 2020.

### Climate Change Trends

Recent climate trends represent the cumulative effect of regional, continental, and global climate change conditions. Evaluations of climate change conditions in California tend to focus on Southern California urban areas, coastal areas, the Central Valley, and the Sierra rather than on desert areas, in part because there are fewer long-term meteorological stations in desert areas. Reviews of historical climate data for California (California Energy Commission 2009) indicate:

- There has been a greater increase in average temperature in the western US than in the US as a whole.
- Average nighttime minimum temperatures in California have increased more than average daytime maximum temperatures. Since 1920, the average nighttime minimum temperature in California has increased 0.33 degrees Fahrenheit (°F) per decade while the average daytime maximum temperature has increased 0.1 °F per decade.
- The average number of winter chill hours (hours with temperatures below 45 °F) in the Central Valley has decreased since 1950.
- There has been an increase in the number of heat stress events over the last 50 years.
- A larger fraction of annual precipitation in the Sierra is falling as rain rather than as snow.

## **3.11.2 Environmental Consequences**

### ***Impact Criteria***

Napa County has federal nonattainment designations for ozone and PM<sub>2.5</sub>, and has state nonattainment designations for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. The CAA conformity thresholds for ozone precursors (reactive organic compounds and nitrogen oxides) are 100 tons per year for each precursor category. The CAA conformity threshold for PM<sub>2.5</sub> emissions is 100 tons per year. The BAAQMD has adopted air quality impact significance thresholds (Table 3.11-1) for project-related emissions associated with construction activities and operational activities (BAAQMD 2010b).

**Table 3.11-1  
BAAQMD Impact Significance Thresholds for Criteria Air Pollutants**

Pollutant	Threshold for Construction Activity, pounds per day	Thresholds for Operational Activities	
		Pounds per Day	Tons per Year
ROG	54	54	10
NO <sub>x</sub>	54	54	10
PM <sub>10</sub>	82 (exhaust emissions only)	82	15
PM <sub>2.5</sub>	54 (exhaust emissions only)	54	10
Fugitive Dust (PM <sub>10</sub> and PM <sub>2.5</sub> )	Best Management Practices	No threshold adopted	No threshold adopted

ROG = reactive organic gases (ozone precursors)

NO<sub>x</sub> = nitrogen oxides (ozone precursors)

Source: BAAQMD 2010b

In addition to impact significance thresholds for criteria air pollutants, the BAAQMD has adopted impact significance thresholds for GHG emissions (BAAQMD 2010b). The BAAQMD impact significance threshold for GHG emissions from operational activities is 1,212.5 tons per year (1,100 metric tons per year), carbon dioxide equivalent (CO<sub>2</sub>e); the BAAQMD has not adopted a GHG impact significance threshold for construction activities.

***Proposed Action***

Air pollutant and GHG emissions would be generated by the proposed project during construction and operation. An additional air quality issue is the potential exposure of site occupants to naturally occurring asbestos. These air quality topics are discussed in the sections that follow. Results of the analysis show that criteria pollutant and greenhouse gas emissions associated with construction and operation would be less than the BAAQMD impact significance thresholds and less than the CAA conformity thresholds. Development and implementation of an Asbestos Dust Mitigation Plan would avoid potential impacts from exposure to naturally occurring asbestos.

***Emissions from Construction Activities***

Emissions associated with construction have been estimated using a detailed spreadsheet model that accounts for implementation of federal and state emission standards applicable to construction equipment. The spreadsheet model includes a database of 115 equipment types, subdivided into engine size and fuel type categories (diesel, gasoline, and compressed gas fuels). The spreadsheet model generates estimates of criteria pollutant emissions, GHG emissions, and diesel particulate matter emissions. In addition, the spreadsheet model provides estimates of construction-related truck trips and construction worker commute trips.

Emissions associated with off-site construction-related vehicle traffic were estimated using the operational analysis module of the URBEMS2007 model (Jones and Stokes Associates 2007). Construction truck traffic and worker commute traffic were both assumed to average 45 miles each way at an average speed of 35 miles per hour (mph). The vehicle mix for construction truck traffic was derived from the URBEMIS2007 default values for Napa County, using only the light heavy truck 2, medium heavy truck,

and heavy truck vehicle categories. All medium heavy trucks and heavy trucks were assumed to be diesel-fueled. The vehicle mix for construction worker commute traffic was assumed to be light duty autos, light duty trucks (classes 1 and 2), and medium duty trucks. The vehicle mix fractions were derived from the URBEMIS2007 default values for Napa County, with adjustments made to the fraction of light duty autos. The default light duty auto fraction was reduced by half, with the fractions for each vehicle type normalized to total 100 percent. This procedure resulted in a vehicle mix of about 25 percent light duty autos and 75 percent light and medium duty trucks, vans, and sport utility vehicles.

For this analysis, it was assumed that construction activities would occur intermittently over a period of nine years. Initial construction activity in 2011 was assumed for facilities associated with the enhanced rustic development option, followed by expansion to provide central facilities in 2015, and final expansion to provide permanent cabins and central services in 2019.

Maximum daily construction-related emissions of criteria pollutants during 2011, 2015, and 2019 are summarized in Tables 3.11-2, 3.11-3, and 3.11-4, respectively. Emissions during each year would be well below the BAAQMD impact significance thresholds summarized in Table 3.11-1.

**Table 3.11-2  
Maximum Daily Construction Emissions for 2011**

Construction Phase and Emissions Component	Maximum Pollutant Emissions, Pounds Per Day						
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM
<b>Roads, Parking, and Trails</b>							
On-Site	1.53	14.79	8.60	0.90	3.91	2.00	1.11
Truck Traffic	0.19	3.29	1.28	0.01	0.58	0.18	0.13
Worker Traffic	0.67	0.62	8.50	0.01	1.39	0.26	0.07
<b>Subtotal</b>	<b>2.39</b>	<b>18.70</b>	<b>18.38</b>	<b>0.92</b>	<b>5.88</b>	<b>2.45</b>	<b>1.30</b>
<b>Utilities</b>							
On-Site	0.54	3.71	3.33	0.12	1.19	0.56	0.25
Truck Traffic	0.11	1.94	0.75	0.00	0.34	0.11	0.08
Worker Traffic	1.11	1.04	14.16	0.01	2.32	0.44	0.11
<b>Subtotal</b>	<b>1.76</b>	<b>6.69</b>	<b>18.24</b>	<b>0.13</b>	<b>3.85</b>	<b>1.11</b>	<b>0.44</b>
<b>Facility Pads</b>							
On-Site	0.42	4.00	3.38	0.23	0.83	0.46	0.30
Truck Traffic	0.06	1.01	0.39	0.00	0.18	0.06	0.04
Worker Traffic	0.74	0.69	9.44	0.01	1.54	0.29	0.07
<b>Subtotal</b>	<b>1.22</b>	<b>5.70</b>	<b>13.21</b>	<b>0.24</b>	<b>2.55</b>	<b>0.81</b>	<b>0.41</b>
<b>Facility Pads</b>							
On-Site	0.35	2.88	2.23	0.09	0.53	0.29	0.18
Truck Traffic	0.07	1.19	0.46	0.00	0.21	0.07	0.05
Worker Traffic	0.74	0.69	9.44	0.01	1.54	0.29	0.07
<b>Subtotal</b>	<b>1.16</b>	<b>4.76</b>	<b>12.13</b>	<b>0.10</b>	<b>2.29</b>	<b>0.65</b>	<b>0.30</b>
<b>Maximum Day Total</b>	<b>2.38</b>	<b>18.70</b>	<b>18.38</b>	<b>0.92</b>	<b>5.88</b>	<b>2.49</b>	<b>1.31</b>

CO = carbon monoxide  
 SO<sub>x</sub> = sulfur oxides  
 DPM = diesel particulate matter  
 Construction phases assumed to occur in sequence without overlap.  
 Source: Tetra Tech analyses

**Table 3.11-3  
Maximum Daily Construction Emissions for 2015**

Construction Phase and Emissions Component	Maximum Pollutant Emissions, Pounds Per Day						
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM
Roads, Parking, and Trails							
On-Site	0.77	6.81	5.68	0.29	2.57	1.17	0.48
Truck Traffic	0.09	1.32	0.57	0.00	0.35	0.10	0.06
Worker Traffic	0.38	0.33	4.76	0.01	1.08	0.21	0.05
<b>Subtotal</b>	<b>1.24</b>	<b>8.46</b>	<b>11.01</b>	<b>0.30</b>	<b>4.00</b>	<b>1.48</b>	<b>0.59</b>
Utilities							
On-Site	0.13	0.96	1.23	0.01	1.83	0.68	0.08
Truck Traffic	0.03	0.40	0.17	0.00	0.11	0.03	0.02
Worker Traffic	0.38	0.33	4.76	0.01	1.08	0.21	0.05
<b>Subtotal</b>	<b>0.54</b>	<b>1.69</b>	<b>6.16</b>	<b>0.02</b>	<b>3.02</b>	<b>0.92</b>	<b>0.15</b>
Facility Pads							
On-Site	0.33	2.73	3.42	0.11	2.14	0.87	0.21
Truck Traffic	0.05	0.81	0.35	0.00	0.22	0.06	0.04
Worker Traffic	0.38	0.33	4.76	0.01	1.08	0.21	0.05
<b>Subtotal</b>	<b>0.76</b>	<b>3.87</b>	<b>8.53</b>	<b>0.12</b>	<b>3.44</b>	<b>1.14</b>	<b>0.30</b>
Facility Pads							
On-Site	0.16	1.12	1.39	0.01	1.37	0.53	0.08
Truck Traffic	0.03	0.40	0.17	0.00	0.11	0.03	0.02
Worker Traffic	0.38	0.33	4.76	0.01	1.08	0.21	0.05
<b>Subtotal</b>	<b>0.57</b>	<b>1.85</b>	<b>6.32</b>	<b>0.02</b>	<b>2.56</b>	<b>0.76</b>	<b>0.15</b>
<b>Maximum Day Total</b>	<b>1.23</b>	<b>8.46</b>	<b>11.01</b>	<b>0.30</b>	<b>4.01</b>	<b>1.48</b>	<b>0.59</b>

SO<sub>x</sub> = sulfur oxides

Construction phases assumed to occur in sequence without overlap.

Source: Tetra Tech analyses

**Table 3.11-4  
Maximum Daily Construction Emissions for 2019**

Construction Phase and Emissions Component	Maximum Pollutant Emissions, Pounds Per Day						
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM
Utilities							
On-Site	0.12	0.62	1.19	0.01	1.79	0.65	0.04
Truck Traffic	0.02	0.25	0.13	0.00	0.10	0.03	0.01
Worker Traffic	0.31	0.26	3.85	0.01	1.24	0.24	0.06
<b>Subtotal</b>	<b>0.44</b>	<b>1.13</b>	<b>5.17</b>	<b>0.01</b>	<b>3.13</b>	<b>0.91</b>	<b>0.11</b>
Facility Pads							
On-Site	0.24	1.48	3.00	0.06	1.65	0.64	0.11
Truck Traffic	0.02	0.31	0.16	0.00	0.13	0.03	0.02
Worker Traffic	0.31	0.26	3.85	0.01	1.24	0.24	0.06
<b>Subtotal</b>	<b>0.57</b>	<b>2.05</b>	<b>7.01</b>	<b>0.07</b>	<b>3.02</b>	<b>0.91</b>	<b>0.19</b>
Facility Pads							
On-Site	0.15	0.80	1.66	0.01	1.08	0.41	0.05
Truck Traffic	0.01	0.17	0.08	0.00	0.07	0.02	0.01
Worker Traffic	0.31	0.26	3.85	0.01	1.24	0.24	0.06
<b>Subtotal</b>	<b>0.47</b>	<b>1.23</b>	<b>5.60</b>	<b>0.01</b>	<b>2.38</b>	<b>0.66</b>	<b>0.12</b>
<b>Maximum Day Total</b>	<b>0.57</b>	<b>2.05</b>	<b>7.01</b>	<b>0.07</b>	<b>3.13</b>	<b>0.91</b>	<b>0.19</b>

Construction phases assumed to occur in sequence without overlap.  
Source: Tetra Tech analyses

Table 3.11-5 summarizes annual criteria pollutant emissions from each construction year. The data in Table 3.11-5 shows annual construction emissions would be well below the CAA conformity thresholds of 100 tons per year for nonattainment pollutants (ozone precursors and suspended particulate matter). Because annual operational pollutant emissions would also be well below these thresholds (as discussed further below), no formal CAA conformity determination would be required for this project.

**Table 3.11-5  
Annual Construction Emissions for 2011, 2015, and 2019**

Calendar Year and Emissions Component	Annual Pollutant Emissions, Tons Per Year						
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM
2011 Emissions							
On-Site	0.035	0.307	0.220	0.016	0.071	0.038	0.022
Truck Traffic	0.006	0.095	0.037	0.000	0.017	0.005	0.004
Worker Traffic	0.046	0.043	0.581	0.000	0.095	0.018	0.005
<b>2011 Total</b>	<b>0.086</b>	<b>0.444</b>	<b>0.838</b>	<b>0.016</b>	<b>0.183</b>	<b>0.061</b>	<b>0.030</b>
2015 Emissions							
On-Site	0.005	0.041	0.045	0.001	0.028	0.012	0.003
Truck Traffic	0.001	0.011	0.005	0.000	0.003	0.001	0.001
Worker Traffic	0.007	0.006	0.083	0.000	0.019	0.004	0.001
<b>2015 Total</b>	<b>0.012</b>	<b>0.059</b>	<b>0.133</b>	<b>0.002</b>	<b>0.050</b>	<b>0.016</b>	<b>0.004</b>
2019 Emissions							
On-Site	0.003	0.019	0.038	0.001	0.022	0.008	0.001
Truck Traffic	0.000	0.004	0.002	0.000	0.002	0.000	0.000
Worker Traffic	0.005	0.005	0.067	0.000	0.022	0.004	0.001
<b>2019 Total</b>	<b>0.009</b>	<b>0.027</b>	<b>0.107</b>	<b>0.001</b>	<b>0.045</b>	<b>0.013</b>	<b>0.003</b>

Construction phases assumed to occur in sequence without overlap.

Source: Tetra Tech analyses

GHG emissions from each construction year are summarized in Table 3.11-6. GHG emissions from construction and construction-related traffic would be less than 115 tons per year CO<sub>2</sub>e in 2011, and less than 25 tons per year CO<sub>2</sub>e in 2015 and 2019. While the BAAQMD has not adopted a GHG emissions significance threshold for construction, the BAAQMD has adopted a threshold of 1,212.5 tons per year CO<sub>2</sub>e for operational emissions. Maximum annual GHG emissions from construction would be substantially less than the BAAQMD annual GHG emissions threshold for operations.

**Table 3.11-6  
Annual Construction Emissions for 2011, 2015, and 2019**

Calendar Year and Emissions Component	Annual GHG Emissions, Tons Per Year			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	GWP in CO <sub>2</sub> e
2011 Emissions				
On-Site	33.81	0.001	0.001	<b>34.10</b>
Truck Traffic	20.48	0.001	0.001	<b>20.76</b>
Worker Traffic	55.47	0.006	0.006	<b>57.44</b>
<b>2011 Total</b>	<b>109.76</b>	<b>0.008</b>	<b>0.008</b>	<b>112.30</b>
2015 Emissions				
On-Site	6.88	0.000	0.000	<b>6.94</b>
Truck Traffic	3.89	0.000	0.000	<b>3.94</b>
Worker Traffic	11.09	0.001	0.001	<b>11.48</b>
<b>2015 Total</b>	<b>21.85</b>	<b>0.002</b>	<b>0.002</b>	<b>22.36</b>
2019 Emissions				
On-Site	5.45	0.000	0.000	<b>5.49</b>
Truck Traffic	2.28	0.000	0.000	<b>2.31</b>
Worker Traffic	12.70	0.001	0.001	<b>13.15</b>
<b>2019 Total</b>	<b>20.43</b>	<b>0.002</b>	<b>0.002</b>	<b>20.95</b>

CO<sub>2</sub> = carbon dioxide, GWP = 1

CH<sub>4</sub> = methane, GWP = 25

N<sub>2</sub>O = nitrous oxide, GWP = 298

CO<sub>2</sub>e = carbon dioxide equivalents

GWP = global warming potential in carbon dioxide equivalents (CO<sub>2</sub>e) from IPCC (2007)

Source: Tetra Tech analyses

**Emissions from Operational Activities**

The primary source of emissions associated with campground operations would involve vehicle travel by users of the campground. The number of users traveling to and from Camp Berryessa would vary throughout the year. Most use would involve overnight or multi-day visits, although some types of special events (such as weddings) might last only one day. For this analysis, two visitor use scenarios were evaluated: a normal high occupancy visitor condition and a special event condition. The normal high occupancy visitor use scenario assumed approximately 100 visitors arriving and departing on separate days. The special event scenario assumed approximately 200 visitors arriving and departing on separate days.

Emissions associated with visitor traffic were estimated using the operational analysis module of the URBEMS2007 model (Jones and Stokes Associates 2007). All visitor traffic was assumed to average 50 miles each way at an average speed of 35 mph. The vehicle mix for normal visitor traffic was derived from the URBEMIS2007 default values for Napa County, using only the light duty auto, light duty truck (classes 1 and 2), medium duty truck, and school bus categories. For this analysis, the URBEMIS2007 default vehicle percentages for motorcycles, school buses, and motor homes were combined and assigned to the school bus category. The vehicle mix for special event traffic was derived from the vehicle mix for normal visitor traffic by deleting the school bus and medium duty truck categories. Taking vehicle occupancy factors into account, the normal high occupancy visitor traffic scenario involved 19 vehicles (one school bus,

two mini buses, four large vans, and 12 light duty vehicles (autos, vans, and sport utility vehicles). The special event traffic scenario involved 50 light duty vehicles (autos, pickup trucks, vans, and sport utility vehicles).

Table 3.11-7 summarizes the visitor traffic emissions analyses. Operational emissions from visitor vehicle traffic would be well below the BAAQMD impact significance thresholds for operational emissions.

**Table 3.11-7  
Typical Daily Visitor Traffic Pollutant Emissions for 2012, 2015, and 2019**

Calendar Year and Emissions Component	Daily Pollutant Emissions, Pounds Per Day						
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM
<b>2012 Emissions</b>							
Normal Visitor Traffic	0.73	1.39	8.89	0.01	1.64	0.32	0.09
Special Event Traffic	1.73	2.02	20.94	0.02	4.28	0.80	0.19
<b>2015 Emissions</b>							
Normal Visitor Traffic	0.65	1.17	7.46	0.01	1.64	0.32	0.09
Special Event Traffic	1.51	1.63	17.52	0.02	4.28	0.80	0.19
<b>2019 Emissions</b>							
Normal Visitor Traffic	0.50	0.94	5.67	0.01	1.64	0.32	0.09
Special Event Traffic	1.14	1.20	6.93	0.02	4.28	0.80	0.19

Source: Tetra Tech analyses

Operational vehicle traffic would be the major source of GHG emissions from campground operations. Table 3.11-8 summarizes estimated GHG emissions from the typical normal high occupancy visitor traffic and special event traffic scenarios. Special event traffic would generate more GHG emissions than would normal high occupancy visitor traffic. Even if special event traffic occurred every day of the year, annual GHG emissions from visitor traffic would not exceed the BAAQMD impact significance threshold for operational GHG emissions.

**Table 3.11-8  
Typical Daily GHG Emissions for 2012, 2015, and 2019**

Calendar Year and Emissions Component	Daily GHG Emissions, Pounds Per Day			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	GWP in CO <sub>2</sub> e
<b>2012 Emissions</b>				
Normal Visitor Traffic	892	0.10	0.10	<b>925</b>
Special Event Traffic	2,170	0.28	0.28	<b>2,259</b>
<b>2015 Emissions</b>				
Normal Visitor Traffic	891	0.10	0.10	<b>925</b>
Special Event Traffic	2,169	0.28	0.28	<b>2,258</b>
<b>2019 Emissions</b>				
Normal Visitor Traffic	891	0.10	0.10	<b>925</b>
Special Event Traffic	2,169	0.28	0.28	<b>2,258</b>

Source: Tetra Tech analyses

In addition to visitor traffic, on-site sources of operational emissions would include campfires and barbeque grill use by visitors, possible propane or other fuel use in the central kitchen facilities, limited on-site vehicle use by camp staff, and limited vehicle traffic associated with delivery of materials needed for camp maintenance and operation. Most on-site vehicle use by camp staff would involve electric carts with no direct emissions. Although these additional sources of emissions have not been quantified, the combination of visitor vehicle traffic plus the miscellaneous on-site operational emissions would be less than the BAAQMD impact significance thresholds for operational emissions of criteria pollutants and GHG.

#### Exposure to Naturally Occurring Asbestos

Serpentine and other ultramafic rocks found along the western shoreline of Lake Berryessa are a potential source of exposure to naturally occurring asbestos. The on-site wastewater feasibility study (Questa Engineering 2009) identified subsurface serpentine layers at some locations. Asbestos is a carcinogen and a respiratory irritant, and has been designated as a hazardous air pollutant by EPA and as a toxic air contaminant by CARB. Erosion of serpentine rocks can contribute asbestos fibers to surrounding soils.

Construction of the proposed project could expose construction workers to dust containing asbestos fibers, and recreational activities could expose visitors to dust containing asbestos fibers. Feasible mitigation measures are available to minimize these potential exposure conditions.

CARB has adopted an ATCM to reduce exposure to naturally occurring asbestos from construction activities (California Code of Regulations Title 17, Section 93105). The CARB regulations apply to construction activities on areas where the soils may contain naturally occurring asbestos. The dust control measures required by this state regulation would adequately mitigate potential asbestos exposure for construction workers, and would also mitigate visitor exposure to naturally occurring asbestos.

The asbestos ATCM adopted by CARB for construction activity requires implementation of the following dust control measures if construction activities in any year would disturb one acre or less:

- Vehicle speeds at the construction site must be limited to 15 mph or less;
- Prior to ground disturbance, sufficient water must be applied to the area to prevent visible dust from crossing the property line;
- Areas to be graded or excavated must be kept adequately wetted to prevent visible dust from crossing the property line;
- Storage piles must be kept adequately wetted, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile;

- Equipment must be washed down before being moved from the property onto a paved public road; and
- Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA (high efficiency) filter equipped vacuum device within 24 hours.

The asbestos ATCM adopted by CARB for construction activity requires that a written asbestos dust control plan be submitted to and approved by the appropriate air pollution control agency (the BAAQMD) if construction activities in any year would disturb more than one acre. The measures contained in the approved asbestos dust control plan must be implemented and followed throughout the construction process. The asbestos dust control plan must include one or more of the options identified for each of the following dust control topics:

- Cleanup of track-out from paved public roads at any location where vehicles exit the work site:
  - Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA (high efficiency) filter equipped vacuum device at the end of each work day or at least one time per day;
- Options for additional track-out prevention and control:
  - A gravel pad, designed using good engineering practices, to clean the tires of exiting vehicles,
  - A tire shaker,
  - A wheel-wash system,
  - Pavement extending at least 50 consecutive feet from the intersection with the paved public road, or
  - Any other measures as effective as the measures above;
- Options for active storage piles:
  - Keep active storage piles adequately wetted or covered with tarps;
- Options for disturbed surface areas or storage piles that will remain inactive for seven days or more:
  - Keep the surface adequately wetted,
  - Establish and maintain a surface crust that meets testing requirements specified in the regulation,

- Apply chemical dust suppressants or chemical stabilizers according to manufacturer directions,
- Cover exposed areas with tarps or vegetation,
- Installation of wind barriers of 50 percent porosity around three sides of storage piles,
- Installation of wind barriers across open areas, or
- Any other measures as effective as the measures above;
- On-site vehicle speed control:
  - Limit vehicle speeds to 15 mph or less;
- Options of on-site unpaved roads, parking areas, and staging areas:
  - Watering every two hours of active operations or often enough to keep the area adequately wetted,
  - Apply chemical dust suppressants according to manufacturer directions,
  - Maintain 3 inches of gravel cover with a silt content of less than 5 percent and an asbestos content of less than 0.25 percent on surfaces used for vehicle travel, or
  - Any other measures as effective as the measures above;
- Options for earthmoving activities:
  - Application of water prior to any land clearing,
  - Pre-wetting the ground to the depth of anticipated cuts,
  - Suspending grading operations when wind speeds are high enough to cause dust emission crossing the property line, despite the application of other dust mitigation measures, or
  - Any other measures as effective as the measures above;
- Maintenance of trucks used to transport material off-site:
  - Maintain trucks so that there are no spills from holes or other openings in cargo compartments;

- Options for control of material transported off-site:
  - Cover loads with tarps, or
  - Load material so that no point of the load extends above the top of the cargo compartment and in such a manner that points of material contact with the front, back, or sides of the cargo compartment are at least six inches below the top of the cargo compartment;
- Options for post-construction stabilization of disturbed areas:
  - Establish a vegetative cover,
  - Placement of at least three inches of asbestos-free material,
  - Paving, or
  - Any other measures deemed sufficient to prevent visible dust emissions during periods when the wind speed is 10 mph or greater.

In addition to the asbestos dust control measures that are required for construction projects, the following measure should be implemented during facility construction to minimize potential visitor exposure to naturally occurring asbestos:

- Developed facility areas, such as tent sites, tent cabin sites, shade shelter areas, the amphitheater, and the central activity area, should be tested to determine if surface soils contain more than five percent asbestos. If so, then that area should be covered with three inches of clean sand, gravel, or soil to reduce visitor exposure to naturally occurring asbestos.

***No Action Alternative***

Under the No Action Alternative, the Camp Berryessa site would be left in its current condition. No formal recreational or educational programs would be conducted at the site. Consequently, there would be no air quality or climate change impacts under the No Action Alternative.

## 3.12 Noise

### 3.12.1 Affected Environment

#### **Resource Overview**

Sound is caused by vibrations that generate waves of minute air pressure fluctuations in the air. The decibel (dB) is the accepted unit of measure for noise. Because human hearing is not equally sensitive to all sound frequencies, various frequency weighting schemes have been developed to approximate the way people hear sound. The A-weighted decibel scale (dBA) is normally used to approximate human hearing response to sound. Average noise exposure over a 24-hour period is often presented as a day-night average sound level (DNL). DNL values are calculated from 24-hour averages in which nighttime values (10 PM to 7 AM) are increased by 10 dB to reflect the greater disturbance potential from nighttime noises.

Cities and counties in California are required to adopt a noise element as part of their general plan. Napa County implements a detailed noise ordinance that establishes limits on a wide variety of noise sources and mechanisms to enforce these limits.

The dominant sources of noise in Napa County are mobile (related to transportation), including automobile and truck traffic, boats, motorcycles, and operations at the Napa and Angwin airports. State Route 12 (SR 12), Hwy 29, SR 121, SR 128, and Silverado Trail are major sources of traffic noise for county residents as are some county roads. The *Napa County General Plan* provides the existing (2006) and projected (2030) noise levels for major roadways. For Berryessa-Knoxville Road, the existing roadway noise level is 59 DNL at 100 feet. Projected noise levels for Berryessa-Knoxville Road are 68 DNL at 100 feet.

There are stationary noise sources in the County consisting mainly of airports (in particular, the Napa County Airport), construction sites, agricultural activities, commercial, and industrial facilities (Napa County 2008). Most complaints about noise in Napa County arise from instances where residential areas are next to agricultural lands or agricultural processing areas.

The noise goals of Napa County are:

**Goal CC-7:** Accept those sounds that are part of the County's agricultural character while protecting the people of Napa County from exposure to excessive noise.

**Goal CC-8:** Place compatible land uses where high noise levels already exist and minimize noise impacts by placing new noise-generating uses in appropriate areas.

**Policy CC-37** of the *Napa County General Plan* states:

The County shall seek to limit excessive noise impacts of recreational uses—including motorboats, shooting ranges, motorcycles, and other noise-producing equipment— through the enforcement of applicable laws (such as requirements for mufflers) and limits on the location and/or extent of such uses.

Policy CC-39 provides noise compatibility guidelines for use in determining the general compatibility of planned land uses:

**Table 3.12-1  
Noise Compatibility Guidelines  
(Expressed as a 24-Hour Day-Night Average)**

<b>Land Use</b>	<b>Completely Compatible</b>	<b>Tentatively Compatible</b>	<b>Normally Incompatible</b>	<b>Completely Incompatible</b>
Residential	Less than 55 dBA	50-60 dBA	60-75 dBA	Greater than 75 dBA
Commercial	Less than 65 dBA	65-75 dBA	75-80 dBA	Greater than 80 dBA
Industrial	Less than 70 dBA	70-80 dBA	80-85 dBA	Greater than 85 dBA

Source: Napa County 2008

The Napa County Noise Ordinance limits construction noise between the hours of 7:00 AM and 7:00 PM except for emergency work of public service utilities. The ordinance defines noise limits for construction activities between 7:00 AM and 7:00 PM at 75 dBA near residential areas and 80 dBA and 85 dBA near commercial and industrial areas, respectively (Napa County 1993).

***Existing Noise Conditions***

Ambient noise levels have not been measured at Lake Berryessa. The Environmental Impact Statement for the Future Recreation Use and Operations of Lake Berryessa (Reclamation 2005) states that the majority of the loud sounds experienced appear to be from powered watercraft operating in and near the marinas. The State of California regulates such noise, and has published restrictions regarding noise associated with watercraft on waters regulated by state or county authorities.

No sensitive receptors such as residences, schools, or hospitals are located near the project area. The Putah Creek Park area is over 2,000 feet from the project site. Portions of the trail along the northeast shore of Putah Creek are the only recreational facilities within 600 feet of the project site.

***Groundborne Vibrations***

Groundborne vibrations can be a source of annoyance to people or cause structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity is the common unit used to assess building damage potential. Both human annoyance effects and building damage effects depend in

part on whether vibration events are isolated discrete events or are a relatively continuous episode of vibrations. In general, there is less sensitivity to single events than to continuous events or frequently repeated events.

### **3.12.2 Environmental Consequences**

#### ***Impact Criteria***

The primary sources of noise associated with the alternatives would be construction activities and operational recreational activities related to vehicle trips and occasional concerts at the amphitheater. Adverse noise effects would occur if increases in local noise levels exceed applicable land use compatibility standards or violate noise or noise-generating activity limitations of local noise ordinances.

#### ***Proposed Action***

Noise impacts of the Proposed Action include temporary increases in local noise levels from construction activities and long-term incremental increases in area noise levels from increases in vehicle traffic associated with the additional recreational activities in the project area.

Construction activity for the proposed action would be accomplished in phases and would occur over a period of up to 10 years beginning in late 2011. Heavy equipment operations, construction-related vehicle traffic, and power tools would be the dominant temporary noise sources at the project site during the construction period. These noise sources would operate intermittently at various locations on the construction site, causing intermittent and variable noise impacts to nearby visitors of the surrounding area. Construction activities would be limited to daytime periods, primarily on weekdays, consistent with the requirements of the Napa County noise ordinance.

Construction noise levels during the excavation and grading phase originating from equipment such as bulldozers, wheeled loaders, hydraulic hammers, dump trucks, and water trucks would be relatively high within about 600 feet of the construction area.

Noise levels during other phases of construction generally would be noticeably lower than noise levels during the excavation and grading phase. Equipment that could be used during the other construction phases include flatbed trucks, forklifts, mobile cranes, aerial lifts, wheeled loaders, bobcats, carrier dumpers, and water trucks. This equipment would be operating intermittently in different combinations in the same general areas over a normal work day. Equipment operations would tend to be more intermittent during the other phases of construction than during the excavation and grading phase. Typically, construction noise levels would be relatively high only within about 200 feet of the area of active construction.

Noise levels near active construction sites would typically exceed a DNL of 65 dBA within 200 to 300 feet of the construction. The Putah Creek Park area is more than 2,000 feet from the project site. Portions of the trail along the northeast shore of Putah Creek

are the only recreational facilities within 600 feet of the project site. Because noise from construction would be limited to daytime and would be fairly far away from areas currently visited near Lake Berryessa, noise impacts during the construction period would be less than significant.

Vehicle traffic would be the primary long-term source of noise associated with the proposed action. The parking lot to be constructed would have a maximum capacity of approximately 50 to 60 vehicles. The proposed action and increased recreational use would increase the volume of traffic over existing conditions in the project site and contribute to the overall volume in the vicinity of Lake Berryessa and especially onto Berryessa-Knoxville Road. Due to the limited capacity of the project site, this increase would be relatively small. Therefore, long-term noise impacts from the proposed action would be less than significant.

Temporary groundborne vibration at the project site would be generated by construction equipment. However, groundborne vibration of the construction equipment would be noticeable only in the immediate vicinity of the construction site. Portions of the trail along the northeast shore of Putah Creek are the only recreational facilities within 600 feet of the project site. Because construction activities would be intermittent and limited to daytime period, temporary impacts related to groundborne vibration would be less than significant.

The project would not add to the permanent groundborne vibration. Impacts of the permanent ground borne vibration from the project resulting from the additional traffic to and from the project site would be comparable to groundborne vibration associated with the current vehicle trips to the project area. Therefore, potential impacts from groundborne vibration would be less than significant.

***No Action Alternative***

No noise impacts are expected under the No Action Alternative as no new sources of noise would be generated under this alternative.

## 3.13 Land Use

### 3.13.1 Affected Environment

This section describes land use within the ROI, which is the proposed project site and its surroundings. The proposed project site is in unincorporated Napa County, California. Lake Berryessa is one of the largest freshwater bodies in California; it is 23 miles long and three miles wide with 165 miles of shoreline. The primary land uses along the lake are rural or undeveloped, because most of the land surrounding Lake Berryessa is mountainous and difficult to develop (Reclamation 2008).

The following discussion describes the land use patterns, policies and regulations that include the proposed project site.

#### ***Land Classifications and Regulations***

Management guides for the Camp Berryessa site are the VSP (Reclamation 2005) and the RAMP (Reclamation 1992), as described in Chapter 2. According to the VSP ROD, Camp Berryessa would be developed and operated as a group-camp and activity area on a reservation basis, with facilities that would be developed for use by a range of groups. The site would have a boat launch ramp for nonmotorized boats such as kayaks and a swimming area. The VSP ROD further stipulates that Camp Berryessa be developed through partnership agreements with organizations and local agencies. The RAMP developed five classifications (RAMP Class I to Class V) of land use based on the type of recreation activities and the levels of use for each jurisdiction under Reclamation.

#### ***Existing Land Use in the Proposed Project Area***

The Camp Berryessa site is a RAMP Class II category—a General Outdoor Recreation Area. The definition of a Class II General Outdoor Area is “substantially developed areas intended for specific recreation uses, e.g. camping, picnicking, boat launching; but of lower density than Class I” (Reclamation 2005). In these RAMP Class II areas, there is a low density of development and opportunities for hiking, fishing, and picnicking within a moderately developed area; these activities are more readily obtainable in RAMP Class II areas than other areas. Facilities are less intrusive and more appropriate in a semi-natural outdoor setting. Large open spaces are connected by narrow paved roads and day-use facilities are present. Natural resource features are the primary features, but the natural environment is still altered by some moderate development of visitor amenities (Reclamation 2005).

The project site proposed for development is approximately 10 acres of land, undeveloped except for a few gravel roads, disconnected electrical service, and several utility poles equipped with lights remaining from the prior use as a Boy Scout camp that closed in 2004. The project site is currently closed to the public.

### **3.13.2 Environmental Consequences**

A land use impact is considered significant if implementation of the proposed project or project alternatives would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Impacts on recreation and aesthetics are addressed in Sections 3.3 and 3.14, respectively. As there are no agricultural resources in the ROI, no impacts to such resources would result from implementation of the proposed project.

None of the project alternatives would physically divide an established community, conflict with applicable land plans or policies, or conflict with any habitat or natural community conservation plans.

#### ***Proposed Action***

The public's use of lands in the project area would continue to be restricted during construction. Land use in the project area would not be permanently altered by implementation of the project, as the proposed project area is designated an RAMP Class II Outdoor Recreation Area – designated as a substantially developed area intended for specific recreation uses such as camping, picnicking, boat launching, developed parking, paved roads, showers, and designated campsites (Reclamation 2008). Since these recreational activities would occur under the Proposed Action and are consistent with the RAMP Class II category, no land use impacts or conflicts over land use plans would occur and there would be no significant impact on land use by the Proposed Action.

#### ***No Action Alternative***

Under the No Action Alternative, the proposed Camp Berryessa project would not be developed and there would continue to be no development on the site although the land use designation of RAMP Class II would remain.

## 3.14 Visual Resources

### 3.14.1 Affected Environment

This section describes the visual resources within the ROI, which is the proposed project site and its surroundings. Visual resources include scenic vistas, scenic roadways, and the visual character or quality of the landscape. The proposed project site is not within a scenic vista or a scenic highway.

#### *Visual Character of the Region*

The Camp Berryessa project site is located along the eastern slope of the Coast Range in Napa County, at the mouth of Putah Creek along the northwest shore of Lake Berryessa. The primary dominant visual elements are the hills, ridges, shoreline areas, slope, vegetation, a natural pastoral landscape, and the surface of the lake (Figures 3.14-1 and 3.14-2). There are coves and natural inlets along the proposed project site, creating a natural, serene appearance. The dominant natural vegetation consists of gray pine, oak woodland and sloping grasslands, along with large areas of chaparral (Reclamation 2005). There are no residences with a view of the Camp Berryessa site along the hills or ridges of Lake Berryessa (Reclamation 2005).

Recreational land use on federal lands at the site is subject to the VSP, as described in Chapter 2. This plan prescribes basic management principles to guide and support lake-wide integration of government and commercial operations concessionaires in the best interests of the visiting public (Reclamation 2005). The plan incorporates guidance for Reclamation to ensure that facilities are sited to minimize visual intrusions from the lake, with design guidelines to ensure that new structures and supporting utilities are designed to blend with the surrounding natural environment (Reclamation 2008).

The Napa County Viewshed Protection Program provides hillside development standards that minimize the impact of manmade structures and grading on views from designated public roads within Napa County (Napa County 2008). The purpose of the ordinance is to protect the ridgelines and hillsides of the county from development (Napa County 2008). California Highway 128 provides access to Camp Berryessa and is subject to this scenic roadway Viewshed Protection Program. This program also addresses light and glare, and seeks to maintain a “dark sky” (a night sky without the effects of manmade lighting, such as the “glow” from neighborhood street lights, lighting at sporting events, or the lights of urbanized areas), eliminating glare, and reducing light pollution within Napa County (Napa County 2008). The program emphasizes careful planning, choosing appropriate forms of lighting and eliminating light sources through fixture changes, manipulating intensities, and changing the type of illumination wherever possible. The California Energy Commission (CEC) adopted energy efficiency standards in 2001 for outdoor lighting for public and private sectors. The standards have been effective since 2005 and most of Napa County falls under the “rural” standards specified in the law (Napa County 2008).



Figure 3.14-1: View of Berryessa-Knoxville Road crossing over Putah Creek from Camp Berryessa project site, camera facing south.



Figure 3.14-2: Vegetation and view of Lake Berryessa surface, camera facing north.

Camp Berryessa is most commonly accessed by Berryessa-Knoxville Road that joins California Highway 128 west of the proposed project site (California Highway 128 is not designated a scenic county road although surrounding development is subject to the scenic roadway Viewshed Protection Program). Motorist's views of the Camp Berryessa site are blocked by vegetation, trees, and hills until the Putah Creek Bridge crosses Lake Berryessa at Putah Creek, approximately one-quarter mile before entering the proposed project site (Reclamation 2008). From this bridge, motorists crossing the bridge first glimpse the proposed project site. Recreationists at the Camp Berryessa site have a view of the bridge in the distance when they look south (Figure 3.14-1 shows the bridge over Lake Berryessa from the proposed project site).

### **3.14.2 Environmental Consequences**

The proposed project would have a significant impact on visual and aesthetic resources if it were to:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

#### ***Proposed Action***

The proposed project is not within a scenic vista or a scenic highway and, therefore, there would be no impact to either resource.

The proposed project would result in short-term and permanent changes to the existing setting and visual quality of the proposed project site. The visual quality of the area would be temporarily impacted by any vegetation removal during construction of the camp structures, roads, and utility infrastructure. Permanent loss of vegetation during construction would not be significant as work would include only limited tree removal, trimming, and minor grading. Temporary impacts to visual resources would also result from the construction vehicles and equipment at staging areas at the proposed site. Under the Proposed Action, the visual quality of the site during and after construction would not substantially degrade the visual quality of the area, nor would it have a substantial adverse effect. The improvements at the site would implement the General Design Guidelines listed in the Camp Berryessa Master Plan. These guidelines state that “views of the surrounding areas [should be considered] when siting buildings, utilities, and storage areas to preserve the viewshed. Buildings should be in scale with the existing tree canopy, which is relatively low” (Questa Engineering 2010). The guidelines also state that painted surfaces should be limited, with a focus on a neutral color palette that reflects

the wooded landscape setting and minimizes presence of the built elements that would be constructed. Although the proposed alternative would create buildings and structures on a currently vacant site, these design guidelines would ensure the impact of the proposed project on the visual quality of the site to less than significant.

Non-reflective, galvanized sheeting would be used for the siding of buildings constructed at the Camp Berryessa site, for those buildings that are not left with unfinished siding (Questa Engineering 2010). Any light or glare from the proposed Camp Berryessa site would be more than the current source of light or glare because there are currently no structures on the proposed site. The amount of light and glare that would result from the construction of Camp Berryessa would not be substantial as it is expected that construction would take place during the daylight. Implementation of the General Design Guidelines would reduce the impact of the glare from the surfaces of buildings on the visual character of the proposed site. Consistent with the General Design Guidelines, dark sky lighting would be used for project components requiring nighttime illumination for safety and security. Dark sky lighting techniques, which minimize impacts from nighttime light and glare, include shrouds to direct lighting downward and inward, motion sensors, and use of appropriate bulb type and wattage. Impacts to visual resources under the proposed action would be less than significant.

***No Action Alternative***

Under the No Action Alternative, the proposed project would not be implemented and the recreational improvements would not occur. The proposed project site would remain vacant and there would be no changes in the scenic and visual character.

## 3.15 Socioeconomics

### 3.15.1 Affected Environment

This section contains an analysis of current social and economic data relevant to the towns of Napa and Yountville in Napa County and Vacaville, Fairfield, and Suisun City in Solano County, which have been defined as the ROI for this analysis. This ROI was chosen because these communities are within a 50-mile driving distance (about a 1 to 1.5 hour drive time) from the project site, they are where users of the proposed Camp Berryessa would most likely originate from, they are relatively large population centers, and they are where revenue would be most likely be generated.

Discussed in this section are population, housing, employment, and economic trends taking place within the ROI. Also included are data relevant to California and the United States, which provides for a comparative discussion when analyzed against the ROI. Information in this section was obtained from various sources, including the US Census Bureau, the US Bureau of Economics, and the State of California Finance Department.

#### **Population**

Historic, current, and projected population counts in and around the project site, compared to the state, are provided in Table 3.15-1. These areas were chosen for analysis because they represent the largest population centers within 50 miles of the project site and where short-term and long-term impacts on local revenue are most likely to occur. Napa is the largest city in Napa County, with a population of 75,585 residents in 2000 and an estimated 77,917 residents in 2009, representing a 7.3 percent increase. According to the US Census Bureau, the population of Napa County was 124,279 in 2000 and increased to 137,723 in 2009, representing a 10.8 percent increase. In 2000, the total population in Solano County was 394,542; in 2009, total population increased by 7.9 percent, to 425,740 residents. The increase in total population in California between 2000 and 2009 was 12.9 percent.

**Table 3.15-1  
Population Characteristics**

<b>Location/ Distance from Project Site (miles)</b>	<b>1990<sup>1</sup></b>	<b>Percent Change</b>	<b>2000<sup>2</sup></b>	<b>Percent Change</b>	<b>2009<sup>2</sup></b>	<b>2020<sup>2</sup></b>
Napa County	110,765	12.2	124,279	10.8	137,723	165,786
Napa (41)	61,842	17.3	72,585	7.3	77,917	
Yountville (34)	3,259	1.1	3,297	-0.9	3,267	
Solano County	340,421	15.8	394,542	7.9	425,740	503,248
Vacaville (45)	71,479	24.0	88,642	8.5	96,235	
Fairfield (40)	77,211	24.5	96,178	10.4	106,194	
Suisun City (41)	22,686	15.1	26,118	10.2	28,785	

**Table 3.15-1  
Population Characteristics**

Location/ Distance from Project Site (miles)	Percent Change		Percent Change		Percent Change	
	1990 <sup>1</sup>	2000 <sup>2</sup>	2009 <sup>2</sup>	2020 <sup>2</sup>	2009 <sup>2</sup>	2020 <sup>2</sup>
State of California	29,760,021	13.8	33,873,086	12.9	38,255,508	44,135,923
United States	248,709,873	13.1	281,421,906	9.0	307,006,550	341,386,665

<sup>1</sup>California, Population of Counties by Decennial Census: 1900 to 1990  
<http://www.census.gov/population/cencounts/ca190090.txt>

<sup>2</sup>State of California, 2010. Department of Finance.  
<http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/2001-10/>

Historic, current, and projected population of school-age children, the primary targeted demographic for the proposed Camp Berryessa, are displayed in Table 3.15-2.

**Table 3.15-2  
Population Characteristics of School-age Children for Napa and Solano Counties**

County	K-8			9-12			K-12		
	2000-2001	2009-2010	2018-2019	2000-2001	2009-2010	2018-2019	2000-2001	2009-2010	2018-2019
Napa County	13,197	13,926	15,606	6,060	6,596	7,168	19,257	20,522	22,774
Solano County	50,124	44,387	44,512	21,434	21,615	19,548	71,558	66,002	64,060

State of California, Department of Finance, *California Public K-12 Graded Enrollment and High School Graduate Projections by County, 2009 Series*. Sacramento, California, October 2009

As indicated in Table 3.15-2, a 10.9 percent increase in school enrollment for Napa County is anticipated between the 2009-2010 school year and the 2018-2019 school year. This is a higher estimate than the increase that occurred between the 2000-2001 and 2009-2010 school years, which increased 6.5 percent. Conversely, Solano County is expected to experience a 2.9 percent decrease in K through 12 student enrollment between the 2009-2010 and 2018-2019 school years. This is a lower estimate than the decrease that occurred between the 2000-2001 and 2009-2010 school years, when enrollment decreased by 7.7 percent.

**Employment**

Agricultural activity and recreation and tourism are major contributors to the economies of Napa and Solano Counties. The North American Industry Classification System (NAICS) is the standard form of analysis used by federal statistical agencies when classifying business establishments for the purposes of collecting, analyzing, and publishing statistical data on the US business economy. The NAICS standard is used for this analysis.

Total full-time and part-time employment in Napa County in 2008 was approximately 92,995, an 8.8 percent increase from 2000 at 85,412. In 2008, manufacturing employed

the most residents at 13.1 percent of the total labor force, or 12,255 residents. Other major industries in the county are government and government enterprises, accommodation and food services, and retail trade (US Bureau of Economic Analysis 2010).

Total full-time and part-time employment in Solano County in 2008 was approximately 173,682, a 5.6 percent increase from 2000 at 164,337. In 2008, government and government enterprises employed the most residents at 19.3 percent of the total labor force, or 33,645 residents; of these, approximately 33.2 percent (11,182) were employed by the federal government and 66.7 percent (22,463) were employed by state and local government. Other major industries in the county are retail trade, health care and social assistance, and construction.

As of July 2010, the annual unemployment rate in Napa County was 9.4 percent, and it was 12.4 percent in Solano County. This compares to the 12.3 percent unemployment rate in California (US Bureau of Labor Statistics 2010).

### **Housing**

Housing supply estimates for Napa County, Solano County, and California are provided in Table 3.15-3. As of July 2009, a grand total of 53,506 housing units were available in Napa County and 150,853 in Solano County, representing an increase of 9.9 percent and 11.7 percent. California experienced a 9.7 percent increase in total housing units between 2000 and 2009.

**Table 3.15-3  
Housing Characteristics**

<b>Year</b>	<b>2000</b>	<b>2009</b>	<b>% Change from 2000</b>
Napa County	48,669	53,506	9.9
Solano County	135,016	150,853	11.7
California	12,245,260	13,433,691	9.7

Source: US Census Bureau 2010

### **Local Income**

Per capita personal income consists of all income that is received by county residents in a given year from all sources. It is an indicator of the standard of living relative to the state. According to the Bureau of Economic Analysis, per capita personal income for Napa County increased 34.2 percent, from \$38,861 in 2000 to \$52,169 in 2008. Per capita personal income for Solano County increased 39.0 percent, from \$28,373 in 2000 to \$39,442 in 2008. This compares with a 28.3 percent increase in state per capita income, from \$33,398 in 2000 to \$43,852 in 2008.

Median household income for Napa County in 2008 was \$64,829, and it was \$70,173 for Solano County. This compares to the state median household income at \$61,017 (US Bureau of Economic Analysis 2010).

### 3.15.2 Environmental Consequences

#### ***Impact Criteria***

The Proposed Action was evaluated for adverse effects on people or the environment in the context of existing socioeconomic conditions within the ROI. Impacts on socioeconomic resources would result from the effects of construction dollars and workers on the local economy and social conditions. Impacts on socioeconomic resources would be considered significant if the proposed action were to result in any of the following:

- Decrease jobs so as to raise regional unemployment rates;
- Reduce income generation;
- Induce population in-migration that exceeds the capacity of local infrastructure or historic growth rates;
- Change the demand for housing and public infrastructure/services that exceeds existing ROI inventory;
- Change the revenues and expenditures (fiscal characteristics) of affected local governments; or
- Change social conditions and quality of life.

#### ***Proposed Action***

##### *Population and Employment*

The Proposed Action includes a developed Camp Berryessa, including permanent rustic cabins, dormitory cabins, a central facility with kitchens and showers, and an amphitheater. This type of development enables the camp to offer year-round services, which would contribute to a higher rate of use, as compared to a less developed project site.

A developed Camp Berryessa with full amenities would require professional and maintenance personnel to operate and maintain it. However, because full build-out would occur over ten years, increases in employment would also occur over time. As such, long-term impacts on population would be less than significant and limited to permanent employees at Camp Berryessa, if these employees were hired from outside the ROI. Camp Berryessa is not intended to provide permanent housing for any member of the general public and would therefore not contribute to long-term population growth in the ROI.

Employment related to construction of the proposed facilities at Camp Berryessa would slightly increase the short-term population of the region if the proposed facilities were built on the project site. The increase in short-term employment would be reduced if the

facilities were pre-engineered off-site. However, because construction is proposed in phases, total employment would not noticeably contribute to the population of the ROI.

Housing

In Napa County and Solano County, there might be a slight increase in demand for temporary housing, such as hotels and motels, during construction if workers were hired from outside the ROI. However, due to the abundance of temporary lodging in the ROI, direct impacts on short-term housing would be less than significant.

Long-term impacts on lodging include an increase in the demand for housing if Camp Berryessa were to hold special events, such as weddings, and people, such as family members, visiting the youth groups at Camp Berryessa. Participants from other activities, such as corporate retreats, are expected to stay at Camp Berryessa. Any increase in the demand for lodging from the Proposed Action is not expected to exceed the capacity of the ROI and therefore would be less than significant.

Local Economy

A three-tiered fee structure was used to generate anticipated revenue for the proposed Camp Berryessa. Factors considered in this calculation include days of use, visitor days, visitor use fees, and operating and maintenance (O&M) costs. A visitor day is defined as one day at the project site per single visitor. Table 3.15-4 presents anticipated revenue based on these factors.

**Table 3.15-4  
Estimated Utilization and Revenues by Annual O&M Costs\***

	Low-Use Scenario				Medium-Use Scenario				High-Use Scenario			
	Days of Use	Visitor Days	Revenue	Net Revenue	Days of Use	Visitor Days	Revenue	Net Revenue	Days of Use	Visitor Days	Revenue	Net Revenue
O&M Costs	--	--	--	\$427,490	--	--	--	\$486,540	--	--	--	\$545,590
\$35.00	80	6,424	\$224,840	(\$202,650)	146	11,680	\$408,800	(\$77,740)	219	17,520	\$613,200	\$67,610
\$47.00	80	6,424	\$301,928	(\$125,562)	146	11,680	\$548,960	\$62,420	219	17,520	\$823,440	\$277,850
\$65.00	80	6,424	\$417,560	(\$9,930)	146	11,680	\$759,200	\$272,660	219	17,520	\$1,138,800	\$593,210

\*Does not reflect annual replacement costs  
Source: Chuck Nozicka Consulting 2009

Without including replacement costs,<sup>1</sup> O&M costs would range between \$427,000 and \$545,000, depending on days of use. Revenue also fluctuates depending on days of use and visitor fee. It is estimated that, at full build-out, Camp Berryessa could operate at a profit under the medium use category, charging \$47 or \$65 per person and operating for 146 days. Camp Berryessa could also be profitable under the high-use category, charging \$35, \$47, or \$65 per person and operating for 219 days. Under the low-use scenario,

<sup>1</sup>Replacement costs are not included in this analysis because Nozicka's (2009) Camp Berryessa Feasibility Study and Master Plan Market and Economic Analysis states that, based on comparable facility managers, replacement costs may be covered by grants and donations.

higher fees or additional revenue sources, such as opening the facility to a wider use group, would be necessary for Camp Berryessa to be economically feasible (Chuck Nozicka Consulting 2009).

The anticipated increase in employment from the Proposed Action would likely benefit local family incomes. These benefits would be realized from low-paying seasonal jobs or part-time jobs for local high school students or adults who want to supplement their incomes. As such, any increase in per capita personal income or median household income would be minimal and short term. However, because full build-out would occur over ten years, additional personal financial benefits would accrue gradually, commensurate with development and visitor use.

The Proposed Action would directly contribute additional revenue to the state and local communities and would provide other economic benefits. Direct benefits would result from material procurement and associated sales taxes on these materials, for construction of the proposed 4,000-square-foot central facility because this facility would be custom designed and built at the project site. However, local sales taxes would not be realized if the facility were a pre-engineered structure built outside of the ROI. Indirect benefits would include the potential for other businesses to become established near Lake Berryessa as a result of the Proposed Action, as well as increased spending and lodging taxes from nonresident workforce spending on local hotels and motels, if such workers were hired.

Local communities, such as Napa, Vacaville, and Suisun City, would benefit directly from the economic activity generated by the purchase of services, manufactured goods, and equipment from local businesses to operate and maintain Camp Berryessa. Due to the camp's location, most spending would likely occur in Napa County, with additional spending in Solano County if sought services were not found in Napa County. Spending on materials purchased within these counties would be subject to sales tax.

***No Action Alternative***

Under the No Action Alternative, the proposed project would not be implemented and the recreational improvements would not be implemented. There would be no socioeconomic impacts.

## 3.16 Environmental Justice

### 3.16.1 Affected Environment

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, and its accompanying memorandum have the primary purpose of ensuring fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. As such, each federal agency must identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low-income populations.

The Presidential Memorandum that accompanied EO 12898 calls for a variety of actions related to minority and low-income communities, summarized below. Each federal agency must analyze the following:

- Human health, economic, and social effects of federal actions;
- Mitigation measures outlined or analyzed in EAs, EISs, or RODs;
- Whenever feasible, should address significant and adverse environmental effects of proposed federal actions; and
- Must provide opportunities for community input in the NEPA process

Table 3.16-1 summarizes relevant data regarding minority populations for the ROI in 2008.

**Table 3.16-1  
Summary of Relevant Data Regarding Minority Populations for the ROI in 2008**

Race/Ethnicity	Population				
	Napa County	Percent of Total	Solano County	Percent of Total	California
White	75,589	55.0	182,284	42.8	15,568,730
Black	1,671	1.2	63,632	14.9	2,229,046
American Indian	777	0.5	2,605	0.6	211,623
Asian	7,287	5.3	60,874	14.3	4,727,855
Native Hawaiian or Pacific Islander	298	0.2	3,247	0.7	140,917
Multirace	3,001	2.2	20,060	4.7	1,058,412
Hispanic	48,735	35.4	93,084	21.8	14,197,914

Source: State of California 2010

In 2008, California’s total minority population was approximately 22,565,767, or 59.1 percent of the state’s total population. This is an increase of approximately 25.3 percent since the 2000 minority population, compared with the 11.8 percent overall increase for the state’s total population during the same time. Although 40.8 percent of the population in California is classified as White, this is a decrease of 3.2 percent from 2000. Conversely, as presented in Table 3.16-1, the minority population of the state steadily increased since 2000.

Relative to the population of Napa County, as of 2000, there are some residents who live in the vicinity of the project site and no one living on the project site. According to the US Census Bureau 2000 Census Tract Data, the latest available data, there were approximately 1,635 people living in Census Tract 2018, the Census Tract for Lake Berryessa. Of this, 233 people were identified as minority or a mix of minorities, while the remaining 1,402 were identified as White (US Census Bureau 2010b). Additionally, as further refinement, of the two block groups identified in Tract 2018, Lake Berryessa is in Block 1, in which 1,018 people were found to be living, 129 of whom were identified as one minority race alone, and the remaining were classified as White.

Poverty rate data for Napa and Solano Counties is presented in Table 3.16-2. According to the US Census Bureau, poverty counts for Napa and Solano Counties and for California has increased since 2000. The Census provides these estimates with a 90 percent confidence rate.

**Table 3.16-2  
Estimated Poverty Counts for the ROI for 2000 and 2008**

Location	2000	Percent Change	2008
Napa County	8,802	30.7	11,511
Solano County	32,756	8.0	35,393
State of California	4,304,909	11.0	4,781,201

Source: US Census Bureau 2010c

As presented Table 3.16-1, between 2000 and 2008, the poverty count in Napa County increased by 30.7 percent, Solano County by 8.0 percent, and California by 11.0 percent.

### **3.16.2 Environmental Consequences**

#### ***Impact Criteria***

The Proposed Action was evaluated for adverse effects on people or the environment in the context of existing environmental justice issues within the ROI. The proposed project would have a significant impact on environmental justice if it were not to comply with the applicable laws discussed or to result in disproportionately high and adverse human health or environmental effects on low-income or minority populations within the ROI.

***Proposed Action***

The Proposed Action includes a developed Camp Berryessa to be used primarily for recreation for a range of people, including youth groups. The implementation of a recreation-based camp and the resultant physical changes to the project site are not actions that could substantially affect human health or the environment by excluding persons, by denying persons benefits, or by subjecting persons to discrimination. In addition, although minority and low-income populations do reside within the ROI, because of the nature of the proposed project, none were identified as having potential for disproportionate human health or environmental effects.

***No Action Alternative***

Under the No Action Alternative, the proposed project would not be implemented, and the recreational improvements contemplated would not occur. Current uses would continue until other projects for the project site were developed.

## 3.17 Cumulative Impacts

This section provides a description of other projects in the area and a discussion of the cumulative impacts of those projects, in combination with the previously identified effects of the Proposed Action.

A cumulative impact is defined in the Code of Federal Regulations (40 CFR, Part 1508.7) as “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.”

CEQA Guidelines Section 15355 states that “cumulative impacts refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

(a) The individual effects may be changes resulting from a single project or a number of separate projects.

(b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”

The Proposed Action has been assessed for cumulative impacts with other actions in the project vicinity. Identified current or reasonably foreseeable actions in the affected region are described below.

### 3.17.1 Cumulative Projects

The cumulative projects were identified through research and consultation with Reclamation and the District. Cumulative projects proposed in the project vicinity are summarized in Table 3.17-1.

**Table 3.17-1  
Cumulative Projects and Plans**

<b>Project</b>	<b>Proponent</b>	<b>Implementation Date</b>	<b>Description Summary</b>
Visitor Services Plan (VSP) for Lake Berryessa	Reclamation	2006 (ongoing)	The VSP prescribes basic management principles to guide and support lake-wide integration of government and commercial operations (concessionaires) in the best interests of the visiting public.
Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas	Reclamation and Pensus Group LLC	Anticipated 2010/2011	Provide a full range of amenities and services at the six concession sites and emphasizing the conservation and preservation of the Lake Berryessa area.
Sewer Pond Remediation and Closure	Reclamation	Anticipated 2011	Cleanup and removal of potentially hazardous sludge and clay lining from 19 wastewater treatment ponds at four Lake Berryessa concession areas.
ADA Retrofits	Reclamation	Anticipated 2010/2011	Retrofitting of existing structures at Lake Berryessa to meet the mandates of the Americans with Disabilities Act
North End Trail	Reclamation	Anticipated 2011	Rehabilitate and realign the existing North End Trail from the Putah Creek trailhead to the K-6 trailhead.
Oak Shores Trail	Reclamation	Anticipated 2011	Build a three-mile hiking and biking trail along the shore of Lake Berryessa.
Voluntary Oak Woodland Management Plan	Napa County	Anticipated 2010	Conservation framework for the preservation of oak woodlands.

***Visitor Services Plan for Lake Berryessa***

The VSP limits future development of the concession areas to facilities that support the intent of the VSP and includes the demolition and removal of private facilities from federal property at Lake Berryessa. It also commits Reclamation to partner with other government agencies, private landowners, and private organizations to design and construct a regional trail system for non-motorized recreation, and to include a multipurpose shoreline trail.

Reclamation will continue to operate day-use recreation areas at Oak Shores, Smittle Creek, Olive Orchard, Pope Creek, North Shore, Eticuera, Markely Cove, and Steele

Canyon. Reclamation will also continue to operate the Capell Cove boat launch facility. Markley Cove, Pleasure Cove, Steele Park, Spanish Flat, Lake Berryessa Marina, Rancho Monticello, and Putah Creek recreation areas will be developed, operated, and maintained by commercial concession contracts with Reclamation.

***Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas***

Under an agreement with Reclamation, Pensus Group LLC will develop six concession sites emphasizing the conservation and preservation of the Lake Berryessa area. The proposed plan includes cabins, hotel units and boutique style hotel units. Distinctive, complimentary and non-conflicting services will be provided at the combined concession areas to satisfy the needs of all socio-economic sectors. Close attention will be paid to sustainable development.

Pensus plans to use “Floating and On Land Marina/Camping and RV Villages.” The village concept calls for many activities to be centered in one area. A restaurant, convenience and gift store, clothing boutique, fuel dock and tour boat dock, all focused in one village area. This approach consolidates utilities and services and produces an energetic and interesting environment on a smaller footprint.

All new wet slips with walkway lighting and connections for water and power will be built. A “shuttle boat” service will make all concession areas accessible to all others without the need to drive.

RV and camping locations will be reconfigured for greater space and privacy and new areas established. More sites will have power, water or sewer installed, and the sites will be visually enhanced. High quality toilet, shower and laundry facilities will be constructed with tile and granite. All buildings will be air conditioned.

A cultural and educational learning center will be constructed as part of the Visitor Center at Manzanita and will be dedicated to Lake Berryessa, its history, demographics, topography, climate and events. Also included in this complex will be a Watersport Education Center focusing on water safety and proper operation of watercraft.

***Sewer Pond Remediation and Closure***

This project includes the cleanup and removal of potentially hazardous sludge and clay lining from 19 wastewater treatment ponds at four Lake Berryessa concession areas: Spanish Flat, Lake Berryessa Marina, Rancho Monticello, and Putah Creek. The project includes the complete cleanup, safe disposal of hazardous materials, and contour of the pond sites.

The actions required by the RWQCB to close each pond site are underway. To close and remediate the ponds, Reclamation performed initial sampling and lab analysis and will backfill, compact, and re-vegetate excavated sites.

### ***ADA Retrofits***

The project involves the retrofitting of existing structures at Lake Berryessa to meet the mandates of the Americans with Disabilities Act. Work includes: retrofitting restroom facilities, walkways, parking areas, picnic sites; other methods of ingress and egress to all facilities; and providing updated interpretive displays to meet the requirements of ADA. The areas to be retrofitted will be the Administrative Building, Dormitory Building, Visitor Center, and the Oak Shores Day Use area (Acorn Beach, Coyote Beach, and Coyote Knolls).

### ***North End Trail***

Berryessa Trails and Conservation is proposing to rehabilitate and realign the existing North End Trail from the Putah Creek trailhead to the K-6 trailhead. The existing North End Trail was built in the late 1970s by the California Conservation Youth Corps. The trail system originally ran from Putah Creek to Eticuera Creek, but portions of the trail that were found to be a concern to public safety were abandoned, while some of the other segments of trail continue to be used by the public today. Much of the trail has deteriorated over the years, creating safety and erosion issues. In an effort to restore the trail, Berryessa Trails and Conservation volunteers have removed overgrown vegetation and marked missing segments with flagging; these efforts have not produced long-term results.

The proposed project consists of rehabilitating the existing trail by realigning portions to be away from hazardous areas, resurfacing the trail through the use of possible trail stabilizers, and removing and controlling overgrown vegetation. Associated structures, such as trailheads, gates, bridges, and wet crossings, would also be constructed or repaired, as needed. The new trail would conform to Reclamation's Recreation Facility Design Guidelines and would provide improved opportunities for public use of the Lake Berryessa area in accordance with the VSP ROD.

### ***Oak Shores Trail***

The proposed project is to build a three-mile hiking and biking trail along the shore of Lake Berryessa. The Oak Shores Trail would start at Lake Berryessa's Visitor Center and end at Coyote Knolls, which is part of the Oak Shores Day-Use Area (Oak Shores). This proposed trail would intersect with the southern end of the Smittle Creek Trail at Coyote Knolls. A 2.6-mile section of the trail would be built to comply with the Accessibility Guidelines for Outdoor Developed Areas (AGODA) to allow people with disabilities the opportunity to use the trail. Regulations implementing the Americans with Disabilities Act and the Architectural Barriers Act have been incorporated into AGODA. The entire trail will comply with the Reclamation's Recreation Facility Design Guidelines (2002). Horses will not be permitted on the trail.

### ***Voluntary Oak Woodland Management Plan***

The purpose of the Voluntary Oak Woodland Management Plan is to provide a conservation framework for the preservation of Napa County's oak woodland resources. This Plan provides a summary of the location, condition and value of Napa County's oak woodlands; identifies potential threats; outlines conservation strategies; supports

eligibility of landowners, agencies, and non-profits for grants under the California Oak Woodlands Conservation Program; and improves communication and collaboration among those interested in the long-term health and viability of Napa County's oak woodlands.

### **3.17.2 Biological Resources**

Of the seven cumulative projects considered, five would have a potential adverse impact on biological resources as a result of disruption and modification. These include the Visitor Services Plan for Lake Berryessa; the Major Recreation Facilities, Visitor Services, and Capital Investment at Lake Berryessa Concession Areas Project; the Sewer Pond Remediation and Closure Project; the North End Trail Project; and the Oak Shores Trail Project. These projects would include measures similar to those planned for the Camp Berryessa project site, which may include special-status species surveys, Section 401 and 404 evaluations, and CDFG Section 1600 evaluations. These measures are intended to reduce impacts on sensitive habitats as well as on special status plant and animal species. Therefore, the less than significant impacts on biological resources as a result of the Proposed Action are not expected to contribute to significant cumulative impacts in the Lake Berryessa area.

### **3.17.3 Recreation**

In conjunction with the Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas Project, Visitor Services Plan for Lake Berryessa, North End Trail, and Oak Shores Trail projects, development of the proposed Camp Berryessa would cumulatively increase the amount of recreation activities at Lake Berryessa. These projects together would significantly impact the recreation experience at Lake Berryessa by offering an array of activities, lodging, and access to the lake not previously offered to the recreating public. The overall recreation experience at Lake Berryessa would significantly improve over existing conditions, thereby making the lake a more attractive destination for local residents and tourists. Although Camp Berryessa would be managed on a reservation basis, implementation of the proposed action would make the project site available to wider public than the previous exclusive use as a Boy Scout Camp.

### **3.17.4 Cultural Resources**

Of the seven cumulative projects considered, five could impact cultural resources through earth-moving activities. These include the Visitor Services Plan for Lake Berryessa; the Major Recreation Facilities, Visitor Services, and Capital Investment at Lake Berryessa Concession Areas Project; the Sewer Pond Remediation and Closure Project; the North End Trail Project; and the Oak Shores Trail Project. However, these projects would comply with relevant cultural resource laws and regulations, including NHPA and the Native American Graves Protection and Repatriation Act, as well as Reclamation cultural resource policies to reduce impacts on cultural resources. These projects would also implement measures similar to those planned here, i.e., stop-work orders to reduce

impacts on any undiscovered cultural resources. Further, the Proposed Action would not have significant impacts on the cultural resource landscape and inventory of the Lake Berryessa area.

Based on these factors, the Proposed Action is not expected to contribute to significant cumulative impacts on cultural resources.

### **3.17.5 Geology and Soils**

Of the seven cumulative projects considered, five could impact geology and soils through earth-moving activities that may contribute to soil loss and erosion. These are the Visitor Services Plan for Lake Berryessa; the Major Recreation Facilities, Visitor Services, and Capital Investment at Lake Berryessa Concession Areas Project; the Sewer Pond Remediation and Closure Project; the North End Trail Project; and the Oak Shores Trail Project. However, these projects would implement measures similar to those planned here (SWPPP, the erosion control plan, and the asbestos dust mitigation plan) to reduce the impacts on geology and soils. Therefore, the less than significant impacts on geology and soils as a result of the Proposed Action are not expected to contribute to significant cumulative impacts in the Lake Berryessa area.

### **3.17.6 Water Resources**

Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas are projects that would involve impacts on water resources. These projects would provide a full range of amenities and services at the six concession sites and emphasize the conservation and preservation of the Lake Berryessa area. They would be required to comply with water quality regulations and waste discharge requirements. It is assumed these sites would not be constructed unless pump tests are done to verify groundwater supplies would not be substantially depleted.

As with the proposed project site, these projects would occur at previously developed sites. It is assumed these projects would be confined to the footprint of previously disturbed areas and would not alter the course of a river or stream, thereby limiting the alteration of drainage patterns. Emphasizing the conservation and preservation of the Lake Berryessa area at these sites would include landscaping that preserves and stabilizes existing drainage patterns.

These projects would be developed in a manner to prevent on-site flooding. Most importantly, these projects are also adjacent to Lake Berryessa and, therefore, there are no developed areas downstream of these projects that could be affected by runoff from these projects.

The proposed project does not and would not have a stormwater drainage system. The stormwater systems for these projects are unknown, but it is assumed they have no stormwater systems. Stormwater from all of these areas would continue to drain into Lake Berryessa.

Runoff from these projects would enter Lake Berryessa. Runoff could be contaminated with pollutants found on the surface of parking lots and litter left on the ground. It is assumed these projects would maintain sufficient receptacles with lids for disposing of garbage and recycling materials. Runoff from impervious surfaces would not be channeled directly into Lake Berryessa.

The Base Floodplain is 440 to 450 feet above MSL. The reservoir water level may fluctuate from 455 feet to 253 feet above MSL. It is assumed all permanent structures and facilities, including the wastewater disposal field facility, would be higher than 455 feet above MSL.

Because of the above, there would be less than significant cumulative impacts on water resources from the proposed project and Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas.

### **3.17.7 Hazardous Materials and Waste**

There is one project proposed in the Lake Berryessa area that could create a hazardous materials impact. The Sewer Pond Remediation and Closure Project is composed of cleanup and removal of potentially hazardous sludge and clay lining from 19 wastewater treatment ponds at Lake Berryessa. The project would ensure complete cleanup and disposal of hazardous materials, and contouring the pond sites (Vignau 2010a). It is assumed that Reclamation would implement measures to reduce any hazardous substance release during the excavation and disposal of the contaminated soils. The less than significant impacts from hazardous substances as a result of the Proposed Action are not expected to contribute to significant cumulative impacts.

### **3.17.8 Public Health and Safety**

#### ***Fire Safety***

Cumulative Reclamation projects involve new buildings, structures, and activities capable of being associated with a fire, which would involve proper fire planning and education. However, it is unknown how much this would increase the use of the area. The opportunity for fires to occur increases as the use of the area increases. Assuming there is not a significant increase in the use of the area, cumulative impacts involving fire safety would be less than significant.

#### ***Water Recreation Safety***

Cumulative Reclamation projects involve water recreation. Cumulative projects would be required to comply with and enforce water safety laws, codes, and regulations. Also, Reclamation would not be allowed to provide water recreation opportunities without also monitoring and safely enforcing associated laws. Cumulative impacts involving water recreation safety would be less than significant.

### ***Law Enforcement***

Cumulative Reclamation projects involve activities potentially requiring law enforcement. The facilities would be designed to allow for emergency access. Also, Reclamation would not be allowed to develop facilities and programs without also monitoring and safely enforcing associated laws. Cumulative impacts involving law enforcement would be less than significant.

### ***Roadway Safety***

Cumulative Reclamation projects involve roadway safety. Roadways would be constructed and maintained to provide for safe use and appropriate access. Cumulative impacts involving roadway safety would be less than significant.

### ***Flora and Fauna Safety***

Cumulative Reclamation projects potentially involve contact with flora and fauna. Public education about the characteristics of local flora and fauna, through such means as signs and brochures, would occur at these projects. Cumulative impacts involving flora and fauna safety would be less than significant.

### **3.17.9 Utilities and Infrastructure**

Constructing and operating the amenities and services planned for the six concession sites at Lake Berryessa would cumulatively increase the demand for utilities – including electricity, water, wastewater, and solid waste disposal – at Lake Berryessa over existing conditions because of the large increase in facilities, infrastructure, and recreational uses associated with them. If the Proposed Action were implemented, demand for electricity and solid waste disposal associated with visitors to Camp Berryessa would have a small contribution to this cumulative increase in demand for utilities. Because Reclamation would ensure that adequate infrastructure was in place to support facilities on its lands, cumulative effects would be less than significant.

### **3.17.10 Traffic and Transportation**

Constructing and operating the amenities and services planned for the six concession sites at Lake Berryessa would cumulatively increase traffic volume in the vicinity of the lake over existing conditions because of the increase in recreational attractions. If the Proposed Action were implemented, traffic associated with visitors to Camp Berryessa would have a small contribution to this cumulative increase in traffic. The total volume of traffic associated with the project site, at full build-out, would likely be similar to levels that occurred when the Boy Scout camp was in place, when local roads were below capacity at all times except occasional summer weekends (Reclamation 2005).

### **3.17.11 Air Quality**

Many of the cumulative projects listed in Table 3.17-1 would at least partially overlap construction periods for the proposed project, and thus have the potential for cumulative air quality impacts. Most of the cumulative projects involve new construction activities at

the established concession and recreation areas around Lake Berryessa. The southern end of the North End Trail is more than 1,200 feet from Camp Berryessa. The Putah Creek recreation area (south of the Putah Creek inlet to Lake Berryessa) is the facility area closest to the proposed project. The closest portions of the Putah Creek recreation area are more than 2,500 feet from Camp Berryessa. The junction of Berryessa-Knoxville Road and Pope Canyon Road is more than a mile from Camp Berryessa. Other facility areas are well over a mile from Camp Berryessa. The limited amount of construction activity at Camp Berryessa combined with the relatively large distances to other facility areas means that no significant cumulative air quality impacts would be expected from concurrent construction activities at Camp Berryessa in combination with these other facility areas.

### **3.17.12 Noise**

The geographic scope for cumulative noise impacts encompasses the project area and its immediate vicinity, as well as areas adjacent to access routes to the project site. As described in Section 3.12, the proposed action would have less than significant noise impacts. It is possible that construction of the proposed action may overlap with construction of some of the projects listed in Table 3.17-1. Given the intermittent condition of noise impacts for most construction sites and the distance from most of these construction sites, cumulative noise impacts from construction activities would be less than significant.

As discussed in Section 3.12, in the long term the proposed action would result in less than significant noise impacts associated with the increase in the number of visitors to the project area. Most of the projects listed in Table 3.17-1 would increase vehicle traffic on the access roads to Lake Berryessa. However, the contribution of the proposed action to the long-term cumulative noise impacts from traffic would be negligible as it would have a maximum capacity of 50 to 60 parking spaces. Therefore, long-term cumulative noise impacts of the proposed action would be less than significant.

### **3.17.13 Land Use**

In conjunction with the Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas Project, Visitor Services Plan for Lake Berryessa, North End Trail, and Oak Shores Trail projects, implementation of the proposed Camp Berryessa project would cumulatively increase the recreation activities at Lake Berryessa in areas that are RAMP Class I and Class II land classifications. The RAMP land use classification system was established as a planning tool to balance recreational uses and development in the area. These individual projects should comply with the RAMP land use classifications to ensure that their projects fit with the existing RAMP classifications and consider existing land uses prior to construction. With consideration for RAMP land use classifications and existing land use recreational opportunities for each of these projects in the planning stages, cumulative impacts to land use would be less than significant.

### **3.17.14 Visual Resources**

In conjunction with the Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas Project, Visitor Services Plan for Lake Berryessa, North End Trail, and Oak Shores Trail projects, implementation of the proposed Camp Berryessa project would cumulatively increase the amount of activities, built amenities, and structures around Lake Berryessa. These projects together would significantly impact the recreation experience at Lake Berryessa by visually degrading undeveloped areas that offer scenic vistas and may degrade the existing visual quality of Lake Berryessa, or create a substantial source of glare. The VSP Design Guidelines, together with the Community Character policies in the Napa County General Plan (2008), and the visual qualities and resources of Lake Berryessa would be taken into consideration during the planning phases of each project. Therefore, the overall cumulative effect of each project on visual resources would be reduced and viewsheds and visual resources would retain their visual quality. Following these guidelines would reduce impacts on visual resources to less than significant.

### **3.17.15 Socioeconomic**

Implementation of the Proposed Action would cumulatively increase employment, and income in the vicinity of Lake Berryessa over existing conditions; however, their contribution would be minimal compared to the identified past, present, and reasonably foreseeable projects, especially the Major Recreation Facilities, Visitor Services and Capital Investment at Lake Berryessa Concession Areas Project. Because most of the users of the proposed Camp Berryessa would come from Napa County, the proposed project is not expected to generate any sizeable in-migration of people from outside the ROI. As such, the cumulative demand for housing is also expected to be minimal and may be limited to short-term construction employment if workers were hired from outside the ROI. Overall short-term and long-term employment would slightly increase from construction and operations and maintenance, respectively, but impacts would also be minimal because the Proposed Action would take place over time. Cumulatively, per capita income may also experience a slight increase over time due to the additional employment required to operate and maintain the proposed Camp Berryessa, but the contribution would be minimal because most of these jobs would be low-paying seasonal jobs.

### **3.17.16 Environmental Justice**

No disproportionate cumulative impacts on minority or low-income persons would result from implementing the proposed action in conjunction with the identified past, present, and reasonably foreseeable projects.

### **3.18 Growth Inducing Impacts**

Analysis of growth-inducing impacts includes those characteristics of the project that may encourage and facilitate activities that would, either individually or cumulatively, affect the environment. Population increases, for example, may impose new burdens on community service facilities. Similarly, improving access routes may encourage growth in previously undeveloped areas. Implementing the Proposed Action would not contribute to significant development or economic growth in the vicinity. No housing would be required, nor would businesses be established as a result of this project. No growth inducement would result from implementing any the Proposed Action.