4.12.1 WATER – PUBLIC UTILITIES

4.12.1.1 INTRODUCTION

This water analysis is based on information within the following documents:

- *American River Pump Station* EIR/EIS, 2002
- *CSP Feasibility Analysis,* May 2007
- *City of Roseville Urban Water Management Plan,* Brown and Caldwell, 2006 (hereby incorporated by reference)
- *Creekview Specific Plan Master Water Study Final Report,* MacKay and Somps Civil Engineers, November 30 2010
- *Creekview Specific Plan Water Conservation Plan*, HydroScience Engineers, November 23, 2010
- *Groundwater Impact Analysis for Proposed Reasons Farms Land Retirement Plan,* MWH, June 2003
- *PCWA's Integrated Water Resources Plan,* Brown and Caldwell, August 2006
- *Placer Groundwater Management Plan,* PCWA 1998
- *Sierra Vista Specific Plan EIR Technical Memorandum: Effects of Changed Water Management Operations on Fisheries and Water Quality Impacts Previously Disclosed in the Water Form Agreement EIR,* Robertson-Bryan Inc. and HDR, October 2009
- *TM-1 – Unit Water Demand Factor Verification and Water Demand Evaluation and Update,* MWH, September 2006
- *Water Forum Agreement Final EIR (SCH #950824041),* November 1999 (hereby incorporated by reference)
- *Water Supply Assessment for the Creekview Specific Plan*, City of Roseville, September 2010
- *West Roseville Specific Plan FEIR,* February 2004
- *Western Placer County Groundwater Management Plan,* MWH, August 2007

All of the above listed documents are available for review during normal business hours at:

City of Roseville Permit Center
311 Vernon Street
Roseville, California

Several comments pertaining to water supply were received in response to the NOP (Appendix A). These comments are included in Appendix B. These comments requested the City clearly define the amount of water needed for the project including surface water, recycled water and groundwater supplies and clearly show supply availability. The comments also requested the City address if there is a need for groundwater treatment facilities and define any groundwater facilities including how they would be funded.

4.12.1.2 ENVIRONMENTAL SETTING

Water Supply

The City of Roseville would serve as the water supplier for the Creekview Specific Plan (CSP). The Water supply sources for the City are surface water from Folsom Lake, groundwater, and recycled water for landscape irrigation. The City of Roseville's water source has historically been from Folsom Lake. Groundwater is occasionally used as backup supply. The last instance of groundwater use occurred in 1991 during a drought. During 2008, the City of Roseville conducted a pilot program of limited groundwater pumping to pilot test the City's aquifer storage and recovery (ASR) facility located on the west side of the City. Recycled water is available for landscape irrigation from both the Dry Creek and the Pleasant Grove Wastewater Treatment Plants. Each of the City's water supply sources is described in detail below. Additional information on recycled water is included in Subsection 4.12.2 (Recycled Water).

In addition to the water supplies identified above, supplemental water is available from other agencies through system interties. These water system interties are typically operated during treatment plant disruptions, such as are occasionally experienced during plant construction projects or other maintenance operations that require treatment plant or pump station shutdown. Water system interties are also used for equal trading of water supplies in two different service areas due to local operational needs.

Surface Water Supply

The City's current surface water supply is American River water diverted from Folsom Lake. Folsom Lake has been the primary source of water supply to the City since 1971. Prior to 1971, the City relied on Placer County Water Agency (PCWA) water delivered through the Boardman Canal to a treatment facility that was located in the eastern portion of the City and which is now a part of the Stoneridge Specific Plan area. Additionally, prior to 1971, Roseville used groundwater from wells located in the older part of the City.

Surface water is now delivered from Folsom Lake via United States Bureau of Reclamation (USBR) facilities through a pumping plant and parallel 48-inch and 60-inch transmission lines to the City's water treatment plant, located on Barton Road in Granite Bay. The City's water plant has a treatment capacity of 100-million gallons per day (mgd). Water is treated through conventional treatment processes of flocculation/sedimentation, filtration, and disinfection. Treated water is fluoridated for consumer health, and pH is adjusted for corrosion protection of the distribution system.

The City has contracts for 66,000 acre-fee per year (AFY) of surface water through contracts with the USBR, Placer County Water Agency (PCWA) and San Juan Water District (SJWD). The City maintains a contract entitlement with the USBR for 32,000 AFY of Central Valley Project (CVP) supplies. Roseville's water supply contract with PCWA allows for 30,000 AFY of American River Middle Fork Project water wheeled through USBR facilities at Folsom Lake. Lastly, the City has a current contract with SJWD for 4,000 AFY. The SJWD supply is a normal or wet year supply and is served from part of SJWD's contract with PCWA for 25,000 AFY of Middle Fork Project water, also served from Folsom Lake.

The City participated in the Water Forum, a regional stakeholder effort concerned with the protection of the Lower American River and reliable water supplies. The Water Forum resulted in the development of purveyor-specific agreements that outline how suppliers will meet commitments agreed to as part of the Water Forum efforts. The goal of the Water Forum was to provide a safe and reliable water supply through the year 2030, while protecting resources associated with the Lower American River. Roseville's agreement included a limitation of diversion from the American River in both wet and dry years. In wet years the City agreed to limit diversions from its American River supply contracts to no more than 54,900 AFY in normal/wet years, and no less than 39,800 AFY in driest years(critically dry). Through its agreement with SJWD, the City increased its normal year

water supplies by an additional 4,000 AFY, for a total normal/wet year supply of 58,900 AFY. These water supply contracts and Water Forum limitations are summarized in Table 4.12.1-1, below, and further described within the City's 2005 Urban Water Management Plan.

TABLE 4.12.1-1

CITY OF ROSEVILLE SURFACE WATER CONTRACTS

Contracted Water Supply Source	Contract Amount (AFY)
USBR	32,000
PCWA	30,000
SJWD (normal/wet year only)	4,000
Total Contracted Supplies	**66,000**
Available Supplies: Normal/Wet Years (a)	58,900
Available Supplies: Driest/Critically Dry Years (a)	39,800

(a) As a result of City commitments made under the Water Forum.

Although water contract entitlements total 66,000 AFY, the City's diversions from the American River are limited by the Water Forum Agreement (WFA). The Water Forum categorized water years into three types: 1) Normal or Wet Years (normal/wet), 2) Drier Years, and 3) Driest Years (critically dry). These hydrologic year types are defined as follows:

- Normal or Wet Years: When the projected March through November American River Unimpaired Inflow to Folsom Reservoir is greater than 950,000 AF;
- Drier Years: When the projected March through November American River Unimpaired Inflow to Folsom Reservoir is between 950,000 AF and 400,000 AF; and,
- Driest (Critically Dry) Years: When the projected March through November American River Unimpaired Inflow to Folsom Reservoir is less than 400,000 AF.

In normal/wet years, the City is limited to 58,900 AFY while in driest (critically dry) years; the maximum diversion from the American River is limited to 39,800 AFY. In drier (below average) years, the City may divert an amount between 58,900 and 39,800 AFY from the American River based on unimpaired flow into Folsom Lake.

The City is evaluating using the remaining 7,100 AFY of water (the difference between contracted supplies of 66,000 AFY and normal/wet year WFA limitation of 58,900 AFY) which would be delivered from a new diversion on the Sacramento River through the proposed Sacramento River Water Reliability Project (SRWRP), should the proposed project be completed. The SRWRP is a joint project between the City of Sacramento, Sacramento Suburban Water District, PCWA and the City of Roseville. As discussed in 4.12.1-1 and 4.12.1-2, below, the City is not in need of additional surface water supplies, and therefore, does not need a surface water supply diversion point from the Sacramento River to serve this Project. However when considered under cumulative conditions in 2025, this diversion could be required. Therefore, additional information on the Sacramento River Water Reliability Project is included within the cumulative discussion in Chapter 5, CEQA Considerations.

Pursuant to the City's purveyor-specific WFA, the City has an agreement with PCWA on a re-operation plan for drier and driest years from PCWA's Middle Fork Project (MFP), which will allow the release of up to 20,000 AFY of raw water down the American River to offset increased diversions above 1995 levels. These increased releases would come either from MFP storage in total or a combination of PCWA contract water and MFP storage. Re-operational releases would not be released as part of normal MFP operations.

The intent of MFP re-operational releases during drier and driest years is to mitigate environmental impacts resulting from increased diversions above 1995 baseline levels. City baseline diversions in 1995 were 19,800 AF. Because annual municipal and industrial (M&I) demands were projected to increase significantly between 1995 and 2030 it was agreed that it was not feasible to reduce build out demands to 1995 levels of diversion. The City agreed as part of the Water Forum to offset a portion of the demand in drier and driest years by facilitating the release of up to 20,000 AF of water down the American River. The City further agreed to limit its diversion from Folsom Lake to 39,800 AF in driest (critically dry) years and may proportionally increase diversions to 58,900 AF in normal/wet years.

By agreeing to release an equivalent amount of environmental water down the American River as diverted to supply new growth in the City, environmental impacts were held to 1995 levels. Those impacts were identified in the Water Forum EIR and mitigated by the Water Forum purveyor specific agreement (WFA) as discussed above.

The American River

The American River, from which the City of Roseville draws its surface water, is one of the major tributaries of the Sacramento River. The Feather River is the other. The American River basin encompasses about 1,936 square miles and ranges in elevation from 23 feet to more than 10,000 feet above mean sea level. The average annual flow of the American River at Fair Oaks (USGS Station No. 11446500) has been approximately 2.7 MAF per year from 1905 through 2003. It contributes about 15 percent of the total Sacramento River flow below its confluence in Sacramento.

The largest reservoir in the basin, Folsom Lake (977 TAF), is owned and operated by the USBR for the California Central Valley Project (CVP). Other major reservoirs upstream from Folsom Lake include the Union Valley Reservoir on Silver Creek, which is owned and operated by SMUD (230 TAF, owned and operated by SMUD), PCWA's Hell Hole Reservoir on the Rubicon River (208 TAF), and French Meadows Reservoir behind the L.L. Anderson Dam on the Middle Fork American River (135 TAF). Folsom Lake has dedicated capacity to store flood flows, and the property located adjacent to the Lower American River is protected by a levee system.

Folsom Reservoir

Folsom Reservoir (or Folsom Lake) has a maximum storage capacity of approximately 977 TAF, and has a maximum depth of approximately 266 feet. Folsom Reservoir is the most upstream CVP facility on the American River, and is located at an elevation of 466 feet above msl.

Folsom Lake is part of the Folsom Lake State Recreation Area (SRA), an 18,000-acre area encompassing Folsom Lake and Lake Natoma managed by the California Department of Parks and Recreation (DPR). The Folsom Lake SRA is one of the most heavily used recreation areas in the California State Park System because of its proximity to large urban areas, the diminishing open space of the area, and high regional interest in recreation. When full, the reservoir has a surface area of approximately 11,900 acres, 75 miles of shoreline, and a surface elevation of 466 feet above msl.

Folsom Lake accommodates a variety of water-dependent recreational activities, including power and sail boating, camping, fishing, swimming, water skiing, jet skiing, and windsurfing. Major shoreline use areas are Beal's Point, Granite Bay, and Rattlesnake Bar on the western shoreline;

Folsom Point (formerly Dyke 8) and Folsom Lake Marina at Brown's Ravine on the southern and eastern shorelines; and the Peninsula Campground between the north and south forks of the American River. Each of these areas contains a boat ramp and various other recreational facilities. Folsom Lake Marina at Brown's Ravine, the only marina on Folsom Lake, is open year-round and has a main boat ramp, a low-water boat ramp, and 685 slips available for mooring. The recreation area has approximately 80 miles of trails available for hiking and horseback riding and approximately 30 miles of paved and unpaved bicycling trails.

Boating, sailing, and water skiing take place throughout the main reservoir area. Anglers fish from boats throughout the lake and especially in the upper arms of the reservoir, which are designated slow-boating zones. Fishing is mainly for coldwater species, such as rainbow trout and kokanee salmon, and warm water species, such as bass, catfish, and sunfish. Swimming and sunbathing take place at many undesignated areas along the reservoir shoreline.

The water level at Folsom Lake dictates the length of the recreation season. During years with normal precipitation, the main recreational season is May through Labor Day in September, when recreation is primarily focused on water-dependent activities. During the remaining months of the year, use consists of fishing and land-based recreation. (California State Parks 2001). In general, the Granite Bay, Beal's Point, Folsom Point, and Brown's Ravine use areas account for approximately 50 percent of the use of Folsom Lake SRA. Water-dependent activities account for nearly 85 percent of recreation use at Folsom Lake. Boating is the most popular activity at the reservoir, followed by swimming and fishing (Sacramento Area Flood Control Agency and Reclamation 1994).

With respect to its qualities as fish habitat, strong thermal stratification occurs within Folsom Reservoir annually between April and November. Thermal stratification establishes a warm surface water layer (epilimnion), a middle water layer characterized by decreasing temperature with increasing depth (metalimnion or thermocline), and a bottom, coldwater layer (hypolimnion) within the reservoir. In terms of aquatic habitat, the warm epilimnion of Folsom Reservoir provides habitat for warm water fishes, whereas the reservoir's lower metalimnion and hypolimnion form a "coldwater pool" that provides habitat for coldwater fish species throughout the summer and fall portions of the year. Hence, Folsom Reservoir supports a "two-story" fishery during the stratified portion of the year (April through November), with warm water species (both

centrarchids and ictalurids) using the upper, warm-water layer and coldwater species using the deeper, colder portion of the reservoir.

Native species that occur in the reservoir include hardhead and Sacramento pikeminnow. However, introduced largemouth bass, smallmouth bass, spotted bass, bluegill, crappie, and catfish constitute the primary warm-water sport fisheries of Folsom Reservoir. The reservoir's coldwater sport species include rainbow and brown trout, kokanee salmon and Chinook salmon, all of which are currently or have been stocked by the California Department of Fish and Game (CDFG). Although brown trout are no longer stocked, a population still remains in the reservoir. Salmonids are stream spawners and, therefore, do not reproduce within the reservoir. However, some spawning by one or more of these species may occur in the American River upstream of Folsom Reservoir.

Folsom Reservoir's coldwater pool is important not only to the reservoir's coldwater fish species identified above, but also is important to lower American River fall-run Chinook salmon and steelhead. Seasonal releases from the reservoir's coldwater pool provide thermal conditions in the lower American River that support annual in-river production of these salmonid species. Folsom Reservoir's coldwater pool is not large enough to allow for coldwater releases during the warmest months (July through September) to provide maximum thermal benefits to lower American River steelhead, and coldwater releases during October and November that would maximally benefit fall-run Chinook salmon immigration and holding, spawning, and embryo incubation. Consequently, management of the reservoir's coldwater pool on an annual basis is essential to providing thermal benefits to both fall-run Chinook salmon and steelhead, within the constraints of coldwater pool availability.

Lower American River

The lower American River extends for 23 miles from Lake Natoma to its confluence with the Sacramento River. The river passes through the American River Parkway, a 6,000-acre open space corridor that includes a series of interconnected parks along the publicly owned lands of the river. The parkway has 14 county parks that provide user access and the 32-mile Jedediah Smith Memorial Trail provides bicycling, hiking, and horseback-riding opportunities from Discovery Park to the Folsom Lake SRA. The lower American River is a major site for recreational boating (rafting, kayaking, and canoeing), fishing, swimming, and wading. Boating activity, particularly commercial

rafting, depends primarily on air temperature, river flows, and season of the year. The most popular reach for rafting is from Sunrise Boulevard to Goethe Park. There are 10 popular swimming areas along the river, including Paradise Beach and Tiscornia Park, both with large sand beach areas. Both shoreline and boat fishing take place throughout the river. Anglers fish mainly for salmon, steelhead, and shad. Fishing is permitted year-round within the parkway, except during fall and early winter when the river is closed from Ancil Hoffman Park on the west to the Hazel Avenue Bridge on the east to protect spawning fish (EDAW and Surface Water Resources Inc. 1999).

Parkway visitation in 1997 was estimated at 6 million visitor-days. Visitation is expected to increase to 9.6 million visitor-days by 2020, assuming river flows are stable. (County of Sacramento and Reclamation 1997). Boating, particularly rafting is the most popular water-dependent activity on the river, followed by fishing and swimming (Sacramento Area Flood Control Agency and Reclamation 1994). About 90 percent of annual rafting rental business occurs between Memorial Day and Labor Day (Jones & Stokes 2001).

The American River has historically provided over 125 miles of riverine habitat to anadromous and resident fishes. Presently, use of the American River by anadromous fish is limited to the 23 miles of river below Nimbus Dam (the lower American River).

The lower American River provides a diversity of aquatic habitats, including shallow, fast-water riffles, glides, runs, pools, and off-channel backwater habitats. The lower American River from Nimbus Dam (river mile [RM] 23) to approximately Goethe Park (RM 14) is primarily unrestricted by levees, but is bordered by some developed areas. Natural bluffs contain this reach of the river and terraces cut into the side of the channel. The river reach downstream of Goethe Park, and extending to its confluence with the Sacramento River (RM 0), is bordered by levees. The construction of levees changed the channel geomorphology and has reduced river meanders and increased depth.

At least 43 species of fish have been reported to occur in the lower American River system, including numerous resident native and introduced species, as well as several anadromous species. Although each fish species fulfills an ecological niche, several species are of primary management concern either as a result of their declining status or their importance to recreational and/or commercial fisheries. Both steelhead, listed as "threatened" under the Federal ESA, and

Sacramento splittail, a California species of special concern and, informally, a Federal species of concern, occur in the lower American River. Additionally, the lower American River from the outfall of the Natomas East Main Drainage Canal (NEMDC, and also known as Steelhead Creek) downstream to the confluence with the Sacramento River is designated as critical habitat for spring-run Chinook salmon (70 FR 52512).[1] Current recreationally and/or commercially important anadromous species include fall-run Chinook salmon, steelhead, striped bass, and American shad.

The Sacramento River

The Sacramento River is the largest river in California, providing water for municipal, agricultural, recreational, and environmental purposes throughout Northern and Southern California. Water originating from the upper Sacramento River drainages represents a significant component of the total CVP supply, which provides high-quality water to meet downstream urban and agricultural demands. The Sacramento River watershed is predominantly forestland (approximately 65 percent), with the balance of the land used for rangeland (approximately 20 percent), agriculture (approximately 10 percent), urban/residential (less than 2 percent), and wildlife habitat/other.

The annual average Sacramento River flow at Verona (upstream of the confluence with the American River) is about 13.93 MAF per year, based on the 1930 through 2000 flow record maintained by the U.S Geological Survey (USGS) (Station No. 11425500). The Sacramento River is the primary water source for the CVP, which operates major storage reservoirs in the foothills and watershed uplands. These reservoirs include Shasta Lake with 4,552 thousand acre-feet (TAF) in the Sacramento River basin, Whiskeytown Lake (241 TAF) and Trinity Lake (2,448 TAF) in the Trinity River basin, and Black Butte Reservoir (136 TAF) in the Stony Creek basin.

The Sacramento River enters the Delta at Freeport, downstream of its confluence with the American River, where its average annual flow is about 17 MAF. Most flood flows from the upper Sacramento River, Feather River, and Sutter Bypass are diverted west of Freeport and the Sacramento area into the Yolo Bypass through the Fremont Weir at Verona. During the highest

[1] As described in NMFS' 2005 Final Rule Designating Critical Habitat for Seven Evolutionarily Significance Units of Pacific Salmon and Steelhead in California (70 FR 52512), NMFS identifies the reach of the lower American River from the outlet of the Natomas Main Drainage Canal downstream to the confluence with the Sacramento River as spring-run Chinook salmon critical habitat because it is believed to support nonnatal rearing. In its Final Rule, NMFS further states that the lower American River may be used during high winter flows for rearing and refugia by multiple populations of spring Chinook in the central valley (e.g., Feather and Yuba Rivers).

flood flows, gates at the Sacramento Weir are opened to divert flow into the Yolo Bypass and provide an additional layer of flood protection for the Sacramento area. The Yolo Bypass discharges into the Delta. Property adjacent to the Sacramento River and its bypasses is also protected from flood damage by an extensive levee system.

Over 30 species of fish are known to use the Sacramento River. Of these, a number of both native and introduced species are anadromous. Anadromous species include Chinook salmon, steelhead, green and white sturgeon, striped bass and American shad. Other Sacramento River fishes are considered resident species, which complete their lifecycles entirely within freshwater, often in a localized area. Resident species include rainbow and brown trout, largemouth and smallmouth bass, channel catfish, sculpin, Sacramento pikeminnow, Sacramento sucker, hardhead, and common carp (Moyle 2002).

The Sacramento River Watershed Program has identified mercury, organophosphate pesticides, toxicity, and drinking water parameters as chemicals of concern in the Sacramento River watershed, which includes the Sacramento and Feather Rivers, and the Delta (Sacramento River Watershed Program, 2001).

Upper Sacramento River

The upper Sacramento River is often defined as the portion of the river from Princeton (RM 163) the downstream extent of salmonid spawning in the Sacramento River (Burmester, 1996 *as cited in* Water Forum 1999), to Keswick Dam (the upstream extent of anadromous fish migration and spawning). The Sacramento River is an important migration corridor for anadromous fishes moving between the Pacific Ocean or the Delta and upper river and tributary spawning and rearing habitats. The upper Sacramento River is differentiated from the river's "headwaters" which lie upstream of Shasta Reservoir. The upper Sacramento River provides a diversity of aquatic habitats, including fast-water riffles and shallow glides, slow-water deep glides and pools, and off-channel backwater habitats.

Streamflow is greatly influenced by managed releases from Shasta Reservoir and, during the rainy season, by stormwater runoff. The stream channel is in a natural state, with no artificial levees. The drainage basin area includes parts or all of the Great Basin, Middle Cascade Mountains, Klamath Mountains, Coast Ranges, and Sacramento Valley physiographic provinces. Land cover in

the area is mainly forestland; cropland, pastures, and rangeland cover most of the remaining land area. Water quality effects from past and present mining activities in the Klamath Mountains are likely to be detected at this location (USGS 2002).

The upper Sacramento River is of primary importance to native anadromous species, and is presently utilized for spawning and early-life-stage rearing, to some degree, by all four runs of Chinook salmon (fall-, late fall-, winter-, and spring-runs) and steelhead. Consequently, various life stages of the four runs of Chinook salmon and steelhead can be found in the upper Sacramento River throughout the year.

Lower Sacramento

The lower Sacramento River is generally defined as that portion of the river from Princeton to the Delta, at approximately Chipps Island (near Pittsburg). The lower Sacramento River is predominantly channelized, leveed and bordered by agricultural lands. Aquatic habitat in the lower Sacramento River is characterized primarily by slow-water glides and pools, is depositional in nature, and has reduced water clarity and channel habitat diversity compared to the upper portion of the river.

Many of the fish species utilizing the upper Sacramento River also use the lower river to some degree, even if only as a migratory pathway to and from upstream spawning and rearing grounds. For example, adult Chinook salmon and steelhead primarily use the lower Sacramento River as an immigration route to upstream spawning habitats and an emigration route to the Delta. The lower river is also used by other fish species (e.g., Sacramento splittail and striped bass) that make little to no use of the upper river (upstream of RM 163). Overall, fish species composition in the lower portion of the Sacramento River is quite similar to that of the upper Sacramento River and includes resident and anadromous cold- and warmwater species. Many fish species that spawn in the Sacramento River and its tributaries depend on river flows to carry their larval and juvenile life stages to downstream nursery habitats. Native and introduced warmwater fish species primarily use the lower river for spawning and rearing, with juvenile anadromous fish species also using the lower river and non-natal tributaries, to some degree, for rearing.

Sacramento – San Joaquin Delta Estuary

Below its confluence with the American River at Sacramento, the Sacramento River enters the Delta at Freeport, merges with the San Joaquin River, and then flows through San Francisco Bay to the Pacific Ocean. The Delta is defined as the most upstream portion of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Estuary or Estuary), and consists of a triangle-shaped area composed of islands, river channels, and sloughs at the confluence of the Sacramento and San Joaquin rivers. The Delta forms the lowest part of the Central Valley, bordering and lying between the Sacramento and San Joaquin rivers, and extending from the confluence of these rivers inland as far as Sacramento and Stockton. The Delta is the source of drinking water for more than 23 million Californians in the San Francisco Bay Area, Central Valley, and Southern California. The Delta is also an important agricultural area for corn, grain, hay, rice, and pasture. Although much of the Delta is used for agriculture, the land also provides habitat for wildlife. Many agricultural fields are flooded in the winter, providing foraging and roosting sites for migratory waterfowl. In addition to lands that are used seasonally, CDFG manages thousands of acres specifically for wildlife including Lower Sherman Island and White Slough wildlife areas, Woodbridge Ecological Reserve, and Palm Tract Conservation Easement (SWRCB 1997).

On average, about 21 MAF of water reach the Delta annually. About 62 percent of total Delta inflow is from the Sacramento River, including additional CVP and SWP releases under the 1995 Water Quality Control Plan (WQCP) for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) (SWRCB 1995). Actual Delta inflow varies widely from year to year. In 1977, a critically dry year, Delta inflow totaled only 5.9 MAF, while in 1983, a wet year, the total was about 70 MAF. Both the CVP and SWP export water to the San Joaquin Valley and Southern California through the Jones and Banks pumping plants located in the south Delta. Like upstream areas vulnerable to flooding, the property adjacent to the Delta is protected by an extensive levee system.

San Francisco Bay (Bay) and the Delta (together Bay-Delta) make up the largest estuary on the west coast (EPA 1992). The northern Delta is dominated by the waters of the Sacramento River, which are of relatively low salinity; whereas the relatively higher salinity waters of the San Joaquin River dominate the southern Delta. The central Delta includes many channels where waters from the Sacramento and San Joaquin rivers and their tributaries converge. The Delta includes the river

channels and sloughs at the confluence of the Sacramento and San Joaquin rivers. Details regarding the facilities and water bodies associated with the Delta and the fisheries resources they support are provided below.

The Delta's tidal-influenced channels and sloughs cover a surface area of approximately 75 square miles. These waters support a number of resident freshwater fish and invertebrate species. The waters are also used as migration corridors and rearing areas for anadromous fish species and as spawning and rearing grounds for many estuarine species. Shallow-water habitats, defined as waters less than three meters in depth (mean low water), are considered particularly important forage, reproduction, rearing, and refuge areas for numerous fish and invertebrate species.

The Bay-Delta estuary provides habitat for a diverse assemblage of fish and macroinvertebrates. Many of the fish and macroinvertebrate species inhabit the estuary year-round, while other species inhabit the system on a seasonal basis as a migratory corridor between upstream freshwater riverine habitat and coastal marine waters, as seasonal foraging habitat, or for reproduction and juvenile rearing.

There have been over 100 documented introductions of exotic species to the Bay-Delta estuary. These include intentionally introduced game fishes such as striped bass and American shad, as well as inadvertent introductions of undesirable organisms such as the Asian and Asiatic clams.

Central Valley Project

The Central Valley Project (CVP) provides water supply to meet in-basin needs and exports for areas south of the Delta. The CVP is a multipurpose project operated by USBR that stores and transfers water from the Sacramento River, San Joaquin River, and Trinity River basins to the Sacramento, San Joaquin, and Santa Clara valleys. The CVP was authorized by Congress in 1937, and operates as an integrated system to serve water supply, hydropower generation, flood control, navigation, fish and wildlife, recreation, and water quality control purposes. The CVP service area extends about 430 miles through much of California's Central Valley, from Trinity and Shasta reservoirs in the north to Bakersfield in the south. The CVP also includes the San Felipe Unit, which delivers water to the Santa Clara Valley. In 2001, CVP deliveries totaled about 5.7 MAF, or about 80 percent of its total contracted deliveries of 7.1 MAF (Reclamation, 2003). These deliveries included approximately 2.9 MAF to the Sacramento River Service Area, 192 TAF to the

American River Service Area, and 2.6 MAF to the Delta Export Service Area. As noted earlier, the City of Roseville has a contract with USBR for up to 32,000 AFY of CVP water diverted from Folsom Reservoir.

Regional Groundwater

Roseville is located in the North American River Groundwater Sub-basin which underlies north Sacramento, south Sutter and west Placer Counties. The Sub-basin is a component of the larger Sacramento Valley Groundwater Basin. The Sub-basin is defined by the Bear River on the north, the Feather River and Sacramento Rivers on the west, the American River on the south and a north/south line extending from the Bear River south to Folsom Lake that passes about 2 miles east of the City of Lincoln. The Sub-basin encompasses approximately 351,000 acres.

Several studies of the groundwater Sub-basin have occurred. The California Department of Water Resources (DWR) prepared Bulletin 118-3, Evaluation of Ground Water Resources: Sacramento County in July 1974. This Bulletin describes the various geologic formations that constitute the water-bearing deposits underlying the project area. The storage capacity of the North American Sub-basin is estimated by DWR in Bulletin 118 to be approximately 4.9 MAF. In 1998 the Sub-basin was studied by the Placer County Water Agency (PCWA) in the Placer Groundwater Management Plan. In June 2003, the City commissioned Montgomery Watson Harza (MWH) to prepare a study entitled *Groundwater Impact Analysis for Proposed Reasons Farm Land Retirement Plan* and in August 2007, the Cities of Roseville and Lincoln along with PCWA and the California American Water Company (CAW) completed the *Western Placer Groundwater Management Plan* (WPGMP). The WPGMP was prepared in an effort to maintain a safe, sustainable and high-quality groundwater resource to meet backup, emergency and peak demands within a zone of the North American River Groundwater Sub-basin.

As identified in DWR Bulletin 118-3, the formations which comprise the water-bearing deposits include an upper aquifer (Aquifer 1) and a lower aquifer system (Aquifer 2). Aquifer 1 consists of the Victor, Fair Oaks and Laguna Formations. Aquifer 2 consists primarily of the Mehrten Formation. Groundwater within Aquifer 1 is typically unconfined, while in Aquifer 2 it is semi-confined.

Groundwater elevations within and around the Project area have been monitored by DWR for several decades. There are three groundwater wells in the DWR monitoring network. One well (1IN/6E/18P005M) is located adjacent to Pleasant Grove Creek just west of Fiddyment Road in the WRSP Area. A second well (11N/6E/30F002M) is east of the WRSP Area along Kaseberg Creek southeast of the intersection of Fiddyment and Phillip Roads. The third well (11/N5E/23B001M) is located on City-owned land north of the WRSP Area.

The upper portion of the groundwater basin has historically been pumped for agricultural use, and the lower, semi confined portion of the aquifer has been used for urban water purveyors. The PCWA Integrated Water Resources Plan (IWRP) prepared by Brown and Caldwell (August 2006) indicates a potential safe yield of approximately 95,000 AFY for the basin. The safe yield is defined as the amount of groundwater that can be continuously withdrawn from a basin without adverse impact and is commonly expressed as an annual average in acre-fee per year (AFY). The IWRP also estimated average annual agricultural and urban demands in Western Placer County have been about 97,000 AFY. Under these pumping conditions, the groundwater levels at the southern end of the basin have been stable since about 1982 and the levels have risen slightly at the northern end of the basin, indicating that 97,000 AFY is also within the safe yield of the basin. These stable groundwater levels indicate that groundwater pumping is currently in balance with the natural groundwater recharge rate. This is attributed to the conversion of agricultural lands to urban uses over the past several decades. With the land conversions, pumping demands have decreased, especially when heavy pumping uses such as rice farming have been taken out of production. It is expected that basin pumping demands will continue to decrease over time. According to the IWRP, urban development within the Placer Vineyards, Curry Creek and West of Lincoln study areas alone are estimated to reduce agricultural groundwater pumping demands by 20,000 AFY over time. If these pumping demands are not replaced by other equivalent pumping demands, it is expected to result in improvements to the condition of the basin. There are no existing legal constraints that limit groundwater pumping.

Groundwater Supply

Because groundwater is part of the City's existing supply for backup and dry year needs, the City is investigating the use of its wells for aquifer storage and recovery (ASR) to bolster the basins reliability and mitigate potential groundwater use. ASR would allow the City to store potable water

(treated drinking water) in the aquifer for use when needed. Under such a program, surface water could be injected into the aquifer during wet times (wet years or during the rainy season), and then the City's groundwater wells would pump the stored water when backup supplies are required, during drought conditions, or to satisfy peak water demand periods, especially during summer months. Over the past several years the City has been working with the Central Valley Regional Water Quality Control Board and other state agencies in piloting its ASR program. This has included the injection of potable water taken from the City's distribution system into the aquifer and subsequent extraction and delivery to City water customers. Prior to this testing program for ASR, the last time the City relied on groundwater was during drought conditions experienced in 1991. The City is in the process of completing an EIR for the City of Roseville Aquifer Storage and Recovery Project. The Notice of Preparation was released in June 2009 and is included in Appendix H-1 for reference.

The City's current groundwater well facilities are capable of delivering approximately 12,000 AFY of water supply if run full time , which is the equivalent of approximately 33 AF per day. It is important to note these wells are maintained primarily for back-up water supply and to improve water supply reliability during drought and emergency conditions. As such wells are anticipated to only be used intermittently and during high water use months in drought conditions. Information regarding existing City well facilities is described in Table 4.12.1-2.

In addition to these existing groundwater well facilities, the City has plans to construct up to 9 more wells. These wells would be designed to include provisions to allow for ASR use. Once built, the City's groundwater facilities would allow for delivery of up to 73 AF per day or 27,500 AFY if run on a continuous basis. Figure 4.12.1-1 shows the location of existing and future wells within the City.

Because the City uses groundwater for backup conditions such as drought, it is not anticipated the wells would be run on a continuous basis but would more likely be run on a short term or intermittent basis to supplement water supply needs. According to the IWRP, it is anticipated that groundwater pumping exceeding the safe yield during dry periods is feasible as long as the long term (multi years) average does not exceed the safe yield of 95,000 AFY.

TABLE 4.12.1-2

EXISTING MUNICIPAL WELL FACILITY INFORMATION

Facility Name	Installation / Rehab Date	Well Depth (feet)	Rated Capacity (Gallons per Minute)	Service Zone
Darling Way (Well #4)	1958/1999	303	1,000	1
Oakmont (Well #5)	1978/1999	360	1,950	1
Diamond Creek (Well #6)	2002	323	2,700	4
Woodcreek North (Well #7)	2008	450	1,800	1

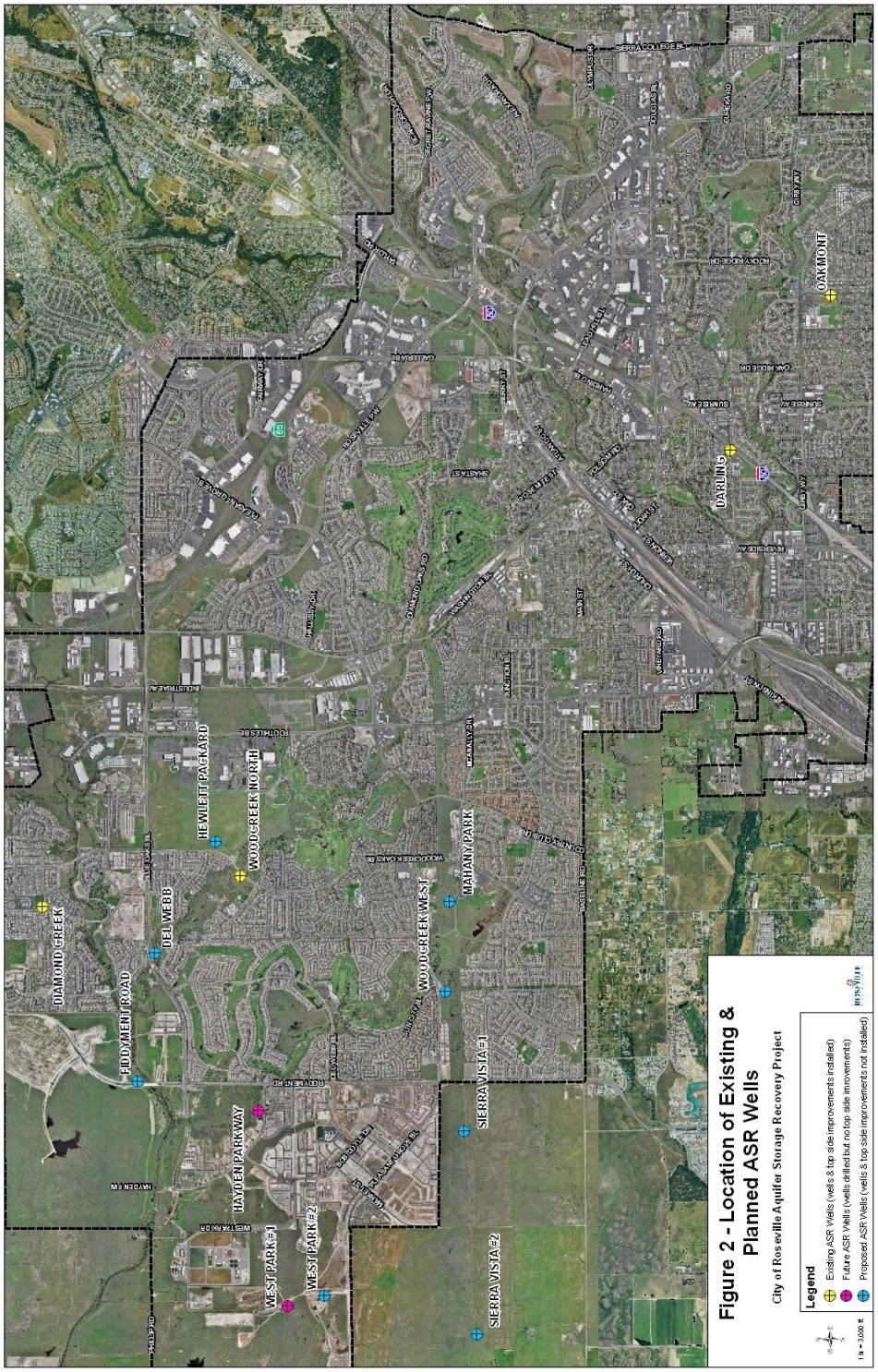
Groundwater Recharge

Under natural conditions, groundwater recharge results from infiltration of precipitation (rain and snow). The rate and quantity of water reaching the saturation zone depends on factors that include the amount and duration of precipitation, soil type, moisture content of the soil, and vertical permeability of the unsaturated zone.

Soils containing hardpan occupy over half the valley on the east side of the Sacramento River (which includes the project area) and these hardpans severely restrict downward movement of water. Soil Group D (poor infiltration) accounts for the majority of soil cover in the Project area. The abundance of Group D soils limits percolation and groundwater recharge under existing conditions. The U.S. Geologic Survey (USGS) estimates that only 1.6 percent of the total natural recharge in the Sacramento Valley basin can be attributed to the Placer County sub-basin area.

FIGURE 4.12.1-1

EXISTING AND FUTURE WELL SITE LOCATIONS



Consequently, the project area is not considered a significant recharge source in the regional context. However, it is expected the proposed wetlands within the project will allow for the storage and infiltration of waters for long periods of time. While infiltration rates are very small, over long periods of time these areas can provide a measurable contribution to the groundwater basin.

Recycled Water Supply

Recycled water refers to wastewater treatment plant effluent that has received a level of treatment that meets the State requirements (Title 22) for direct non-potable reuse (for example, irrigating landscaping). Recycled water is part of the City's water supply portfolio and is available from Roseville's two wastewater treatment plants, the Dry Creek WWTP and the Pleasant Grove WWTP. Both plants produce a Title 22 quality effluent that is available for recycled water applications. The system currently delivers nearly 2,040 AFY recycled water to City parks, streetscapes, and golf courses. System expansion is planned for more intensive use of recycled water in the western portion of the City as new development is built. The City's recycled water system and anticipated demands are described in Section 4.12.2 of this EIR.

Water Supply Reliability

The City of Roseville currently supplies surface water for municipal and industrial (M&I) uses. This requires firm surface water contract amounts to ensure that proper supplies are maintained for the residences and businesses relying on the water supply. The City estimates that during normal/wet years, the City of Roseville has sufficient surface water to meet its customers' needs through buildout of the current General Plan. This is based on a continued commitment to regional planning for water supplies, ongoing conservation efforts, and additional recycled water use for landscaping.

Based on over 70 years of historical hydrology of the American River, an analysis was performed as part of the Water Forum Agreement. That analysis concluded the City's contract surface water supply would be available pursuant to the City's purveyor-specific WFA. In times of drought and water shortage, the Water Forum analysis also assumed that urban demand would decrease as a result of increased conservation awareness and regulations and supplies would be supplemented with groundwater. It is expected that if the supply were to be reduced due to shortage, consistent with reductions identified in the WFA, existing surface water supply, coupled with conservation and

groundwater use will be sufficient to meet citywide demands. This is further explained under Impact 4.12.1- 2, Availability of Water Supplies to Meet Demand in Dry Years, herein.

The City's water system is completely "on-demand", as is typical of many urban water systems. During normal years, water supplies from Folsom Lake are sufficient to meet the contractual obligations, and the City has sufficient quantities, either directly from USBR or wheeled through Folsom Lake from PCWA, to meet the needs of the community. During times of drought, water allocations may be reduced, resulting in restrictions on all water used within the City. The City has developed policies to address the potential of water shortages as described below.

Shortage Contingency Plan

Based on historical information, current water supplies, and projected supply availability, the City does not anticipate having more than a 25-percent shortage over a three-year consecutive dry-year period. However, as part of the UWMP, the City has considered probabilities of shortage and outages that could affect water supply. This Water Shortage Contingency Plan notes that long-duration shortages are handled through implementation of a drought contingency plan, and short-term disruptions are addressed through use of existing system storage and interties with adjacent jurisdictions. In the event these supplies are not sufficient or available to meet short-term needs, groundwater can be used to supplement the required demand.

The Water and Energy Conservation component of the City of Roseville General Plan encourages resource conservation and protection, and the City provides an information program to encourage conservation. The City has implemented various strategies and plans to minimize the use of potable water in order to operate effectively under drought conditions.

In 1991, the City developed and adopted the Roseville Water Conservation and Drought Mitigation Ordinance. Under this ordinance, the City has authority to declare water shortage conditions and implement drought related mitigation measures. The City can initiate this process by declaring a drought stage (Stage One through Stage Five) and imposing the appropriate and corresponding drought response measures. For example, Stage One prohibits washing of streets, driveways, sidewalks, and parking lots and places restrictions on vehicle washing, and serving water in restaurants. Under Stage Two, additional measures on landscape irrigation would be imposed. Depending on the severity, Stage Three, Four, and Five drought restrictions and the use of

groundwater could also be initiated. Stages One through Five as outlined in the City's Municipal Code Chapter 14.09, cover supply shortages up to 50 percent.

In February 2008 the City of Roseville adopted Ordinance 4629, which added Sections 14.09.200-14.09-220 and amended Sections 14.09-020 – 14.09.090 of the Roseville Municipal Code regarding water conservation. The purpose of the ordinance is to ensure compliance with all federal, state and local requirements relating to water conservation and drought mitigation by:

- Reducing water consumption throughout the City during years of normal precipitation and during years of drought;
- Protecting and conserving the City's supply of water during times of emergency and/or crisis; and
- Minimizing and/or eliminating the waste through voluntary compliance or punitive action, if necessary.

By way of example, on April 30, 2008, the City of Roseville's Environmental Utilities Department activated a Stage One Water Conservation Level within the Roseville City limits in response to a letter received from the United States Bureau of Reclamation (USBR) which reduced Roseville's water supply for the 2008 calendar year by 25 percent.

Additionally, the City completed an update to the landscape ordinance to include new water conservation and management provisions. This update was prepared in compliance with the Water Conservation in Landscaping Act of 2006 (AB 1881). This ordinance update was approved by the City Council on November 4, 2009 (Ord. No. 4786).

Water Demand

Water demand is the amount of water required to serve a customer on an average annual basis. The City measures this amount of water in acre feet per year (AFY). One acre-foot of water is the volume of water that can cover an acre of land at a depth of one foot and equals 325,828 gallons. Total water demand for the CSP project was developed using the City's unit demand factors and applying those factors to the proposed land uses for the Project area.

The unit demand factors are based upon actual customer water meter usage data. They were developed in 2002 as part of the West Roseville Specific Plan process. The City conducted additional

studies in 2006 and 2008 to confirm the unit demand factors using the history of available water meter data from City customers. The 2006 study, *TM-1 – Unit Water Demand Factor Verification and Water Demand Evaluation and Update by MWH, September 2006* is provided in Attachment 1 of Appendix H-2 of this EIR. The study confirmed the appropriateness of the unit demand factors developed in 2002. The 2008 study conducted by City staff further verified the appropriateness of the unit demand factors. These water demand factors are provided in Table 4.12.1-3.

TABLE 4.12.1-3

WATER DEMAND FACTORS

Residential Land Use Categories	Unit Demand Factor (GPD/DU)
LDR1 (<3.5 DUs / Acre)	728
LDR2 (3.5 to 5 Dus / Acre)	600
LMDR1(>5.0 to 6.0 Dus / Acre)	521
LMDR2(6.0 to 8.0 Dus / Acre)	430
MDR (>8.0 to 12.0 Dus / Acre)	323
HDR1 (>12.0 to 16.0 Dus / Acre)	288
HDR2 (>16.0 Dus / Acre)	177
Non Residential Land Use Categories	**Unit Demand Factor (GPD/AC)**
Community Commercial / Retail	2,598
Business Professional	2,598
Light Industrial	2,598
Industrial	2,562
Railyard	109
Elementary School	3,454
High School	4,069
Pubic Quasi-Public	1,780
Parks	2,988
Open Space / Right of Way	0

GPD/DU = Gallons per day per dwelling unit
GPD/AC = Gallons per day per acre

Water demands are divided into potable water demands and recycled water demands. Potable water demands are that component of the total water demand that will be used for public health related activities such as drinking water and indoor domestic use. In Roseville potable water demand is typically met by surface water supplies and supplemented by groundwater supplies for backup during emergency and drought conditions. Recycled water demand is that component of the overall water demand that can be used for outside irrigation use. Potable water demand is calculated by subtracting estimated recycled water demands from the total water demand. Anticipated recycled water demand is calculated based upon estimates of irrigated areas as described in Section 14.12.2.

The City's water demand in 2008 was 36,559 AFY. Of this demand approximately 2,040 AFY was met through recycled water supplies. At buildout of the City's General Plan, water demands are estimated to reach approximately 61,709 AFY of which 4,388 AFY will be met through recycled water supplies and 57,321 AFY met through surface water supplies.

Potable Water Treatment

The City of Roseville operates a 100-million-gallon-per day (mgd) water treatment plant (WTP). The City's WTP is located on Barton Road in the Granite Bay community of Placer County. Raw (untreated) surface water from Folsom Lake is conveyed from the United State Bureau of Reclamation (USBR) facilities to the City's WTP. USBR raw water delivery facilities are described in the Water Distribution section below. Raw water treatment consists of these primary processes; flocculation/sedimentation, clarification, filtration and disinfection. Following these processes the treated water is fluoridated prior to distribution to City water customers. Peak demands of 58 mgd were recorded at the WTP in July of 2006.

Water Distribution

The City's water distribution system includes raw water facilities to deliver surface water supplies to the City's water treatment plant and the potable water facilities that deliver potable water to City water customers. In addition to the potable water system, the City also operates a recycled water distribution system. This system is described in Section 14.12.2 of this document.

Raw Water Facilities

The raw water facilities consist of both infrastructure owned and operated by the USBR and infrastructure owned and operated by the City of Roseville. USBR facilities include an 84-inch intake pipeline and pumping plant. The pumping plant has sufficient capacity for San Juan Water District (SJWD), Roseville and portions of the City of Folsom. Roseville pumping capacity limits are 150 cubic feet per second (96.9 mgd). Once through the pumping station, water is conveyed through an 84-inch pipeline and a 72-inch parallel pipeline to the "Hinkel Y" where the flows to SJWD and Roseville are split. Raw water for Roseville then flows through parallel raw water pipelines to the City's WTP. These pipelines consist of parallel 60-inch pipelines followed by parallel 60-inch and 48-inch pipelines. The raw water is then introduced at the influent portion of the Barton Road plant for treatment.

Potable Water Facilities

The City's potable water supply system is comprised of pipes, storage facilities, booster pumping stations, groundwater wells and pressure regulating stations. Distribution piping in the City ranges from as large as 66-inch diameter to as small as 4-inch diameter. The City designs its distribution system to meet various pressure and velocity criteria under average day, maximum day and peak hour delivery scenarios. In general, the City's system meets the maximum day demand criterion of 6 feet per second (fps) for transmission main velocity (i.e. the rate at which water flows through the pipelines) and the water pressure criterion of 50 pounds per square inch (psi). There are a few locations where these criteria are not met, but these discrepancies are minimal and do not adversely affect water service to customers.

The City has six storage tanks with a combined total storage capacity of 31 million gallons (mg). Water storage is necessary in order to manage flow fluctuations on a daily basis, and to maintain sufficient storage to address emergency needs such as water main breaks and high water needs such as fire fighting activities.

The City currently has two pumping stations currently in the City, with plans for two more. The existing stations are the Dual Purpose Pump Station (DPPS) and the Highland Reserve North Pump Station (HRNPS). As the name implies, the DPPS provides two distinct functions. The first is that it provides the ability to fill the City's North East Storage Reservoirs during off-peak demand periods

and second it boosts water pressures into higher elevation areas in and adjacent to the Stoneridge Specific Plan area of the City. Similarly, the HRNPS allows the City to boost water pressures into higher elevation portions of the Highland Reserve North Specific Plan area. Future water storage tanks and pump stations are planned for construction within the West Roseville Specific Plan and the Sierra Vista Specific Plan areas to service customers in the western portion of the City.

4.12.1.3 REGULATORY SETTING

Water supply and distribution within the City of Roseville are regulated by Federal, State and Local regulations as summarized below.

Federal

Folsom Dam on the American River, from which the City of Roseville draws its surface water supplies, is managed by the United States Bureau of Reclamation as part of the Central Valley Project. Numerous laws, directives, opinions, and orders affect or otherwise have influence on the management of the CVP. These include, but are not limited to the following:

Reclamation Act (1902)	Formed legal basis for subsequent authorization of the CVP
Rivers and Harbors Act (1935), (1937), (1940)	First authorization of CVP for construction and provision that dams and reservoirs used first for river regulation, improvement of navigation, and flood control. Second authorization for irrigation and domestic uses. Third authorization for power.

Reclamation Project Act (1939)	Provided for the repayment of the construction charges and authorized the sale of CVP water to municipalities and other public corporations and agencies, plant investment, for certain irrigation water deliveries to leased lands.
Water Service Contracts (1944)	Provided for the delivery of specific quantities of irrigation and municipal and industrial water to contractors.
Flood Control Act (1944)	Authorized flood control operations for Shasta, Folsom, and New Melones dams.
Water Rights Settlement	Provided diverters holding riparian and senior appropriate rights on the

Contracts (1950)	Sacramento and American rivers with CVP water to supplement water which historically would have been diverted from natural flows.
Trinity River Act (1955)	Provide that the operation of the Trinity River Diversion be integrated and coordinated with operation of the other CVP features to allow for the preservation and propagation of fish and wildlife.
Fish and Wildlife Coordination Act (1958)	Provided for integration of fish and wildlife conservation programs under federal water resources developments. Authorized the Secretary of the Interior to include facilities to mitigate CVP-induced damages to fish and wildlife resources.
Reclamation Project Act (1963)	Provided a right of renewal of long-term contracts for municipal and industrial contractors.
SWRCB Decision 1379 (1971)	Established Delta water quality standards to be met by both the CVP and SWP.
Endangered Species Act (1973)	Provided protection for animal and plant species that are currently in danger of extinction (endangered) and those that may become so in the foreseeable future (threatened).
SWRCB Decision 1485 (1978)	Ordered CVP and SWP to guarantee certain conditions for water quality protection for agricultural, municipal and industrial, and fish and wildlife use.
Secretarial Decision on Trinity River Release (1981)	Allocated CVP yield so that releases can be maintained at 340,000 AF in normal water years, 220,000 AF in dry years, and 140,000 AF in critically dry years.
Corps of Engineers Flood Control Manuals for: Shasta (1977), Folsom (1959) New Melones (1982)	Prescribed regulations for flood control.
Corps of Engineers Flood Control Diagrams for: Shasta (1977), Folsom (1986), New Melones (1982)	Outlined descriptions and data on flood potential/ratings.

Central Valley Project Improvement Act (CVPIA)

The Central Valley Project Improvement Act (Public Law 102-575, Title XXXIV, 1992) (CVPIA) reauthorized the CVP for a wider range of beneficial uses and interests than originally mandated. The CVPIA established that fish and wildlife are recognized as project purposes equal to that of irrigation, power generation, and municipal and industrial use. Under the CVPIA, significant quantities (800,000 AFY) of CVP yield are reallocated to meet these new beneficial uses (see CVPIA Section 3406(b)(2)).

CVPIA Section 3406(b)(2)

Objectives of the CVPIA include protecting and restoring fisheries and wildlife in the Central Valley, and allocate 800,000 AFY to this purpose; addressing impacts of the CVP on fish and wildlife; enhancing the operational flexibility of the CVP; expanding the use of water transfers; improving water conservation; and addressing the requirements of fish, wildlife, agricultural, municipal, industrial, and power generation water users. The USBR prepared a Programmatic EIS for the CVPIA programs.

Federal/State Coordinated Operations Agreement

The CVP operated by the USBR and the State Water Project (SWP) operated by the California Department of Water Resources (DWR), rely on the Sacramento River and the Delta as common conveyance facilities. DWR's primary storage facility is Oroville Dam on the Feather River. Reservoir releases and Delta exports must be coordinated so that both the CVP and SWP are able to retain their portion of the shared water and also jointly share in the obligations to protect beneficial uses. A Coordinated Operations Agreement (COA) between the CVP and SWP was developed and became effective in November.

The COA defines the rights and responsibilities of the CVP and SWP regarding water needs of the Sacramento River system and Delta and includes obligations for in-basin uses, accounting, and real-time coordination of water obligations of the two projects. A CVP/SWP apportionment of 75/25 is implemented to meet in-basin needs under balanced Delta conditions, and a 55/45, CVP/SWP ratio is in effect for excess flow conditions. The COA contains considerable flexibility with regard to the manner with which Delta conditions- in the form of flow standards, water quality standards, and export restrictions- are met.

The operation of CVP/SWP is described in a document known as the Operations Criteria and Plan (OCAP). As updated in 2004, the OCAP provides a detailed description of the coordinated operations of the CVP and SWP based on historical data and serves as a starting point for planning project operations in the future. The United States Fish and Wildlife Service (USFWS) prepared a formal Biological Opinion, under the federal Endangered Species Act (ESA) analyzing the impact of OCAP implementation on ESA-listed species (including the delta smelt). USFWS then issued a Biological Opinion for OCAP in 2005 which concluded that CVP/SWP operations did not jeopardize delta smelt populations. The Biological Opinion was subsequently invalidated by a federal court (Wanger, J.) and USFWS was ordered to revise its Biological Opinion. The court also severely restricted CVP and SWP pumping in the Delta (Wanger Decision) pending the USFWS's completion of the new Biological Opinion. Those restrictions took effect in December 2007.

In December 2008, USFWS released a new Biological Opinion, which concluded that CVP and SWP operations would jeopardize the continued existence of endangered delta smelt. USFWS further detailed a "reasonable and prudent alternative" to the proposed OCAP protocol that would, according to USFWS, protect the delta smelt and its habitat from the adverse effects of pumping operations.

The "Reasonable and Prudent Alternative" (RPA) would restrict Delta pumping operations and would thus limit deliveries of water to CVP/SWP contractors south of the Delta. In June 2009 the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration ("NOAA") National Marine Fisheries Service (NMFS) also released a Biological Opinion on the revised OCAP and requested changes to protect ESA listed species including endangered Sacramento River winter-run Chinook salmon, threatened Central Valley spring-run Chinook salmon, threatened Central Valley steelhead, and threatened Southern Distinct Population Segment (DPS) of North American green sturgeon and Southern Resident killer whales. The RPA developed in connection with this Biological Opinion would restrict Delta pumping operations, impose Shasta Reservoir storage targets to achieve water temperature requirements in the Sacramento River below Keswick Dam, impose lower American River flow standards, require modified Delta Cross Channel operations, and limit reverse Old and Middle River ("OMR") flows.

State

Senate Bills 610 and 221

In the year 2001, the California Legislature enacted two pieces of legislation relevant to environmental review focused on the water consumption associated with large development projects. Senate Bill (SB) 610 (Chapter 643, Statutes of 2001; Section 21151.9 of the Public Resources Code and Section 10910 et seq. of the Water Code) requires the preparation of "water supply assessments" (WSAs) for large developments (i.e., more than 500 dwelling units or nonresidential equivalent), such as the Creekview Specific Plan. These assessments, prepared by "public water systems" responsible for serving project areas (in this case, the City itself), address whether existing and projected water supplies are adequate to serve the project while also meeting existing urban and agricultural demands and the needs of other anticipated development in the service area in which the project is located. If the most recently adopted Urban Water Management Plan (UWMP) accounted for the projected water demand associated with the project, the public water system may incorporate the requested information from the UWMP. If the UWMP did not account for the project's water demand, or if the public water system has no UWMP, the project's WSA shall discuss whether the system's total projected water supplies (available during normal, single-dry, and multiple-dry water years during a 20-year projection) would meet the project's water demand in addition to the system's existing and planned future uses, including agricultural and manufacturing uses. The Water Supply Assessment for the proposed Project, prepared in compliance with SB 610, is provided in Appendix H-2 of this EIR.

Where a WSA concludes that insufficient supplies are available, the public water system must provide to the city or county considering the development project its plans for acquiring and developing additional water supplies. Based on all the information in the record relating to the project, including all applicable WSAs and all other information provided by the relevant public water systems, the city or county must determine whether sufficient water supplies are available to meet the demands of the project, in addition to existing and planned future uses. Where a WSA concludes that insufficient supplies are available, the WSA must lay out the steps that would be required to obtain the necessary supply. The WSA is required to include (but is not limited to) identification of the existing and future water supplies over a 20-year projection period. This information must be provided for average normal, single-dry, and multiple-dry years. The absence

of an adequate current water supply does not preclude project approval, but it does require a lead agency to address a water supply shortfall in its project findings.

If the proposed project is approved, additional complementary statutory requirements, created by 2001 legislation known as SB 221 (Government Code Section 66473.7), would apply to the approval of tentative subdivision maps for more than 500 residential dwelling units. This statute requires cities and counties to include, as a condition of approval of such tentative maps, the preparation of a "water supply verification." The verification, which must be completed by no later than the time of approval of final maps, is intended to demonstrate that there is a sufficient water supply for the newly created residential lots. The statute defines sufficient water supply as follows:

> *... the total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection period that would meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including, but not limited to, agricultural and industrial uses.*

A number of factors must be considered in determining the sufficiency of projected supplies:

- The availability of water supplies over a historical record of at least 20 years;
- The applicability of an urban-water-shortage contingency analysis that includes action to be undertaken by the public water system in response to water supply shortages;
- The reduction in water supply allocated to a specific water-use sector under a resolution or ordinance adopted or a contract entered into by the public water system, as long as that resolution, ordinance, or contract does not conflict with statutory provisions giving priority to water needed for domestic use, sanitation, and fire protection; and
- The amount of water that the water supplier can reasonably rely on receiving from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer, including programs identified under federal, state, and local water initiatives.

The SB 610 analysis for the CSP can be found in Appendix H-2 of this EIR.

Safe Drinking Water Quality Regulations

The State Department of Public Health (DPH) establishes "primary" and "secondary" Domestic Water Quality Standards for drinking water supplied by public water systems such as the City. The standards are required by state law to meet or exceed standards adopted by the U.S. Environmental Protection Agency. The concentrations of specified constituents are limited to maximum contaminant levels and are established on a constituent basis for bacteriological contaminants (such as coliform), organic chemicals (such as benzene), inorganic chemicals (such as total dissolved solids), and radioactivity (such as gross alpha particle activity). Primary standards are set at levels necessary to protect public health and may not be exceeded. Secondary standards are based on aesthetic criteria such as taste and odor and are composed of (1) recommended limits that may be exceeded but are not recommended to be exceeded; (2) upper limits that may be exceeded for a limited duration with prior DPH approval; and (3) short term limits that may not be exceeded.

Public water systems also must obtain a domestic water supply permit from DPH that must be amended to reflect changes to the water supply system. The City has obtained such a permit.

Urban Water Management Planning Act

The Urban Water Management Planning Act (Act) was established in Division 6, Part 2.6 of the California Water Code. The Act became part of the California Water Code with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California legislature. Subsequent assembly bills between 1990 and 2003 amended the Act. Most recently the Act was amended on January 1, 2003 by Assembly Bill 105. The Act was developed due to concerns for potential water supply shortages throughout the State of California. It requires information on water supply reliability and water use efficiency measures. Urban water suppliers are required as part of the Act to develop and implement Urban Water Management Plans to describe their efforts to promote efficient use and management of water resources. The City has complied with this Act through the adoption of the City's Urban Water Management Plan (UWMP), which is described in the "Local" sub-section, below.

Water Conservation Projects Act

The State of California's requirements for water conservation are codified in the Water Conservation Projects Act of 1985 (Water Code Sections 11950-11954), as reflected below:

11952. (a) It is the intent of the Legislature in enacting this chapter to encourage local agencies and private enterprise to implement potential water conservation and reclamation projects...

Other Applicable Regulations

Other statutes that address water supplies include the California Environmental Quality Act (Public Resources Code Section 21151.9), the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56668(k)), and Planning and Zoning Law (Government Code Section 6532.5).

Local

Water Forum Agreement

The Water Forum Agreement (WFA) is the result of the efforts of a diverse group of community stakeholders. The stakeholder group was formed in 1994 with the goal to formulate principles for developing solutions to meet future regional water supply needs. Participants in the Water Forum have developed two coequal objectives:

- Provide a reliable and safe water supply for the region's economic health and planned development to the year 2030.
- Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

Water Forum stakeholders have developed an integrated package of actions that will meet these two co-equal objectives. Each element of the package is necessary for a regional solution to work. These elements are:

- Increase surface water divisions
- Actions to meet customers' needs while reducing diversion impacts on the lower American River in drier years
- An improved pattern of fishery flow releases from Folsom Reservoir
- Lower American River Habitat Management, which also addresses recreation in the lower American River

- Water conservation
- Groundwater management
- Water Forum successor efforts

Purveyor Specific Agreements (PSAs) have also been developed that describe in detail how each of the elements will be implemented by the respective purveyors. Purveyors included the City of Roseville, Placer County Water Agency, the San Juan Water District, as well as other regional water agencies. The PSAs are compiled into a Memorandum of Understanding that each stockholder's authorizing body has executed. In return for signing the final WFA, water purveyors receive regional support for water supply projects, including site-specific infrastructure development. A copy of the PSA for the City of Roseville is included as Appendix H-3.

In January 1999, the Sacramento City-County Office of Metropolitan Water Planning published the Draft Environmental Impact Report (EIR) for the WFA. The WFA EIR addresses the impacts and mitigation measure that the area stakeholders would need to comply with in order to implement the water supply program outlined in the WFA. The Final EIR for the WFA was certified on November 23, 1999. The findings of that EIR, and the accompanying Water Forum Action Plan, outline a program whereby water delivery could be supplied to area stakeholders through the year 2030, provided that a permanent pumping plant is constructed at Auburn and the Sacramento River Water Reliability Project division facilities are constructed. The pumping plant in Auburn has been constructed and is now in operation by PCWA. The WFA EIR is hereby incorporated by reference into this EIR per CEQA Guidelines Section 15150.

The WFA EIR was not challenged in court, the certified document constitutes a legally satisfactory analysis of all the issues addressed therein, including cumulative water supply impacts (see Public Resources Code Section 21167.2). The findings of the FEIR and the accompanying Water Forum Action Plan outlined a program whereby water delivery could be supplied to Water Forum Agreement stakeholders, including the City of Roseville, through 2030. The document identified and thoroughly evaluated potential impacts on water supplies resulting from implementation of the Water Forum Agreement, including impacts on both the federal Central Valley Project (CVP) run by the United States Bureau of Reclamation and the State Water Project (SWP) operated by the California Department of Water Resources.

The WFA EIR listed the flow-related environmental impacts that could occur when implementing water diversions under the WFA and concluded that there was the possibility for environmental impacts in the following areas: groundwater resources, water supply, water quality, fisheries and aquatic habitat, flood control, hydropower supply, vegetation and wildlife, recreation, land use and growth inducement, aesthetics, cultural resources, soils and geology. While mitigation measures were developed, some impacts remained significant even after feasible mitigation measures would be applied.

A detailed discussion of both the less-than-significant effects and the significant and unavoidable effects associated with the Water Forum Agreement can be found in the portion of Chapter 5 (CEQA Considerations) addressing Cumulative Impacts.

Over the past 10 years since the WFA EIR was prepared, there have been significant events that have affected the CVP and SWP water operations. These include:

- 1999 - San Joaquin River Agreement; Agreement for providing San Joaquin River flows and exports,
- 1999 - DOI Final Decision Accounting of CVPIA 3406 (b)(2); Defined metrics and accounting for CVPIA 3406(b)(2) operations,
- 2000 - SWRCB Revised Water Right Decision 1641; Revised order to provide for operations of the CVP and SWP to protect Bay-Delta water quality,
- 2000 - CALFED Record of Decision (ROD); Presented a long-term plan and strategy designed to fix the Bay-Delta,
- 2000 - Trinity River ROD; Defined minimum flow regime of 369,000 acre-feet in critical dry years ranging to 816,000 acre-feet in wet years,
- 2001 - CVPIA ROD; Implemented provisions of CVPIA including allocating 800,000 acre-feet of CVP yield for environmental purposes,
- 2001 - National Marine Fisheries Service Biological Opinion for Spring-Run Chinook Salmon and Steelhead; Established criteria for operations to protect spring-run Chinook salmon and steelhead,
- 2002 - National Marine Fisheries Service Biological Opinion for Spring-Run Chinook Salmon and Steelhead; Established criteria for operations to protect spring-run Chinook salmon and steelhead,
- 2003 – Revised DOI Final Decision Accounting of CVPIA 3406 (b)(2); Defined metrics and accounting for CVPIA 3406(b)(2) operations,

- 2004 - National Marine Fisheries Service Biological Opinion for Spring-Run Chinook Salmon and Steelhead; Established criteria for operations to protect spring-run Chinook salmon and steelhead,
- 2005 - USFWS Biological Opinion for Reinitiation of Formal and Early Section 7 Endangered Species Consultation on the Coordinated Operations of the Central Valley Project and State Water Project and the Operational Criteria and Plan to Address Potential Critical Habitat Issues,
- 2007 - Judge Wanger issued a summary judgment that invalidated the 2005 biological opinion and ordered a new biological opinion be developed by September 15, 2008,
- 2007 - Judge Wanger issued an interim order to direct actions at the export facilities to protect delta smelt until a new biological opinion is completed,
- 2008 – USFWS Biological Opinion on the effects of the continued operation of the Federal Central Valley Project and the California State Water Project on the delta smelt and its designated critical habitat,
- 2009 – NOAA Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project.

Given the multitude of changed water supply/water management conditions within the region since the WFA EIR was adopted, an evaluation was completed to determine if these changed conditions would make the impacts to fisheries resources and water quality from the WFA demands more severe then previously disclosed in the WFA EIR. The analysis, prepared by Robertson – Bryan, Inc and HDR dated October 2009 and included as Appendix H-4, concludes that in all cases, the impact conclusions remain the same as originally characterized within the WFA EIR.

Placer County Water Agency

The Placer County Water Agency (PCWA) was created in 1975 by a special Act of the State Legislature ("Placer County Water Agency Act"). This Act gives the PCWA countywide authority with regard to water. The PCWA boundary includes 1,400 square miles within Placer County. PCWA is also designated as a local agency and an independent "special district" encompassing all of Placer County. PCWA carries out a broad range of responsibilities, including water resource planning and management, retail and wholesale supply of irrigation water and drinking water, and production of hydroelectric energy. In addition to providing untreated surface water to the City of Roseville, PCWA is also a participating agency for the West Placer Groundwater Management Plan.

PCWA relies on surface water entitlements, which include:

- 100,400 acre-feet of water per year (AFY) from the Yuba/Bear River system that is purchased from PG&E. This is PCWA's primary source of supply for Zone 1. This has been PCWA's primary source of supply for its Zone 1 are since PCWA began retailing water in 1968. The term of this contract is until 2013, but PCWA expects the contract to be renewed after the expiration of the present term. This water supply has a high reliability during normal, single-dry, and multiple-dry years, but the supply is fully utilized. For example, between 1987 and 1992 the State experienced five years of drought, during which many areas in the State had reduced supplies. During that period, PCWA had a full Yuba/Bear River supply each year. 1977 was the only year in which PCWA had to impose drought restrictions on its customers due to reduced PG&E supply. PCWA's Urban Water Management Plan was adopted on December 15, 2005, and contains a water shortage contingency analysis that includes a five stage rationing plan that would be invoked during a declared water shortage.

- 120,000 AFY from the Middle Fork Project on the American River. PCWA's Middle Fork Project (MFP) water right permits provide that this water supply may be diverted from the American River at either Auburn or at Folsom Reservoir. This water supply has historically been very reliable, even during drought periods. PCWA has done extensive modeling of the MFP system to determine its reliability during drought events using California's hydrologic record, which dates back to 1921. The conclusion of that analysis is that the MFP can provide 120,000 AFY, even in dry years as severe as the 1976-1977 hydrologic event. PCWA has completed and is now operating the permanent American River Pump Station (ARPS) and the Auburn Tunnel Pump Station and is designing the Ophir Water Treatment Plant project in order to have the necessary facilities in place to fully exercise its rights to this American River water. At full capacity, the ARPS will divert for treatment 35,500 AFY of MFP water rights water, some of which will also be delivered to the existing Foothill Water Treatment Plant. Diversions from the MFP at the American River Pump Station location were previously evaluated in the American River Pump Station Final EIS/EIR, American River Basin Cumulative Impact Report, 2001.

- 35,000 AFY from the Central Valley Project water supply contract with the U.S. Bureau of Reclamation. This water supply has been cut back up to 25 percent during single-dry and multiple-dry years. This water was originally to be provided to PCWA at Auburn Reservoir but the contract as amended now provides for its diversion at Folsom Dam or other

locations mutually agreed on by the parties. PCWA is pursuing a diversion at the Sacramento River in accordance with the Water Forum Agreement in order to ensure the long-term availability of this supply, as described in more detail below. According to PCWA's October 2005 Draft Integrated Water Resources Plan, PCWA plans to supplement its CVP contract supply with groundwater in dry years to improve the reliability to the point where the full contract amount can be relied upon to serve the urban development needs.

- 5,000 AFY purchased from South Sutter Water District (SSWD). This supply is only available when it is surplus to SSWD's needs, and this water would be made available only as a supplemental supply to agricultural customers in PCWA Zone 5. Water is not expected to be available from this source during dry years. Additionally, this source is considered temporary because it is expected that the available supply will eventually be fully utilized by SSWD. The total water available to Zones 1 and 5 is 255,400 AFY of permanent water supply and 5,000 AFY of temporary water. Out of that permanent supply, PCWA has contracted to deliver up to 25,000 AFY to San Juan Water District for use within the Placer County portion of its service area and up to 30,000 AFY to Roseville. Deliveries to the San Juan Water District and the City of Roseville would only occur during surplus water years. In 2004, PCWA used 112,768 AF to meet the needs of its Zone 1 and Zone 5 customers. In addition to this amount, to date PCWA has approved applications for water service totaling an additional 5,753 AFY, resulting in a total current committed demand of 118,521 AFY. In 2004, PCWA delivered 13,562 AF to San Juan and 465 AF to Roseville.

PCWA's permanent water supply includes the 35,000 AFY of CVP water from the American River described above. PCWA is authorized through a contract with USBR to take 35,000 AFY of CVP contract water at Folsom Reservoir or other places that are agreed to by the affected parties. PCWA is currently pursuing a 35,000 AFY diversion at the Sacramento River in accordance with the Water Forum Agreement. Although it was recently put on hold due to decreased short-term demand caused by the economic downturn in 2008 and 2009, a separate EIR/EIS is currently in process for the water diversion project and an initial alternative analysis has now been completed (Sacramento River Water Reliability Study Initial Alternatives Report).

Groundwater Management Plan

The City in participation with PCWA and the City of Lincoln completed a SB 1938 and AB 3030 compliant groundwater management plan in August 2007.

In September 2002, SB 1938 was signed into law. SB 1938 amended existing law related to groundwater management by local agencies. The law requires any public agency seeking State funds administered through the Department of Water Resources for the construction of groundwater projects or groundwater quality projects to prepare and implement a groundwater management plan with certain specified components. Prior to this, there were no required plan components. Requirements include establishing basin management objectives, preparing a plan to involve other local agencies in a cooperative planning effort, and adopting monitoring protocols that promote efficient and effective groundwater management.

Assembly Bill 3030, the Groundwater Management Act [Sections 10750-10756 of the California Water Code] provides a systematic procedure for an existing local agency to voluntarily develop a groundwater management plan.

City of Roseville Municipal Code

Section 14 of the City's Municipal Code contains regulations associated with water rates, conservation and water waste prohibitions.

City of Roseville General Plan

The City of Roseville General Plan contains goals and policies relating to water supply and distribution. These goals and policies follow:

> **Goal 1:** Maintain a water system that adequately serves the existing community and planned growth levels, ensuring the ability to meet projected water demand and to provide needed improvements, repairs and replacements in a timely manner.
>
> **Goal 2:** Provide water services to all existing and future Roseville water utility customers. The provision of services by another provider may be considered where it is determined that such service is beneficial to the City and its utility customers or the provisions of City services is not feasible.

Goal 3: Ensure that safe drinking water standards are met and maintained in accordance with State Department of Health Services and EPA regulations.

Goal 4: Actively pursue water conservation measures

Goal 5: Actively pursue supplemental water supplies.

Policy 1: Secure sufficient sources of water to meet the needs of the existing community and planned growth

Policy 2: Provide sufficient water treatment capacity and infrastructure to meet projected water demand.

Policy 3: Initiate, upon 75% of treatment plant capacity, expansion studies to determine necessary improvements to meet projected water demand.

Policy 4: Establish a process for monitoring growth trends to anticipate water consumption needs.

Policy 5: Ensure all development provides for and pays a fair share of the cost for adequate water distribution, including line extensions, easements, and plant expansions.

Policy 6: Design the City's water system to maintain a minimum water pressure of 50 pounds per square inch (PSI), while providing adequate water to meet fire demands in the system.

Policy 7: Provide emergency back-up system to add sufficient reliability to the system as determined by the Environmental Utilities Department.

Policy 8: Develop and pursue alternatives to continue delivery of PCWA and SJWD water to Roseville.

Policy 9: Monitor water quality regularly and take necessary measures to prevent contamination.

Policy 10: Develop and implement water conservation standards and measures as necessary elements of the water system.

Policy 11: Develop and implement an aquifer storage and recovery program.

City of Roseville Urban Water Management Plan

The City prepared and adopted a 2005 Urban Water Management Plan (UWMP). This plan was prepared to comply with the Urban Water Management Planning Act of the California Water Code (described above). UWMPs must be developed by urban water providers supplying more than 3,000 customers or supplying more then 3,000 acre-feet of water annually and submitted to the California Department of Water Resources (DWR) every 5 years. The UWMP describes the availability of water and discusses water use, recycled water use and water conservation.

City of Roseville Water Conservation Ordinance

In 1991, the City developed and adopted the Roseville Water Conservation and Drought Mitigation Ordinance as documented in the City's Municipal Code Chapter 14.09. Under this ordinance, the City has authority to declare water shortage conditions and implement drought related mitigation measures.

In February 2008, the City of Roseville adopted Ordinance 4629 which added Sections 14.09.200-14.09-220 and amended Sections 14.09-020 – 14.09.090 of the Roseville Municipal Code regarding water conservation. The purpose of this ordinance is to ensure compliance with all federal, state and local requirements relating to water conservation and drought mitigation. Ordinance 4629 provides an approach to conservation that reflects there are now more water customers billed on metered rates, which creates additional tools to achieve conservation.

City of Roseville Landscape Ordinance

In 2006, the State enacted legislation requiring the Department of Water Resources (DWR) to update the State Model Water Efficient Landscape Ordinance. The updated model ordinance contains several new landscape and irrigation design requirements aimed at reducing water waste in landscape irrigation. All local land use agencies are required to adopt the model ordinance, or develop an ordinance that is at least as effective by January 2010. The City of Roseville adopted an Ordinance tailored to meet the City's needs that is based on, and is at least as effective as, the model ordinance. The new Water Efficient Landscape Ordinance has been incorporated into the

City's Zoning Ordinance as Chapter 19.67 and supersedes the City's 1993 Water Efficient Landscape Requirements document.

City of Roseville Improvement Standards

Section 8 of the City's Improvement Standards (Water System Design) provides criteria for the design of domestic water systems. Compliance with these standards ensures water delivery facilities are properly sized to distribute water to any new customers that would be created as a result of implementing the proposed project.

Applicable Creekview Specific Plan Measures

The CSP includes water savings measures with the goal of reducing the project's overall water demands for both potable and/or recycled water to the best extent feasible and practicable. The following water conservation measures will be implemented in the CSP in an effort to reach the City's water conservation goals:

- **Turf Reductions in Residential Areas** – This involves limiting the amount of turf in the front yards of residential properties and using a higher percentage of low-water use plant species in lieu of turf. Typically, about 70% of a total residential front yard is assumed to consist of landscaping, with the balance consisting of driveways, planter, or walkways. For the CSP, limitations will be placed on the landscaped portion of each front yard, allowing up to 42% of the total area to be turf, with the remaining landscaped area comprised of low water use plant species that use between 65-75% less water than an average lawn.

- **Turf Reductions in Parks, Paseos, and Landscape Corridors** – This involves limiting the use of turf on non-residential parcels within the CSP, with a focus on water efficiencies at parks, paseos, and landscape corridors. For these areas, landscape design will reduce the area of turf and increase the area of low-water-use plant species, as compared to the design of these features in other specific plan areas. To achieve the desired water conservation, the following criteria will be implemented:

    - **Parks –** It is assumed that approximately 80% of a typical park's square footage consists of turf with the remaining 20% in non-irrigated surfaces. Parks in the CSP area would have a maximum cumulative total of turf area of 60%, with the

remaining 20% of the area comprised of low water use plant species. Less than 60% is acceptable provided it is compatible with the amenities planned for the park. For purposes of this analysis, 60 percent turf is assumed.

- **Paseos and Landscape Corridors –** It is assumed that paseos and landscape corridors are typically comprised of 80% turf area and 20% non-irrigated areas. The CSP's paseos and landscape corridors will have a maximum of 30% turf area, 50% low water use plant species, and 20% non-irrigated surfaces.

- **Smart/Centrally Controlled Irrigation Controllers** – Smart and centrally controlled irrigation controllers restrict irrigation to only the times and water application rates that are necessary to maintain landscaping. They account for changes in the demand for water, which varies with weather patterns and seasonal influences. For the CSP, smart irrigation controllers will be required for residential, small commercial and quasi-public parcels subject to turf reduction measures and centrally controlled irrigation controllers for larger commercial and publicly maintained parcels.

- **Re-circulating Hot Water Systems** – This involves using a re-circulating pump on a home's hot water line system, reducing the time necessary to receive hot water at any hot water faucet. This type of system will be included on all residential units to generate additional plan-wide water conservation.

With full implementation of these measures throughout the Plan Area, it is estimated that the water conservation measures outlined above will reduce the CSP's overall water demand by approximately 205 FY. This includes a reduction of 126 AFY on potable demands and 79 AFY on recycled water demands.

4.12.1.4 IMPACTS

Analysis Methodology

For purposes of utilities analysis, the Project area is the entire annexation area with the proposed land uses shown in Figure 2-4, *Land Use Plan.* This includes both the CSP and Urban Reserve parcel. An analysis of the Urban Reserve, should it develop in the future is also included.

Water Supply

In the water supply analysis, the potable water demand created by the plan is compared against the City's water supply portfolio and its ability to obtain American River Water supply in normal/wet year conditions. Water supplies are also evaluated against water demands when surface water supplies are cut back per the City's Water Forum Agreement or by other reasonably foreseeable cut backs as could be instituted by USBR as a result of the OCAP. As described previously, the City uses surface water, recycled water and groundwater (as backup) to meet City water demands.

The potable water demand for the project was determined utilizing unit water demand factors (reference Table 4.12.1-3, above), applying those factors to proposed land uses in the CSP and the Urban Reserve areas, and then subtracting recycled water supplies and estimated savings from planned water conservation measures. In calculating water demands, a 2% factor was added to account for water system losses. Development within the Urban Reserve parcels was assumed to include 405 medium and high density residential units and 1.1 acres of park lands.

The CSP has included significant water conservation measures into the project. These water conservation measures include:

- Turf reductions and low water using landscaping in residential front yards
- Smart irrigation controllers for irrigation uses
- Re-circulating hot water systems for residential units

The Creekview Specific Plan Water Conservation Plan (November 23, 2010 by HydroScience Engineers) included as Attachment 3 of Appendix H-2, provides the calculations showing the estimated water saving expected from the conservation measures identified for inclusion in the CSP project.

Water Treatment and Distribution

For analysis of the water treatment plant and the distribution system, wet year water demands during average day and maximum day conditions were compared to the capacity of the Barton Road Water Treatment Plant and the ability of existing infrastructure to deliver these additional flows without significantly adversely affecting existing customer service levels. The analysis uses the contractual pumping capacity of USBR facilities in combination with the flow characteristics for

the 100-mgd Barton WTP. The data was used to identify capacity constraints on the capacity of pumping and raw water facilities to accommodate increased flows from Folsom Lake that would be conveyed to the Barton Road water treatment plant.

The analysis of potable water storage and distribution effects is based on a technical study prepared by MacKay and Somps for the project (Creekview Specific Plan Master Water Study Final Report dated November 30, 2010 included as Attachment 2 of Appendix H-2) and supplemental analysis completed by the City. As documented in this technical study, MacKay and Somps used the City's current design criteria and standards included in the City's General Plan Update Water System Study for hydraulic modeling to determine pipe and water storage reservoir sizing, storage needs, and booster pumping facilities required for the project area. This information was then imported into the City's overall water hydraulic model to determine impacts to the City's existing potable water distribution system. The model is based on estimated project demands. Peaking factors were used to simulate various operational scenarios such as maximum day plus fire flow demand scenarios and peak hour demand scenarios. Distribution systems must also be sized to provide adequate fire flows at minimum residential pressures that meet or exceed flows specified by the Insurance Services Officer (ISO) and Fire Department. Fire flow demands assumed 4,000 gpm for commercial sites, 4,500 gpm for schools, and 2,000 gpm for single- family residential development maintained at a minimum-required 20 pounds per square inch (psi) residual system pressure at the flowing hydrant with a goal of maintaining 50 psi elsewhere in the system. Resulting pressures and hydraulic grades were evaluated based upon the water model scenario runs.

Groundwater

The impact analysis discussion for groundwater incorporates the results of a groundwater impact analysis prepared by MWH in June 2003 (*Groundwater Impact Analysis for Proposed Reason Farms Land Retirement* Plan) and is included in Attachment 7 of Appendix H-2 to this EIR. The MWH report used the *North American River and Sacramento County Combined Integrated Groundwater and Surface Water Model* (IGSM) to simulate groundwater conditions. This model was originally developed for the *American River Water Resources Investigation* and later updated by the American River Basin Cooperating Agencies for the Regional Water Master Plan.

For this impact analysis, it is assumed that groundwater would be used for drier and critically dry year water supply when surface water supplies are reduced pursuant to the City's Water Forum Agreement or by other reasonably foreseeable cut backs, for example reductions instituted by USBR as a result of the OCAP. It is estimated 28,168 AF of groundwater would be extracted at City buildout (including the proposed Project) over the analysis period (100 years) under the Water Forum scenario and 51,631 AF of groundwater would be extracted under the USBR OCAP scenario.

Reason Farms

Reason Farms is a 1,754 acre City owned property located northwest of the City's West Roseville Specific Plan Area. Prior to City acquisition of the property in early 2003, Reason Farms was used for the agricultural production of rice. It is estimated that approximately 6,483 AFY of groundwater was extracted from the aquifer underlying the property and applied to 1,080 acres of the land for irrigation purposes. The major portion of this water was lost to evapotranspiration, while a smaller amount returned to the groundwater basin through deep percolation. Since the City acquired the property in 2003, rice farming has been discontinued and the property is now dry farmed resulting in "banked" groundwater. However, approximately up to 700 acre feet a year may still be used to support cattle ranch and dry farming operations. The following assumptions were made for the analysis of mitigating dry-year and emergency groundwater use, which was assumed to be accomplished by revised farming practices at the Reason Farms property:

- 1,080 acres of land taken out of rice production
- 6,483 AFY of groundwater formerly extracted for rice irrigation demand
- 2,632 AFY of groundwater used for irrigation returned to the basin by deep percolation
- Net 3,151 AFY of groundwater recharge "banked" for beneficial uses (6,483 AFY – 2,632 AFY for percolation-700 acre feet for cattle ranching operations).

Thresholds of Significance

For the purposes of this EIR, a significant impact would occur if the development proposed for the project would do the following:

- Result in insufficient water supplies to serve the project from existing entitlements and resources, such that new or expanded water supplies are required.

- Result in or require the construction or expansion of water treatment, conveyance, and/ or storage facilities that would create significant environmental effects.
- Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or substantial lowering of the local groundwater table.

Impacts and Mitigation Measures

IMPACT 4.12.1-1	AVAILABILITY OF WATER SUPPLIES TO MEET DEMAND IN NORMAL/WET YEARS	
Applicable Policies and Regulations	Water Supply Assessment (SB610 and 221) Urban Water Management Planning Act Water Conservation Projects Act Water Forum Agreement City of Roseville General Plan Policies Urban Water Management Plan Water Master Plan/Design Standards City of Roseville Water Conservation Ordinance	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Development of the CSP would include residential, commercial, business professional, and school uses that would require water. The total water demand for the Project at buildout is estimated to be 900 AFY. This amount includes 1,082.5 AFY for the CSP, 1 AFY for the Urban Reserve area, and 21.7 AFY for system losses (2% of total demand) minus a water demand reduction of 205 AFY for water conservation measures proposed by the CSP. Project area water demands are shown in Table 4.12.1-4. Development of the CSP in combination with projected water demand for buildout of the City would be 62,609 AFY (61,709 AFY + 900 AFY).

TABLE 4.12.1-4

CREEKVEIW SPECIFIC PLAN WATER DEMANDS

Project Land Use	Water Demand (AFY)
Low Density Residential	511.1
Medium Density Residential	230.1
High Density Residential (a)	103.1
Commercial and Commercial Mixed Use	56.2
Open Space	0
Parks and Paseos	52.6
Public/Quasi Public	5.2
Schools	27.1
Streetscapes	97.1
Subtotal CSP Water Demand	**1,082.5**
Urban Reserve (Harris)	1
Subtotal CSP and UR Water Demand	**1,083.5**
2% for Losses (b)	21.7
CSP Water Conservation Reduction	<205>
Total Water Demand	**900 (rounded)**

(a) Losses: CSP = 21.6 AFY and UR = 0.1 AFY

Two assured sources of water in normal/wet years exist to service the City and the CSP. They are the City's American River supply, and recycled water for landscape irrigation. The City's American River surface water supply contracts total 66,000 AFY and includes supply from USBR, PCWA, and SJWD. These contracts are described in detail in the background portion of this section (see Table 4.12-1) and in the Water Supply Assessment included as Appendix H-2. In normal/wet years pursuant to the City's Water Forum Agreement, the City can access 58,900 AFY if its American River supply. In driest (critically dry) years (pursuant to the City's WFA), by contrast, the City's American River supplies may be reduced to 39,800 AFY (see Impact 4.12.1-2). As documented in the Recycled Water Section 4.12.2, a total of 4,510 AFY of recycled water is available to offset total water demands at buildout. This includes 4,388 AFY within the existing City General Plan area and 122 AFY of recycled water usage within the CSP area. The use of recycled water as an assured water supply source reduces total water supply needs for the build out of the City and the Project to 58,099 AFY (62,609 AFY – 4,510 AFY RW supply). Figure 4.12.1-2 depicts the City's water supply strategy in normal / wet years.

In normal/wet years, the City's American River supply of 58,900 AFY is sufficient. When compared to the total projected potable water demand of 58,099 AFY, there is a surplus of 801 AFY of water at buildout. Current supplies, then, are reasonably certain to be sufficient to serve not only the Project but buildout under the City's general plan in wet years. Therefore, this is considered a **less than significant** impact.

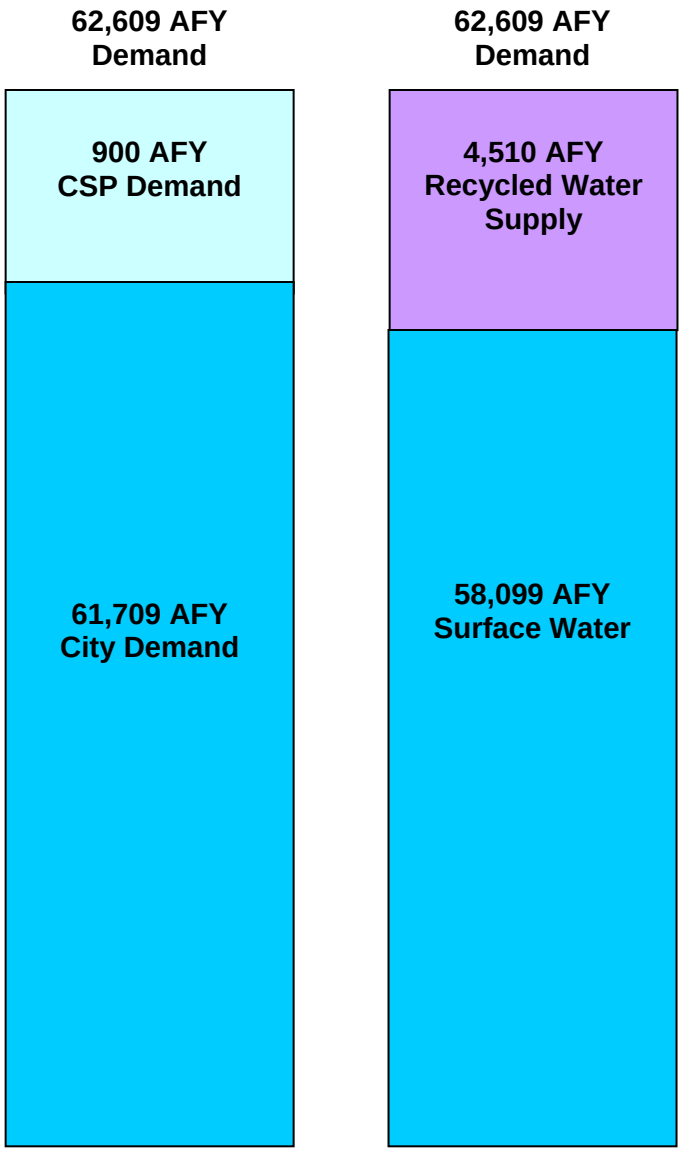
URBAN RESERVE

Water demands for the Urban Reserve area, if developed in the future in a manner similar to the proposed CSP, are estimated to total 98 AFY if water conservation measures are employed to the level with the CSP, as show in Table 4.12.1-5 below.

Development of the Urban Reserve, in conjunction with the City's existing General Plan and the CSP, in 2030 would result in a total water supply need of 62,707 if water conservation is assumed at the same levels as for the CSP. As documented in Section 4.12.2, a total of 4,510 AFY of recycled water is available to offset total water demands at buildout assuming water conservation at the same level planned within the CSP is achieved. This includes use of 4,388 AFY of recycled water within the existing City General Plan area, 122 AFY of recycled water use within the CSP area, and an estimated 10 AFY of recycled water use in

FIGURE 4.12.1-2

CSP NORMAL/WET YEAR WATER SUPPLY STRATEGY



the Urban Reserve area. The use of recycled water as an assured water supply source reduces total water supply needs to 58,188 (62,707 AFY – 4,519 AFY RW supply).

The City's wet year supplies total 58,900 AFY in wet/normal years. The ability of the Urban Reserve area to implement sufficient water conservation measures to reduce total water supply demands will determine if there is a sufficient existing water supply for the Project area. If the future development of the Urban Reserve area can achieve reductions in demands from water conservation measures at the same level as planned within the CSP, the City will have sufficient water supplies for the buildout of this area and a surplus of 712 AFY (58,900 – 58,188 = 712 AFY surplus). Because there is sufficient water for the Urban Reserve area, this impact is considered **less than significant.**

TABLE 4.12.1-5

URBAN RESERVE WATER DEMANDS

Project Land Use	Water Demand (AFY)
Medium Density Residential	60
High Density Residential	47
Park	4
Open Space	0
Landscape Corridors	5
Water Demand	**116**
2% for Losses	2
Water Conservation Reduction	<19>
Total Water Demand	**99**

The WRSP FEIR identified a significant and unavoidable water supply impact, because it was assumed that a new source and supply would be needed to serve this area. The WRSP FEIR, which assumed that the CSP area (inclusive of the Urban Reserve) would need to be served by the Sacramento River Water Reliability project or would need to secure another source of surface water supply. Because an additional source of supply is not required, WMM 4.11-1 (Secure Adequate Water Supply) is no longer applicable to the Urban Reserve.

IMPACT 4.12.1-2	AVAILABILITY OF WATER SUPPLIES TO MEET DEMAND IN DRY YEARS	
Applicable Policies and Regulations	Water Master Plan Water Forum Agreement City of Roseville General Plan Policies Urban Water Management Plan Water Master Plan/Design Standards City of Roseville Water Supply Assessment (SB610 and 221) Urban Water Management Planning Act Water Conservation Projects Act Conservation Ordinance	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

This dry year analysis considers two potential scenarios. The fist scenario considers water supply cut backs pursuant to the City's Water Forum Agreement. The second scenario considers reasonably foreseeable USBR water supply cut backs as a result of current OCAP discussions.

Water Forum Scenario

The Water Forum Agreement (WFA) identifies three different water year types: normal or wet (normal/wet); drier; and, driest. Each year type has specific limitations on the amount of water that could be diverted from the American River. For example, in a normal/wet year, the City agrees to limit the amount of water diverted from the American River to 58,900 AFY. In drier years, the amount of water available for diversion varies depending on the American River's unimpaired inflow. Diversions can vary from a maximum of 58,900 AFY to a minimum of 39,800 AFY. In driest (critically dry) years the City agrees to limit the amount of water diverted from the American River to no less then 39,800 AFY

To meet water supply demands during drier and driest years the City may utilize other supplies like recycled water and groundwater. Recycled water offsets the use of surface water supplies thereby reducing the City's reliance on American River supplies by filling irrigation demands that would otherwise use surface water supplies. Groundwater is used to make up any additional water supply shortfall as further described herein. In drier and driest years, the City will implement the water conservation strategies outlined in the Roseville Municipal Code (RMC). Section 14.09 of the RMC identifies "stages" of conservation designed to achieve a specific amount of reduction in water use to match available supplies for that year. Section 14.09 outlines five drought stages with specific actions a water customer can implement to achieve a 10 to 50 percent water reduction.

Groundwater use has been identified as a method to augment available surface water supplies during drought stages Three through Five. The use of groundwater will mitigate the impact of diverting additional American River (surface water) supplies. The use of groundwater in drier and driest years is consistent with current City practices and is identified in the General Plan as a backup source of supply to be used in droughts or emergencies. As documented within this section, the use of groundwater during dry and driest years is less than significant impact to the area groundwater basin. To understand the impacts of dry and driest year types on the City's water supply availability, this analysis looks at 100 years of hydrologic record from the American River. The following table, Table 4.12.1-6, depicts the impacts of the Water Forum Agreement and shows estimated surface water shortfalls during historical drier and driest years assuming City buildout demand equivalent to 58,900 AFY. For example in a normal year such as occurred in 1929 there would be no anticipated shortfalls in available surface water supplies to the City. In critically dry years such as occurred in 1924 and 1977, the City would need to make up 19,100 AF of water supply. In wetter years as the amount of surface water availability to the City increases from 39,800 AFY to 58,900 AFY, based upon the unimpaired inflow, the anticipated shortfall decreases from 19,100 to 0 AFY.

TABLE 4.12.1-6

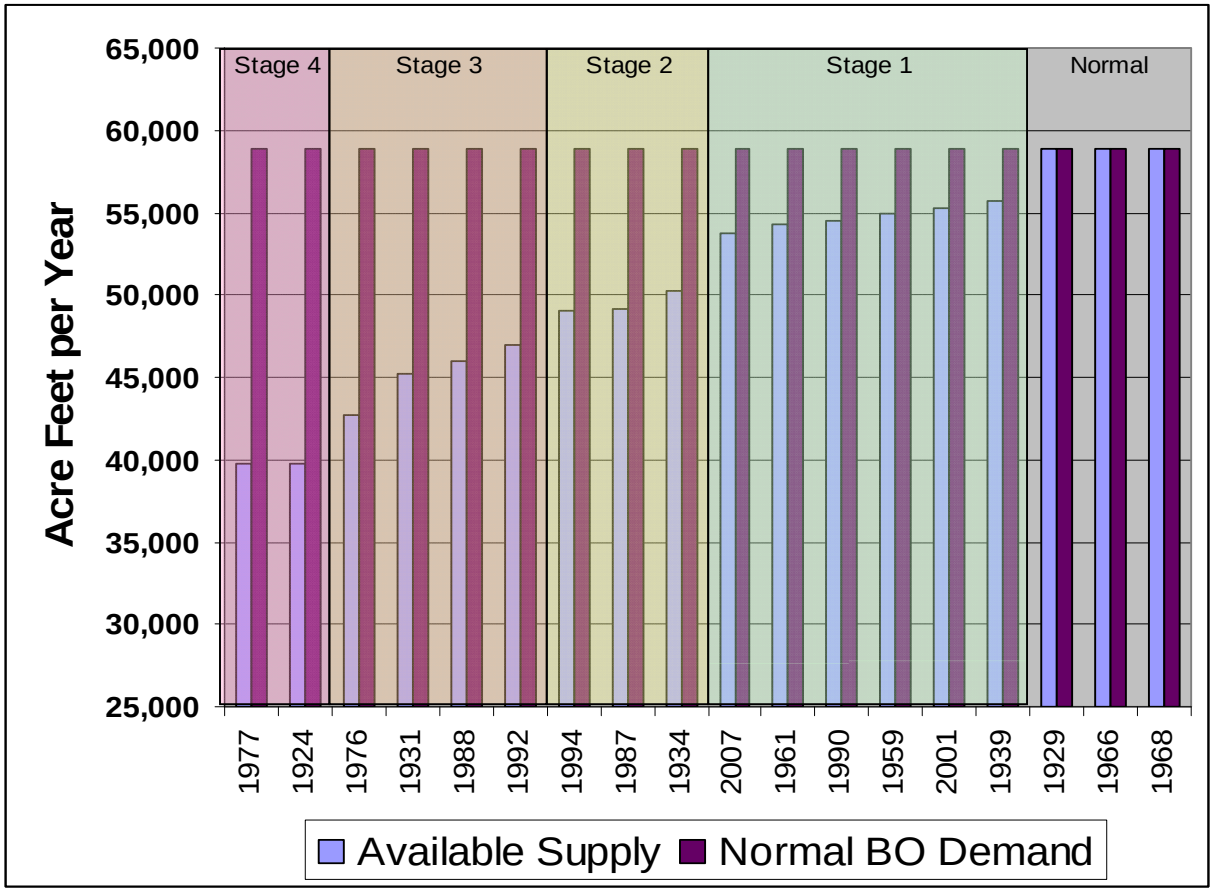
WATER FORUM AGREEMENT IMPACTS ON HISTORIC AMERICAN RIVER HYDROLOGIC DRY AND DRIEST YEAR RECORDS

Year	Year Type	Annual AF	Unimpaired Inflow AF	Available Water Supply AF	Normal Demand AF	Shortfall AF
1977	Driest	520,190	289,740	39,800	58,900	19,100
1924	Driest	628,800	388,900	39,800	58,900	19,100
1976	Drier	598,260	484,060	42,719	58,900	16,181
1931	Drier	854,600	557,200	45,259	58,900	13,641
1988	Drier	892,974	576,736	45,938	58,900	12,962
1992	Drier	989,570	604,927	46,917	58,900	11,983
1994	Drier	956,228	665,328	49,014	58,900	9,886
1987	Drier	940,048	667,769	49,099	58,900	9,801
1934	Drier	1,084,000	699,700	50,208	58,900	8,692
2007	Drier	1,128,924	800,702	53,715	58,900	5,185
1961	Drier	1,021,670	817,440	54,297	58,900	4,603
1990	Drier	1,036,113	822,331	54,466	58,900	4,434
1959	Drier	1,209,420	836,380	54,954	58,900	3,946
2001	Drier	1,185,375	845,617	55,275	58,900	3,625
1939	Drier	1,006,140	858,220	55,713	58,900	3,187
1929	Normal	1,255,100	952,600	58,900	58,900	0

Figure 4.12.1-3 below graphically shows how the estimated shortfall identified in Table 4.12.1-6 above would be evaluated and placed into the City's corresponding drought stages.

FIGURE 4.12.1-3

SURFACE WATER SUPPLY SHORTFALLS DURING HISTORIC AMERICAN RIVER HYDROLOGIC DRY AND DRIEST YEAR RECORDS



The normal buildout demand for the City plus the Project is estimated to be 62,609 AFY (61,709 AFY + 900 AFY). The net surface water or potable water demand is 58,384. This is calculated by subtracting anticipated recycled water usage at buildout with the CSP from the buildout water demand (62,609 AFY – 4,510 AFY = 58,099 AFY). This amount is then compared to available surface water supplies. In a normal water year, there is 58,900 AFY available from the American River.

In dry and driest years, the City would need to make up the difference between 39,800 AFY and 58,900 AFY (0 AFY to 19,100 AFY). This would be done through implementing conservation measures as identified in the RMC and supplementing available supplies with groundwater. As

explained earlier, the RMC identifies five drought stages with varying degrees of reduction (10% to 50%). Table 4.12.1-6 and Figure 4.12.1-3 compares projected build out demands to available supplies based on 100 years of hydrologic record of the American River. The full history is contained in Attachment 5 of Appendix H-2 (American River Hydrologic Record). The hydrologic record indicates that there were two (2) critically dry years and thirteen (13) drier years where City demands would need to be adjusted downward to conform to available surface water supplies. By way of example, and as shown on Figure 4.12.1-3, a direst (critically dry) year would necessitate the implementation of a Stage Four drought to reduce water demands to a level that is comparable with available supplies. Drought Stages One, Two and Three would be required during the drier years depending on the level of surface water supply shortfall.

It is important to note that if the City is able to accomplish the recommended reductions in demand through more stringent conservation measures outlined in the RMC, groundwater would not be needed to supplement supplies. This is depicted in Figure 4.12.1-4.

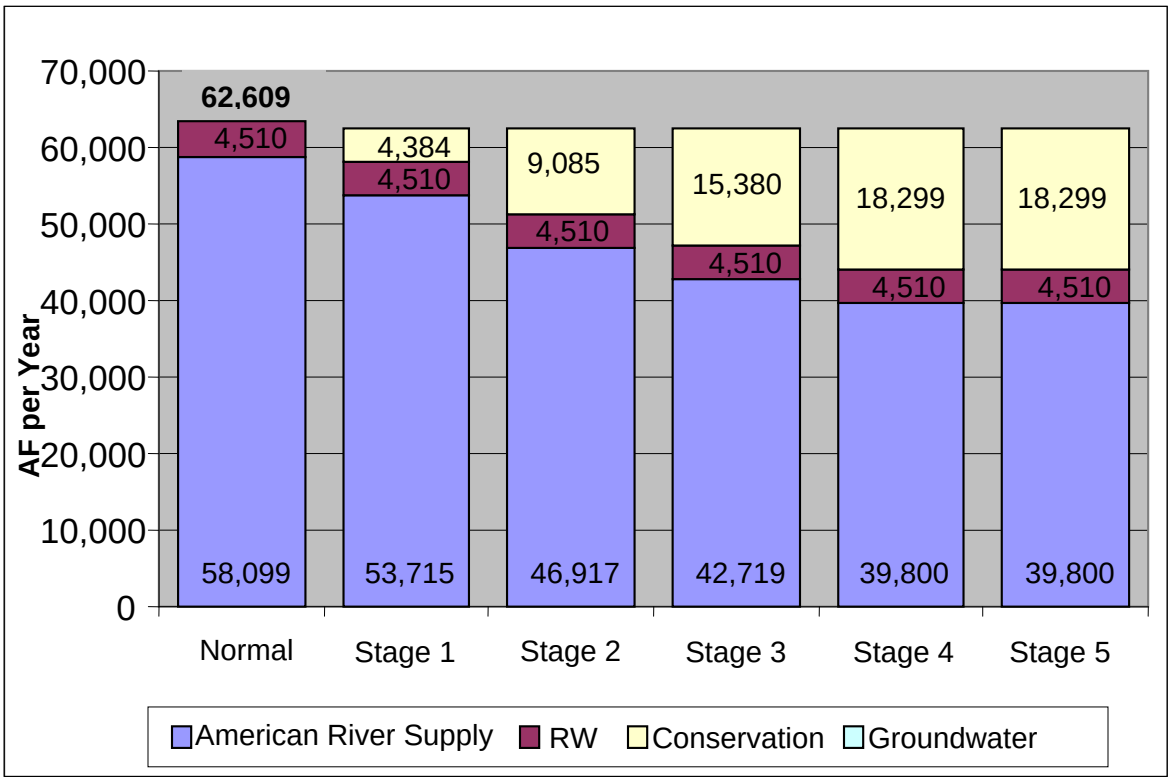
However, to ensure a highly reliable water supply for the City, this analysis assumes only a 20 percent reduction through conservation. This is equivalent to a reduction in water demands of 11,620 AFY at buildout of the City plus the project (20% of the surface water supply requirement of 58,099 AFY).

The 100 years of hydrologic data includes both the 1977 and 1924 droughts of record. This hydrologic record provides a good picture of what should be anticipated as future unimpaired flows in the American River. The data indicates that there would be 15 years out of 100 that would require some level of conservation. Of those 15 years, and assuming only a 20 percent reduction in water demand through conservation efforts, only 7 years would require groundwater pumping to make up for shortfalls in surface water supplies.

FIGURE 4.12.1-4

DRY AND DRIEST YEAR SUPPLY SCENARIO

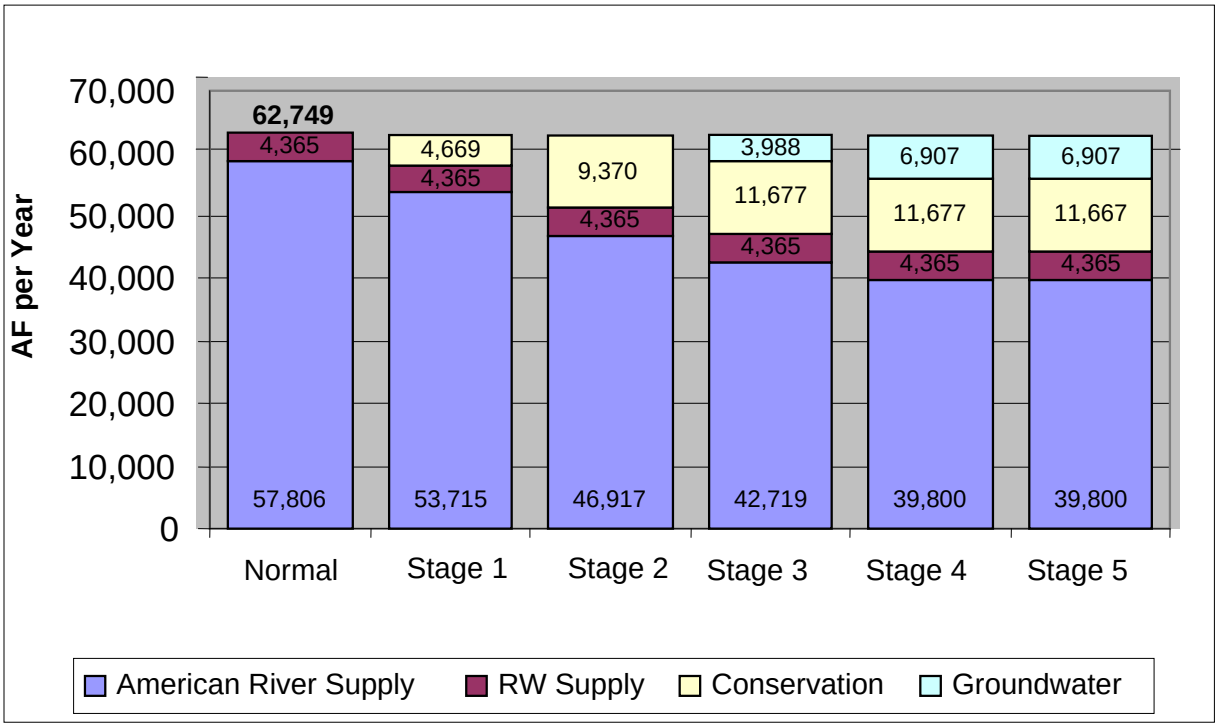
STAGED WATER CONSERVATION



Notes: AR: American River Supply; RW: Recycled Water

The total amount of groundwater extracted over the life of the CSP (based on the 100 year hydrologic record and the need to pump groundwater in only 6 of 100 years) to supplement surface water supplies would be 27,984 AF. The annual amount varies depending on the year type, but ranges from a high of 6,679 AFY to a low of 0 AFY and is depicted in Figure 4.12.1-5.

FIGURE 4.12.1-5
DRY AND DRIEST YEAR SUPPLY SCENARIO
20% WATER CONSERVATION



An additional 220 AF of groundwater is expected to be extracted during the analysis period of the project (100 years) to supplement recycled water supplies for emergency conditions such as a plant outage; for a total extraction of 28,168 AF.

By way of comparison, according to PCWAs Integrated Water Resources Plan (Brown and Caldwell, August 2006), current agricultural and urban withdrawals from the groundwater basin are approximately 97,000 AFY. Under current groundwater pumping loads, the groundwater basin is considered stable since groundwater levels are not declining. This study further estimates pumping rates will reduce over time as much as 20,000 AFY as agricultural lands convert to urban uses within western Placer County.

During dry and driest years when groundwater would be required by the City of Roseville, the maximum volume on an annual basis (6,907 AFY) represents approximately 7% of the current annual extraction from the basin. The IWRP anticipates that groundwater pumping exceeding the safe yield during dry periods is feasible as long as the long term (multi years) average does not exceed the safe yield of 95,000 AFY. Considering that 1) groundwater is needed in only six of the

100 years analyzed; 2) groundwater pumping is expected to decrease on an annual basis by nearly 20 percent over time; and 3) the discontinuance of rice farming on City property identified as Reason Farms fully offsets anticipated groundwater extraction groundwater extractions (refer to Impact 4.12.1-6 within this section); it is expected there will be no impact to basin sustainability as a result of this project.

As documented previously in this section of the EIR, the City's existing groundwater wells are capable of delivering up to 12,000 AFY and once currently planned groundwater facilities are constructed this delivery capability will increase to upwards of 27,500 AFY, if run on a continuous basis, exceeding the required groundwater needs of 6,679 AFY.

With respect to possible impacts from climate change, it is expected that surface water volumes within the American River watershed (the City's surface water supply source) will not change, although the city and the state may need to take proactive measures to manage the supply should water fall increasingly in the form of rain, instead of snow pack. This is further discussed within Impact 4.5-2 in Section 4.5, Effects of Global Warming.

As shown in the figures and described above, the City has sufficient dry year water supplies for the CSP. With the above-described conservation measures and limited reliance on groundwater, then, current supplies are reasonably certain to be sufficient to serve not only the Project but buildout under the City's General Plan even in dry years. Therefore, this is considered a **less than significant** impact.

USBR OCAP Scenario

As previously described within Section 4.12.1.3, Regulatory Setting, both the USFWS and the NMFS prepared new biological opinions on the impacts associated with OCAP implementation. To develop the new biological opinions, both USFWS (smelt) and NMFS (salmon) utilized a series of model runs from CALSIMII known as Study 7 and Study 8. CALSIMII is a model of California's State Water Project (SWP) and the Federal Central Valley Project (CVP). This model was developed jointly by the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation (USBR). Study 7 evaluated current conditions and Study 8 depicted future conditions as prepared by the Bureau of Reclamation. Neither study contains the assumptions for the RPAs prescribed in the Biological Opinions. There is an accelerated effort to model the RPAs in CALSIMII by the Bureau; the

effort has not been completed yet with the appropriate simulations of the RPA. However, utilizing the model runs used by both USFWS and NMFS identifies the frequency of the deliveries to Roseville.

It should be noted that some of the delivery impacts identified in Study 8 are less than in the Water Forum EIR. Those changes result from several model updates resulting from the following actions:

- Change from PROSIM Model to CALSIMII model
- Implementation of the Trinity River Record of Decision
- Updated Hydrology
- Updated State Water Project Demands
- Yuba Accord Flows
- SWRCB WR Order 90-5
- Unprecedented American River Diversions at Fairburn
- Changes to minimum downstream releases on the American and Sacramento Rivers

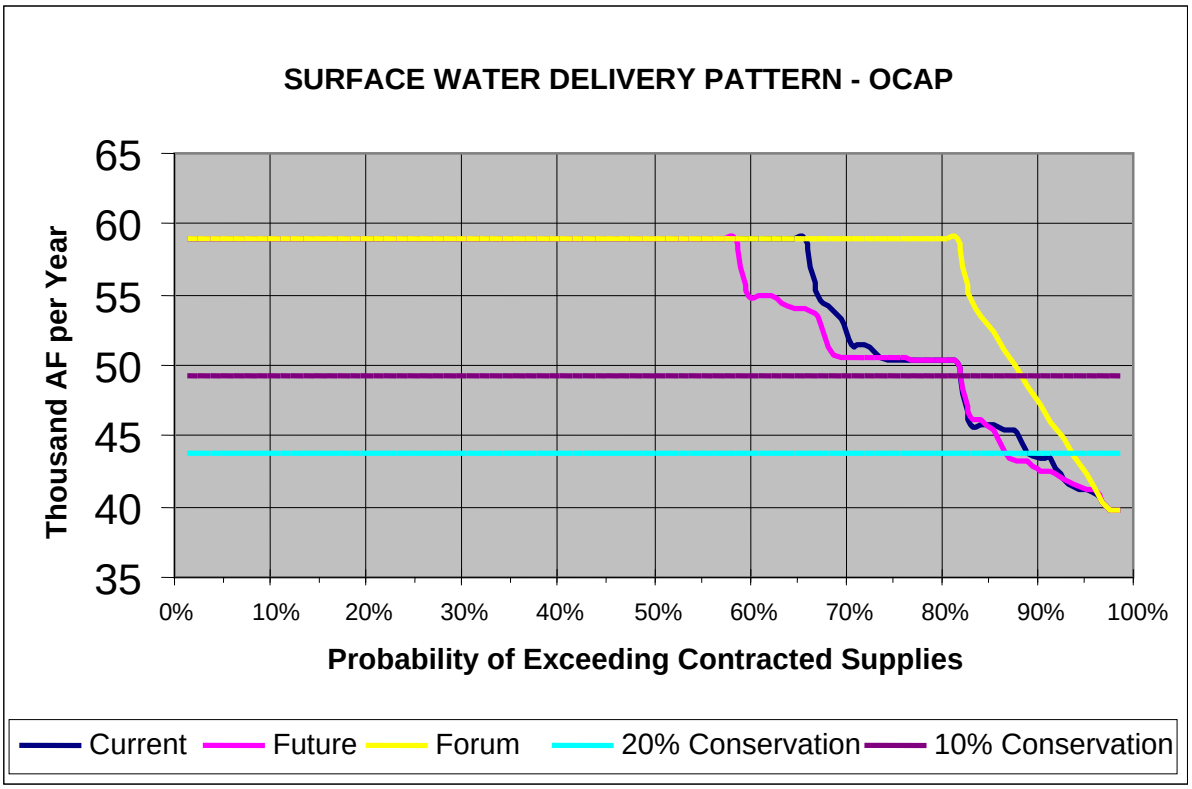
For purposes of this analysis, Study 8 (future conditions) is used to evaluate possible impacts to Roseville deliveries from the OCAP. Figure 4.12.1-6 depicts the changes in water supply deliveries to the City under OCAP, Study 8 (shown as the magenta colored line) as compared against WFA deliveries (shown as the yellow line) and current delivery patterns (shown by the dark blue line). In addition, Figure 4.12.1-6 shows total water demand if the City were to conserve water equivalent to a 10% reduction in surface water supplies (purple colored line) or a 20% reduction (aqua colored line). Placer County Water Agency contractual supplies are included in the analysis which reduces the impact of smaller Bureau supplies.

The analysis completed for the Water Forum EIR project full deliveries occur approximately 83 percent of the time. Under the new OCAP (Study 8) full deliveries of PCWA and USBR contracted supplies are projected to occur fifty-eight (58) percent of the time. Forty-five (45) percent of the time shortages in surface water supplies can be mitigated through implementing water conservation Stages 1 and 2 (between 10% and 20% conservation) outlined in the Roseville Municipal Code (RMC) Section 14.09. This is shown on Figure 4.12.1-11 as the area between the purple-colored 10 percent conservation line and the aqua-colored 20 percent conservation line. Thirteen (13) percent of the time surface water deliveries will fall below a level where mitigation can be accomplished through

20 percent conservation efforts and supplemental supply from groundwater. This is shown as the area below the aqua colored 20 percent conservation line. In the Water Forum analysis within this document, deliveries were projected to fall below the same level only 7 percent of the time.

As previously noted in this document, normal buildout demand for the City plus the Project is estimated to be 62,609 AFY. The net surface water or potable water demand is 58,384 AFY. This amount is less than the available surface water supplies from the American River of 58,900 AFY.

FIGURE 4.12.1-6



In dry and driest years, the City will need to make up the difference between available supplies from the American River and projected demands. This would be done through implementing conservation measures as identified in the RMC and supplementing available supplies with groundwater. As explained earlier, the RMC identifies five drought stages with varying degrees of reduction (10% to 50%). The 100-year hydrologic record indicates that there were two (2) critically dry years and thirteen (13) drier years where City demands would need to be adjusted downward to conform to available surface water supplies.

The total amount of groundwater extracted over the life of the CSP under the USBR OCAP scenario (based on the 100 year hydrologic record and the need to pump groundwater in only 14 of 100 years) to supplement surface water supplies would be 51,411 AF. The annual amount varies depending on the year type, but ranges from a high of 6,709 AFY to a low of 0 AFY and is depicted previously in Figure 4.12.1-5. An additional 220 AF of groundwater is expected to be extracted during the analysis period of the project (100 years) to supplement recycled water supplies for emergency conditions such as a plant outage.

As shown in the figures and described above, the City has sufficient dry and critical dry year water supplies for the CSP under both WFA and USBR OCAP scenarios. With the above-described conservation measures and limited reliance on groundwater, then, current supplies are reasonably certain to be sufficient to serve not only the Project but buildout under the City's General Plan even in dry years. Therefore, this is considered a **less than significant** impact.

URBAN RESERVE

Future development of the Urban Reserve area in conjunction with the City's existing General Plan and the CSP would result in a total water supply need of 62,707 AFY. This amount assumes the Urban Reserve would achieve 20 AFY of water reductions if water conservation measures are implemented to the level assumed with the CSP. Recycled water demands would increase 9 AFY to 4,519 AFY. Use of recycled water as an assured water supply source would result in a total surface water supply need between 58,188 (62,707 AFY demands – 4,519 AFY recycled water). As described above, the City's surface water supplies are reduced in dry and critically dry years. During years when supplies are reduced, either under the WFA or USBR OCAP scenarios, the City will be required to make up supply shortfalls through a combination of conservation efforts and supplemental groundwater supplies. Supplemental groundwater supplies would range between 0 and 6,750 AFY, and would be required in 14% of the years. Because sufficient groundwater supplies are available through the banking of groundwater at Reason Farms (See Impact 4.12.1-6, Groundwater Use), water supply impacts in dry and critically dry years are considered **less than significant**.

With the above-described conservation measures and limited reliance on groundwater, then, current supplies are reasonably certain to be sufficient to serve not only the City's general plan but also buildout of the CSP and the Urban Reserve parcel in dry and critically dry years.

IMPACT 4.12.1-3	IMPACT ON AMERICAN RIVER AND DELTA ASSOCIATED WITH THE DIVERSION OF THE AMOUNT OF SURFACE WATER NEEDED FOR PROJECT.	
Applicable Policies and Regulations	Water Master Plan Water Forum Agreement City/USBR Contracts	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Water demands from the proposed CSP are estimated at 900 AFY. City buildout water demands, offset by the projected use of recycled water, results in a total surface water supply need of 58,099 AFY in 2030. This volume of water falls within the City's current WFA wet year water supply entitlement of 58,900 AFY. As indicated previously within this Section, the diversion of 58,900 AFY from the American River was analyzed under the Water Forum Agreement EIR certified in October 1999.

Because the WFA EIR is over 10 years old, the City conducted an analysis as part of the EIR for the Sierra Vista Specific Plan to confirm or update the American River and Delta related impact determinations of the City of Roseville diverting 58,900 AFY from the American River as originally analyzed in the WFA EIR, but based on current regional water supply issues and conditions. Because the study evaluates the City's full surface water diversion rights under the Water Forum agreement, this study is still valid and applicable for this Project. This analysis, completed by Robertson – Bryan Inc. and HDR (*Sierra Vista Specific Plan EIR Technical Memorandum: Effects of Changed Water Management Operations on Fisheries and Water Quality Impacts Previously Disclosed in the Water Form Agreement EIR, October 2009*) is referred to as the RBI Study and is included in Appendix H-4 of this EIR. These changed conditions as documented in the RBI Study include Central Valley Project (CVP)

operation changes implemented since the WFA EIR as well as reasonably foreseeable actions that may impact CVP/SWP operations.

The Delta-related impacts that were re-analyzed are the 17 individually numbered impacts for Fisheries Resources and Aquatic Habitat and the two individually numbered impacts for Water Quality addressed within the WFA EIR and listed below:

Fisheries Impacts

Folsom Reservoir and Lake Natoma

- Impacts to Folsom Reservoir Coldwater and Warmwater Species (WFA EIR Impacts 4.5-1 and 4.5-2).
- Impact to Coldwater and Warmwater Species in Lake Natoma (Impact 4.5-3) and Temperature Impacts to Nimbus Fish Hatchery Operations and Fish Production (Impact 4.5-4).

Lower American River

- Impact to Fall-run Chinook Salmon (WFA EIR Impact 4.5-5).
- Impact to Steelhead (WFA EIR Impacts 4.5-6).
- Flow- and Temperature-Related Impacts to Splittail (Impact 4.5-7).
- Flow- and Temperature-Related Impacts to American Shad (Impact 4.5-8) and Striped Bass (Impact 4.5-9).

Other CVP Reservoir Storage

- Impacts to Coldwater and Warmwater Species in Shasta Reservoir (WFA EIR Impacts 4.5-10 and 4.5-11), Trinity Reservoir (WFA EIR Impacts 4.5-12 and 4.5-13), and Keswick Reservoir (WFA EIR Impacts 4.5-14).

Sacramento River

- Flow-Related Impacts to Sacramento River Fisheries (WFA EIR Impacts 4.5-15).
- Temperature-Related Impacts to Sacramento River Fisheries (WFA EIR Impacts 4.5-16).

Delta

- Impacts to Delta Fish Populations (WFA EIR Impacts 4.5-17).

Water Quality

- Lower American River and Folsom Reservoir Water Quality (Impact 4.4-1)
- Lower Sacramento River and Delta Water Quality (Impact 4.4-2)

In all cases, the RBI Study confirmed that the analysis and conclusions in the WFA EIR are still valid under the changed conditions and that no new or substantially more severe significant findings would occur. As such the mitigation measures identified within the WFA EIR for these impacts are still valid and this impact is considered **less than significant.** A list of the Mitigation Measures, applicable to Roseville for these impacts is included in Appendix H-5 of this document.

URBAN RESERVE

As discussed in Impact 4.12.1-1, above, future water demands within the Urban Reserve area are estimated to be 99 AFY. When considering CSP and City buildout water demands in combination with water demand from future Urban Reserve development, along with the offsetting of demands from the use of recycled water, total surface water demands are estimated to be between 58,473 AFY (with conservation at the same levels as in CSP). This total water demands is below (by 427 AFY) the City's WFA wet year limitations from the American River, of 58,900 AFY. Because the water demand is less then the City's water supply, this is a **less than significant impact**.

Because a water supply is available to serve the Urban Reserve from American River supplies, similar to the CSP specific Delta related impacts analyzed in the WFA include the seventeen individually numbered impacts for Fisheries Resources and Aquatic Habitat and the two individually numbered impacts for Water Quality addressed within the WFA EIR. The impacts analyzed by area and the finding with the WFA EIR follow:

Fisheries Impacts

Folsom Reservoir and Lake Natoma

- Impacts to Folsom Reservoir Coldwater and Warmwater Species (WFA EIR Impacts 4.5-1 and 4.5-2).
- Impact to Coldwater and Warmwater Species in Lake Natoma (Impact 4.5-3) and Temperature Impacts to Nimbus Fish Hatchery Operations and Fish Production (Impact 4.5-4).

Lower American River

- Impact to Fall-run Chinook Salmon (WFA EIR Impact 4.5-5).
- Impact to Steelhead (WFA EIR Impacts 4.5-6).
- Flow- and Temperature-Related Impacts to Splittail (Impact 4.5-7).
- Flow- and Temperature-Related Impacts to American Shad (Impact 4.5-8) and Striped Bass (Impact 4.5-9).

Other CVP Reservoir Storage

- Impacts to Coldwater and Warmwater Species in Shasta Reservoir (WFA EIR Impacts 4.5-10 and 4.5-11), Trinity Reservoir (WFA EIR Impacts 4.5-12 and 4.5-13), and Keswick Reservoir (WFA EIR Impacts 4.5-14).

Sacramento River

- Flow-Related Impacts to Sacramento River Fisheries (WFA EIR Impacts 4.5-15).
- Temperature-Related Impacts to Sacramento River Fisheries (WFA EIR Impacts 4.5-16).

Delta

- Impacts to Delta Fish Populations (WFA EIR Impacts 4.5-17).

Water Quality

- Lower American River and Folsom Reservoir Water Quality (Impact 4.4-1)
- Lower Sacramento River and Delta Water Quality (Impact 4.4-2)

In all cases, the RBI Study confirmed the findings with the WFA EIR under the changed conditions are still valid and no new or more significant findings are warranted. As such the mitigation measures identified within the WFA EIR for these impacts are still valid and this impact is considered **less than significant.** A list of the Mitigation Measures for these impacts is included in Appendix H-5 of this document.

IMPACT 4.12.1-4	CAPACITY OF WATER TREATMENT SYSTEM TO MEET POTABLE DEMAND	
Applicable Policies and Regulations	Water Master Plan City Improvement Standards	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Water treatment for the City of Roseville is provided at the Barton Road WTP. The existing treatment plant has a rated capacity 100 mgd, and experienced peak demands of 58 mgd in July 2006. As documented above, potable water demands at buildout of the City and the CSP are estimated at 58,384 AFY (62,749 AFY water demand – 4,365 recycled water supply). This equates to an average day treatment demand of 52.1 mgd. The City uses the following peaking factors to estimate capacity needs for treatment and delivery facilities.

Peaking Factors

Peaking factors are used to calculate water demand expected under varying future water demand conditions such as maximum day and peak hour periods. The resulting demand conditions for maximum day use is used to evaluate and size water delivery facilities while the peak hour peaking factor is used to evaluate storage capacity needs. For analysis of raw water delivery facilities (USBR pumping capacity and water treatment plant capacity), a maximum day demand factor of 1.83 is used. This factor is based upon historical data representing actual water demands over a 15 year period of time. As shown in Table 4.12.1-7, historical data suggest an average Maximum Day Peaking Factor of 1.83.

TABLE 4.12.1-7

MAXIMUM DAY PEAKING FACTORS

Year	Max Day Demand (mgd)	Average Day Demand (mgd)	Maximum Day Peaking Factor
1993	27.44	14.40	1.91
1994	27.39	15.94	1.72
1995	30.99	16.82	1.84
1996	35.25	18.88	1.87
1997	34.93	20.71	1.69
1998	37.91	18.26	2.08
1999	37.34	21.58	1.73
2000	41.80	22.90	1.83
2001	43.70	25.10	1.74
2002	48.80	26.60	1.83
2003	49.80	26.80	1.86
2004	48.80	29.00	1.68
2005	51.80	28.10	1.84
2006	59.70	30.10	1.98
2007	54.20	30.20	1.79
		Average	**1.83**
		Maximum	**2.08**
		Minimum	**1.69**

Treatment Plant Capacity Needs

The average day water treatment demand for buildout of the City and the CSP is 51.9 mgd. Using the maximum day peaking factor of 1.83 described above, a water treatment plant capacity of 95.4mgd would be required. The City's water treatment plant currently has a capacity of 100 mgd. Because treatment plant capacity exceeds anticipated buildout plus project demands, this impact is considered **less than significant**.

URBAN RESERVE

Future development of the Urban Reserve would contribute to increased demand at the water treatment plant. It is anticipated that with Urban Reserve, treatment capacity demand would be approximately 95.1 mgd. Because this is less than the WTP capacity of 100 mgd, this is considered a **less than significant** impact.

IMPACT 4.12.1-5	EXTENSION OF POTABLE WATER DISTRIBUTION SYSTEM	
Applicable Policies and Regulations	Water Master Plan City Improvement Standards California Building Code	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Raw Water Facilities

Raw water supplies for the City come from Folsom Lake. Raw water is conveyed to the City's Barton Road Water Treatment Plant through raw water infrastructure owned and operated by the

USBR. Roseville pumping capacity at the USBR pumping plant is limited to 150 cubic feet per second (96.9 mgd). As documented above, potable water demands at buildout of the City and he CSP are estimated at 58,099 AFY. This equates to an average day treatment demand of 51.9 mgd and a maximum day treatment demand of 95 mgd. Because USBR pumping plant capacity exceeds anticipated buildout plus project demands, impacts to raw water pumping facilities are considered a **less than significant**.

Potable Water Facilities

Potable water would be distributed to the CSP area through a looping system of pipelines that parallel collector and arterial roadways on a transmission main grid and water storage and pumping facilities. The transmission and distribution system consists of 12-inch to 24-inch diameter mains. Smaller distribution mains within subdivisions would consist primarily of 8-inch and 12-inch lines surrounding schools, commercial areas, and high density residential uses. Water storage for the CSP would be accomplished at the City's Westside Tank and Pump Station site located with the West Roseville Specific Plan immediately south of the Pleasant Grove Wastewater Treatment Plant. The Westside Tank and Pump Station site was anticipated to accommodate up to 10 million gallons of storage and pumping capacity inclusive of the Project area; 6 million gallons for the WRSP area and up to 4 million gallons for the MOU Remainder Areas (Sierra Vista and Creekview). The CSP area will require 2.0 million gallons of storage capacity. This is less then the 4.0 million gallons assumed with the WRSP EIR.

Development of the CSP would result in a total average annual daily potable water demand of approximately 684 gpm. The results of the hydraulic modeling presented in the Master Water Study identified the necessary infrastructure improvements to serve proposed development in the CSP. Two primary water system intertie points will be used to connect the CSP area to the City's existing and planned potable water system. This includes one connection to planned infrastructure in the WRSP along Blue Oaks Boulevard and one connection, also within the WRSP, west of Hayden Parkway along Holt Parkway One (with the Fiddyment Ranch development of the WRSP). With the exception of one open space / creek crossing along Westbrook Boulevard, all other water pipeline extensions would be installed in existing or planned roadways.

A hydraulic model of the City's water system was used by City staff to analyze the CSP on anticipated buildout system service and capacity limits. The results of City modeling efforts

indicate a negligible level of service impacts to City water customers as a result of the CSP. Therefore, this is considered a **less than significant** impact. Impacts associated with construction of potable water facilities are analyzed in various other sections of Chapter 4 within this document including *Chapter 4.4 (Air Quality), Chapter 4.6 (Noise), Chapter 4.8 (Vegetation and Wildlife), Chapter 4.12 (Public Utilities), Chapter 4.13 (Hydrology and Water Quality), Chapter 4.9 (Cultural Resources), Chapter 4.14 (Aesthetics and Visual Resources), Chapter 5, (CEQA Considerations).*

URBAN RESERVE

Future development of the Urban Reserve is estimated to result in a total average annual daily potable water demand of approximately 74 gpm. Additional potable water distribution pipelines, storage, and wells for dry-year supply could be needed. It is assumed that the Urban Reserve would connect to the WRSP and CSP potable water infrastructure. The hydraulic modeling for the CSP considered development of the Urban Reserve in determining pipeline diameters and flows, based on general land use assumptions, to ensure level of service criteria would be met. Therefore, future development of the Urban Reserve, in combination with the CSP, is not expected to require upsizing of proposed major water mains to meet operational, emergency, or fire flow demands. It is assumed the onsite distribution system in the Urban Reserve would consist of 12- and -24-inch lines, and would connect to mains constructed with the CSP and WRSP.

The total storage demand for the Urban Reserve would be 0.1 million gallons. This storage volume and associated pump capacity were accounted for in the siting and design of the potable water tanks that are proposed to be located within the City's West Side Tank and Pump Station site. Because the City's West Side Tank and Pump Station site was sufficiently sized to accommodate demands from the CSP and CSP Urban Reserve areas, and because the potable water pipelines in the WRSP and CSP areas would be adequate to convey water to the Urban Reserve area, this is considered a **less than significant** impact.

IMPACT 4.12.1-6	GROUNDWATER USE	
Applicable Policies and Regulations	City of Roseville General Plan Water Forum Agreement Groundwater Management Plan	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Development of the proposed Project would increase the demand on water supplies. As discussed previously in this section, the demand for water would be met through a combination of sources. During wet/normal hydrologic year types, water demand would be met using both surface water and recycled water supplies. Surface water would be obtained from existing supplies from the American River and treated at the City's Water Treatment Plant on Barton Road. During dry and driest hydrologic year types, City water demand would be met using surface water, recycled water and groundwater supplies along with demand reduction activities such as mandatory water conservation efforts. In all year types, groundwater may also be used as an emergency backup for recycled water supplies as is current City policy.

When a well first begins extracting groundwater from an aquifer, groundwater is initially extracted from groundwater storage. The result is a localized cone of depression that fluctuates with operation of the well. When extraction decreases, the aquifer typically recharges and returns to its pre-extraction condition. Over time, a well can also induce an incremental decline in regional groundwater elevations. Cones of depression with a larger aerial extent can form in areas where multiple groundwater extraction wells are in operation. The use of groundwater, although relatively infrequent, could affect aquifers in the area by altering groundwater elevations, which

could in turn, affect recharge condition, change aquifer storage characteristics, result in localized well impacts, or cause areas of poorer quality groundwater to shift.

Water Forum Scenario

As discussed in under Impact 4.12.1-2, under the Water Forum scenario, it is estimated that groundwater would need to be used in 6 years out of 100 to supplement available surface water supplies after a 20 percent conservation level had been achieved. The estimated amount of groundwater per year needed to augment surface water supplies would range from 0 to 6,679 AFY, and would total 28,168 AF for the 100-year analysis period. The amount of banked groundwater obtained through fallowing Reason Farms is estimated to be 296,194 AF (banking assume to occur in 94 years of 100 years for a total of 3,151 AFY banked). After subtracting both the amount of groundwater used for emergency backup recycled water supply and the amount used in dry years from the amount of banked groundwater, 263,225 AF would remain in the groundwater basin. Table 4.12.1-8 summarizes these groundwater impacts under the Water Forum Scenario.

TABLE 4.12.1-8
GROUNDWATER SUPPLY NEEDS AT BUILDOUT CONDITIONS
WATER FORUM DRY YEAR SCENARIO

GROUNDWATER USE	GROUNDWATER DEMAND (AFY)	GROUNDWATER OVER PROJECT LIFE (100 YEARS)	COMMENT
Dry year supply to supplement surface water	6,679	27,948 AF	Groundwater required in 6% of all years. Reference Impact 14.12.1-2
Recycled water emergency backup supply	11	220 AF	Assumes 1.8 mgd for a period of two days under emergency conditions when recycled water is not available. It is further assumed emergency conditions would occur once every five years for a total groundwater need of 220 AFY for the life of the project (100 years).
Total Groundwater Needs	**6,690 AFY**	**28,168 AF**	
Banked Groundwater from fallowing Reason Farms	**3,151 AFY**	**296,194 AF**	Banking occurs in 94 of 100 years.
Net Groundwater Banked		**268,026 AF**	

USBR OCAP Scenario

Under the OCAP projected deliveries, as identified under Study 8, full deliveries will be available only fifty-eight (58) percent of the time, which indicates that forty-two (42) percent of the time, some level of conservation will be in effect. Thirteen (13) percent of the time, surface water deliveries will need to be expanded by the use of groundwater. The estimated amount of groundwater per year needed to augment surface water supplies would range from 0 to 6,679 AFY and would total 51,631 AF (51,411 AF + 220 AF of emergency backup supply) for the 100-year analysis period. The amount of banked groundwater obtained through fallowing Reason Farms is estimated to be 270,986 AF (banking assumed to occur in 86 years out of 100 years for a total of

3,151 AFY banked). After subtracting both the amount of groundwater used for emergency backup recycled water supplies and the amount used in dry years from the amount of bank groundwater 219,355 AF would remain in the groundwater basin. Table 4.12.1-9 summarizes the groundwater impacts under the USBR OCAP Scenario.

Under both the Water Forum and the USBR OCAP scenarios the groundwater levels within the basin are expected to increase as a result of the City's retirement of Reason Farms. Because the proposed CSP project is expected to use less groundwater water than is banked this impact is considered **less than significant**.

TABLE 4.12.1-9
GROUNDWATER SUPPLY NEEDS AT BUILDOUT CONDITIONS
USBR OCAP DRY YEAR SCENARIO

GROUNDWATER USE	GROUNDWATER DEMAND (AFY)	GROUNDWATER OVER PROJECT LIFE (100 YEARS)	COMMENT
Dry year supply to supplement surface water	6,679 AFY	51,411 AF	Groundwater required in 14% of all years. Reference Impact 14.12.1-2
Recycled water emergency backup supply	11 AFY	220 AF	Assumes 1.37 mgd for a period of two days under emergency conditions when recycled water is not available. It is further assumed emergency conditions would occur once every five years for a total groundwater need of 220 AFY for the life of the project (100 years).
Total Groundwater Needs	**6,690 AFY**	**51,631 AF**	
Banked Groundwater from fallowing Reason Farms	**3,151 AFY**	**270,986 AF**	Banking occurs in 86 of 100 years.
Net Groundwater Banked		**219,355 AF**	

URBAN RESERVE

Future development of the Urban Reserve area, in conjunction with the City's existing General Plan and the project area, would result in a total water demand of 62,707 AFY. As described above, the City's water supplies are reduced in dry and critically dry years. During years when supplies are reduced, under both the WFA or USBR OCAP scenarios, the City will be required to make up supply shortfalls through a combination of conservation efforts and supplemental groundwater supplies. Future development of the Urban Reserve area would increase the use of groundwater during dry and driest conditions. Under the more conservative OCAP Scenario, it is estimated that over the 100-year analysis period, an additional 11,531 AF of supplemental groundwater supply would be required to meet dry and critically dry year water demands beyond those required for buildout of the City and the CSP. However, as previously described and documented in Table 4.12.1-9, above, the City's fallowing of Reason Farms results in overall groundwater banking of approximately 270,986 AF over 100 years. Because the proposed CSP and future development of the Urban Reserve area are expected to use less groundwater water than will be banked from fallowing Reasons Farms over the analysis period, this impact is considered **less than significant**.

IMPACT 4.12.1-7	**CHANGES IN GROUNDWATER RECHARGE POTENTIAL THROUGH THE DEVELOPMENT OF IMPERVIOUS SURFACES**	
Applicable Policies and Regulations	None applicable	
	CSP	**Urban Reserve**
Significance with Policies and Regulations	Less Than Significant	Less Than Significant
Mitigation Measures:	None Required	None Required
Significance after Mitigation:	Less Than Significant	Less Than Significant

CREEKVIEW SPECIFIC PLAN

Groundwater Recharge

Groundwater supply is partly dependent on "recharge" by percolation of rainwater through permeable surfaces. Groundwater recharge in the project area occurs primarily along stream

channels such as Curry Creek. As described in the Setting, the project area is undeveloped and there are minimal impervious surfaces; soils that are impermeable or underlain by hardpan comprise most of the project area. In these areas, infiltration is low, thereby limiting groundwater recharge.

Although there would be new impervious surfaces created by development in the project area, recharge is already limited under existing conditions. Runoff from new impervious surfaces would be collected and diverted through onsite drainage controls, such as swales, channels or other detention and water quality features, and ultimately released downstream. Some infiltration from these features would occur. Water from flows released from the project to downstream channels could also provide some recharge. In effect, recharge would still occur, but at different locations and at different rates than under existing conditions. In addition, FEMA and City floodplain development restrictions would limit the types and locations of structures that could be placed near the stream channels. Because areas along stream channels would remain undeveloped either because of proximity to the 100-year floodplain or with the use of natural resource buffers, recharge along stream channels would not be affected. Therefore, the project would result in a **less than significant** impact on groundwater recharge potential and would not result in a reduction in available groundwater supply.

URBAN RESERVE

Similar to the CSP, although new impervious surfaces would be created by future development in the Urban Reserve area, recharge is already limited under existing conditions. Runoff from new impervious surfaces would be collected and diverted through onsite drainage controls, such as swales, channels or other detention and water quality features. Therefore, the future development of the Urban Reserve area would result in a **less than significant** impact on groundwater recharge potential, and would not result in a reduction in available groundwater supply.

4.12.1.5 MITIGATION MEASURES

The Project area was included in the program-level analysis of the West Roseville Specific Plan Final EIR. Mitigation adopted by the City Council at time of approval in 2004 is still applicable to the Project area, especially to the Urban Reserve area. This document lists the WRSP mitigation as

"WMM," and uses ~~strikeout~~ to indicate language that is being eliminated and underline to denote new language.

The following mitigation measure is no longer applicable because adequate surface water supplies are available to serve the CSP and the Urban Reserve in wet and dry years.

~~**WMM 4.11-1** ***Secure adequate water supply for wet and dry years (Impact 4.12.1-3 and Impact 4.11-3– CSP)***~~

~~Specific plans and/or development proposals for the Remainder Area shall identify a source of surface water supply sufficient to serve Remainder Area development. At this time, it is anticipated that the source would be the Sacramento River Reliability Project. Prior to the City's approval of any plan for the Remainder Area, the applicant shall demonstrate that the Sacramento River Water Reliability Project has been subjected to environmental review, approved and funded, and that its construction will be completed by the time that the water is needed for development. The applicant shall contribute a fair share toward the funding of the diversion project.~~

~~As an alternative, an applicant may secure another source of surface water. Such a source would need to be legally available and sufficient to meet the demand of the project, consistent with the Water Forum Agreement and City policies and California Water Code Section 10910 et seq. and Government Code Section 66473.7 subject to a completed environmental review, approved by the agency with jurisdiction over the source and funded.~~

The following mitigation measure is no longer applicable because West Roseville Specific Plan already implemented this measure and this impact is less than significant.

~~**WMM 4.11-2** *Reduced Groundwater Extraction of Agricultural Land During Dry Years (Impact 4.11- CSP)*~~

~~As a condition of approval of any Tentative Tract Map for the WRSP Area, and to supplement assured supplies, the City shall ensure that groundwater in the amount of 2,848 AF/year is available for use in the~~

~~WRSP Area in dry years by reducing groundwater extraction at Reason Farms.~~

The following mitigation measure is no longer applicable because adequate treatment plant capacity would be available to serve the CSP and Urban Reserve parcels.

~~**WMM 4.11-3** *Expand Treatment Plant Capacity (Impact 4.11-CSP)*~~

~~Prior to City approval of any proposed development projects in the Remainder Area, the applicant shall demonstrate to the satisfaction of the Roseville Environmental Utilities Director that the Sacramento River Water Reliability Project water treatment facilities or substantially equivalent facilities approved by the City Council will provide the project with sufficient potable water by the time construction of the project is to begin. The development application for the project shall include a mechanism to fund the project's pro rata share of the construction costs of the Sacramento River Water Reliability Project water treatment facilities or alternative approved facilities.~~

The following mitigation measure is no longer applicable because adequate storage space is available with the City's Westside Tank and Pump Station site to serve the CSP and Urban Reserve parcels.

~~***WMM 4.11-4 Potable Water Storage Facility Policies (Impact 4.12.1-5-CSP)***~~

~~Prior to approval of a Tentative Tract map for the WRSP Area, the maximum amount of potable water storage needed to serve the Remainder Area shall be identified, taking into consideration WRSP Area demand existing storage capacity, and planned phasing of the WRSP Area development. The City shall ensure that a sufficient amount of land has been set aside at the proposed location for the WRSP Area storage facilities to allow for expansion that could accommodate~~ Remainder Area ~~Remainder Area storage needs. Either the booster pumping facility shall be designed to allow for possible expansion or, prior to Tentative Tract Map approval for the Remainder Area, Remainder Area, an alternate site~~

~~for the storage facility shall be identified within the Remainder Area. If an alternate site is selected, it would be subject to environmental review and designated on preliminary land use plans. In addition, the size of the water line that would convey water from the tank(s)to an alternate site under low-demand condition shall be determined and evaluated.~~