SRWRS
Sacramento River Water Reliability Study

Appendix D, Attachment A
Summary of Tables for Phase 1 Environmental Evaluation of Preliminary Action Alternatives

May 2004

ATTACHMENT A: SUMMARY TABLES FOR PHASE 1 ENVIRONMENTAL EVALUATION OF PRELIMINARY ACTION ALTERNATIVES

Tables D-A1 through D-A5 document the Phase 1 environmental evaluation of major components in the identified five preliminary action alternatives, namely:

- Elkhorn/Elverta Diversion Alternative (Table D-A1)
- Sankey Diversion Alternative (Table D-A2)
- Feather River Diversion Alternative (Table D-A3)
- American River Pump Station (ARPS) Alternative (Table D-A4)
- Folsom Dam Alternative (Table D-A5)

The Phase 1 environmental evaluation was conducted using currently available information, including the California Natural Diversity Database (CNDDB), Placer Legacy Habitat Conservation Plan (HCP) data, and initial field reconnaissance by resource area specialists. As noted in Appendix D, the level of detail in the evaluation is similar to that generally encountered in Initial Studies or Expanded Initial Studies prepared according to the California Environmental Quality Act (CEQA) Guidelines. Additional studies, including specific field surveys and agency consultation, are required to properly describe the potential impacts in all resource area categories.

The potential environmental consequences currently identified through this preliminary screening process could be reduced through further refinements in engineering design, incorporation of mitigation measures in the design, and coordinated planning efforts with Placer County and other planning agencies in the study area. Suggested alternative modifications, refinements, and other opportunities to avoid or reduce potential project-related effects also are presented in Tables D-A1 through D-A5.

The categories used to analyze the potential magnitude of effects for each component of the alternatives under consideration in this screening evaluation for the SRWRS are as follows:

- LME — Potentially Large Magnitude of Effect
- ME — Potentially Small Magnitude of Effect
- ASN— Additional Study Needed

The terminology used in this report to describe potential environmental effects, namely, “Potential Environmental Consequence” or “Magnitude of Effect,” is considered interchangeable with “Potential Impact,” “Potentially Significant Impact,” or “Less Than Significant Impact” (i.e., the terminology normally used in a CEQA Initial Study—although this report is not intended to be an Initial Study). In either case, no final determination or conclusion of impact is assumed in this phase of the study and all reconnaissance-level evaluations will be thoroughly studied and documented in Phase 2.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities			
Botany	Although no special status plant species are shown on existing databases within the Elkhorn/Elverta Diversion footprint or quad, Delta tule pea, a federal species of concern, was observed at this site during field reconnaissance. The habitat at this location is riparian woodland. Special-status plants potentially occurring within riparian woodland include Sanford's arrowhead, Delta tule pea, and northern California black walnut. Field surveys will be conducted to verify whether any special-status species would be affected by the project.	LME	Opportunities for on-site mitigation for riparian woodlands are limited due to geographic location. Mitigation would likely have to be offsite and the ratio would be high. Avoidance is the preference for Delta tule pea. If this were not possible, a transplanting/mitigation plan may be required. This will be discussed with agencies during Biological Assessment (BA) preparation.
Wildlife	Construction of the diversion facilities will result in the loss of oak/riparian habitat adjacent to the Sacramento River. It is located within the Natomas HCP Swainson's Hawk Zone. This is high-density nesting migratory bird habitat, and may be Swainson's hawk nesting habitat and habitat for the federally threatened giant garter snake. Habitat loss would cause fragmentation and loss of habitat continuity.	LME	Limited due to geography
Fisheries	Potential impacts include: 1) Entrainment/Impingement; and 2) Disturbance of shaded riverine aquatic (SRA) habitat.	LME or ME with mitigation	1) Incorporate fish screen into design features; and 2) need to investigate: (a) engineering design features; and (b) quality of SRA habitat, amount of construction-related disturbance, and potential mitigation requirements.
Water Quality	Potential impacts include 1) construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term effects anticipated.	ASN	Implement Best Management Practices (BMP) during construction.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities (cont'd)			
Recreation	There are no recreation facilities near the diversion site. The Sacramento River is used for boating, fishing, water-skiing, and other boat-based recreation. The effect on water surface elevations because of the project is anticipated to be negligible. However, the presence of the diversion structure may present an obstacle to navigation. Additional study is needed to determine the significance of potential impacts.	ASN	ASN
Land Use	Land uses around the proposed Elkhorn/Elverta diversion site consist primarily of agricultural operations, with some rural residential uses, an existing pump station, and the Sacramento International Airport located nearby. The proposed diversion facilities are not expected to adversely affect these land uses or conflict with existing plans and policies for the area. It is anticipated that if any conflicts arise with respect to airport plans, they will be resolved through early consultation.	ME	No mitigation required.
(b) Raw Water Pipelines			
Botany	The habitat at this location is primarily agricultural. There are no records of special-status species occurring in the pipeline alignment; however, several special-status plant species are known to occur within the general vicinity (United States Geological Survey (USGS) quad), including dwarf downingia and Boggs Lake hedge-hyssop. These species occur in vernal pools, grasslands, and marshes/swamps. Because the alignment would not impact habitat in which special-status plants occur, these species are not likely to be impacted.	ME	Mitigation not likely to be required.
Wildlife	This corridor crosses lands used for agriculture, which is not important as wildlife habitat, and will be adjacent to Jacobs Slough, which is north of the Sacramento International Airport. Additional study is needed to determine impacts.	ASN	3:1 replacement for marsh habitat loss if any is needed.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(b) Raw Water Pipelines (cont'd)			
Fisheries	None anticipated.	ME	
Water Quality	None anticipated.	ME	
Recreation	No constraints anticipated.	ME	
Land Use	None anticipated.	ME	No mitigation required.
(c) Water Treatment Facilities			
Botany	The habitat at this location is primarily agricultural. There are no records of special-status species occurring in this quad.	ME	Mitigation not likely to be required.
Wildlife	This site is vegetated with agricultural plants, which are not important as wildlife habitat, and will be adjacent to Jacobs Slough, which is north of the Sacramento International Airport.	ASN	Unknown. Marsh/wetland habitat loss will likely require a 3:1 replacement.
Fisheries	None anticipated.	ME	None anticipated.
Water Quality	None anticipated.	ME	None anticipated.
Recreation	No constraints anticipated	ME	
Land Use	The proposed water treatment facilities would be located on agricultural land designated for Water Treatment Plant (WTP) use. Sacramento County has also identified the site as airport buffer lands, as it falls within the Sacramento International Airport's flight approach zones. The water treatment facility could conflict with a proposed airport expansion project.	ASN	Further information about the potential airport expansion is necessary to determine possible mitigation strategies.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(d) Treated Water Pipelines			
Botany	No special-status plant species are shown within the alignment on existing databases. Verification in the field will be needed to determine impacts. Special-status plants occurring in quads crossed by the pipeline are dwarf downingia, Boggs Lake hedge-hyssop, big-scale balsamroot, hispid bird's-beak, legenere, Sanford's arrowhead. These species occur in a variety of habitats, including vernal pools and grasslands. The habitat in this alignment may include wetlands such as stream crossings, drainage ditches, and vernal pools. Other special-status species identified that could occur in the project area are California hibiscus, Sacramento Orcutt grass, and pincushion navarettia.	LME	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be planned to avoid impacting vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches (e.g., Natomas East Main Drainage Canal) would likely be at a lower ratio than riparian woodlands, but could be extensive if large linear distances are impacted.
Wildlife	The Baseline Road and Fiddyment Road segments of this corridor traverse wetland habitat that may have low to moderate densities of vernal pools and thus may support the federally threatened vernal pool fairy shrimp, California tiger salamander. This habitat appears to be more likely and in greater aerial extent along the southern edge of Baseline Road. Giant garter snakes are likely near canals, rice fields and standing water.	LME	Impacts would be mitigatable. Pipeline corridor surfaces could be surfaced to develop wetland and vernal pool habitat as mitigation and/or enhancement. Placement of the pipeline on the northern side of Baseline Road would reduce potential impacts to vernal pools and associated sensitive species. (Another option is to minimize impacts by coordinating with development activities in Placer County.).
Fisheries	1) Disturbance of riparian and shaded riverine aquatic (SRA) habitat along several miles of Natomas East Main Drainage Canal where new pipeline alignment runs parallel to stream; and 2) new pipeline alignments would cross several potentially fish-bearing streams, including Dry Creek and Pleasant Grove Creek.	LME	1) Need to investigate: (a) engineering design features; and (b) quality of existing SRA habitat, amount of construction-related disturbance along Natomas East Main Drainage Canal, and potential mitigation requirements; and 2) presence/absence of anadromous and/or resident fish in streams where pipeline crossing would occur.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity, 2) construction-related groundwater dewatering may cause temporary decrease in water quality, and 3) no long-term effects anticipated.	ME with mitigation	Implement BMPs during construction.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(d) Treated Water Pipelines (cont'd)			
Recreation	None anticipated.	ME	
Land Use	None anticipated.	ME	No mitigation required.
(e) Operations			
Botany	Operation of this alternative is not expected to significantly impact botanical resources.	ME	None necessary.
Wildlife	Operations of the diversion will likely produce noise and have nocturnal lighting – both may have an insignificant impact on wildlife.	ME	None necessary.
Fisheries	Anadromous and Resident Riverine Species –Changes in flow, water temperature, and reduced early lifestage salmon survival. (Note: Changes in the timing, magnitude and frequency of these parameters, as they occur throughout the Central Valley Project/State Water Project (CVP/SWP) system, are unknown without hydrologic modeling.) Warmwater Reservoir Fisheries – Changes in reservoir water surface elevation and littoral habitat affecting spawning and rearing. Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. Coldwater Reservoir Fisheries – Changes in reservoir storage impacting long-term population levels. Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. There is a potential to increase the volume of effluent discharge to fish-bearing streams.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Need to determine specifics of the operational pattern of the diversion (e.g., will water be withdrawn at a constant rate, will timing be annual or seasonal, what other conditions associated with the diversion could have an influence on CVP/SWP operations). This alternative's location in the watershed likely would provide a reduced amount of potential impacts to riverine fisheries resources relative to other alternatives because this section of the Sacramento River is primarily used as a migration corridor. Most of the anadromous fish spawning and rearing habitat is upstream and would not likely be affected by diverting at this site.

Table D-A1. Summary of Phase 1 Environmental Evaluation for Elkhorn/Elverta Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(e) Operations (cont'd)			
Water Quality	Reduced downstream dilution potential for pollutants and surface water quality parameters of concern.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Because water quality in the Sacramento River is generally considered to be of lesser quality than water from the lower American River, potential water quality impacts from this alternative could be of smaller consequence relative to other alternatives under consideration involving diversions from the American River.
Recreation	There may be some additional noise to boaters on the river from pumping operations. Protrusion of the diversion structure may be a significant impact.	ASN	ASN
Land Use	There may be some additional noise affecting nearby residences resulting from the pumping operations but this is not considered a significant impact.	ME	

Categories of potential magnitude of effects and mitigation:

LME Potentially Large Magnitude of Effect
ME Potentially Small Magnitude of Effect
ASN Additional Study Needed

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities			
Botany	No special-status plant species are shown on existing databases within the footprint. The habitat at this location is riparian woodland, but more disturbed, less well-developed, and a narrower corridor than Elkhorn/Elverta location. Special-status plants potentially occurring within riparian woodland at the proposed Sankey Diversion include Sanford's arrowhead, Delta tule pea, and California rose mallow.	LME	Limited opportunities for on-site mitigation due to geographic location. Mitigation ratio would be high for riparian woodlands. Mitigation requirements likely to be less than for Elkhorn/Elverta Diversion.
Wildlife	The Sankey Diversion would have less terrestrial wildlife impact than Elkhorn/Elverta because the extent of existing riparian is less. Habitat conditions in the vicinity of the Sankey Diversion have a greater potential for the federally threatened giant garter snake. The habitat is also migratory nesting bird habitat, and may support Swainson's hawks, and is within the Natomas HCP Swainson's Hawk Zone. Habitat fragmentation may be an issue. Cliff swallows nest in abundance on the bridges crossing Sankey Road and across the adjacent canal.	LME	Impacts would be mitigatable, but likely require replacement of riparian habitat, Swainson's hawk habitat, and giant garter snake habitat
Fisheries	1) Entrainment/Impingement; and 2) disturbance of SRA habitat.	LME or ME with mitigation	1) Incorporate fish screen into design features; and 2) need to investigate: (a) engineering design features; and (b) quality of SRA habitat, amount of construction-related disturbance, and potential mitigation requirements.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term effects anticipated.	ASN	Implement BMPs during construction.

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities (cont'd)			
Recreation	Existing nearby recreation facilities include the privately operated Verona Village River Resort with a marina, waterfront restaurant, convenience store, and recreational mobile park. However, the diversion location is far enough south to prevent any direct impacts to these facilities. The Sacramento River is used for boating, fishing, water-skiing, and other boat-based recreational activities. The effect on water surface elevations as a result of the project is anticipated to be negligible. However, the presence of the diversion facilities may result in some reduction of quality of the recreational experience. Additional study is needed to determine the extent of impacts.	ASN	ASN
Land Use	A restaurant, marina, grocery store, and mobile home park/recreational vehicle campground are located north of the proposed Sankey diversion site. Development of the proposed diversion facilities is not expected to adversely affect these land uses or conflict with existing plans and policies for the area.	ME	No mitigation required.
(b) Raw Water Pipelines			
Botany	No special-status plant species are shown on existing databases within the proposed alignment. Special-status plants known to occur in quads crossed by the pipeline are: dwarf downingia and Boggs Lake hedge-hyssop. These species occur in vernal pools, grasslands, and marshes/swamps. The habitat in this alignment may include wetlands such as stream crossings, drainage ditches, and vernal pools.	LME	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be planned to avoid impacting vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches would likely be at a lower ratio than riparian woodlands but could be extensive if large linear distances are impacted.
Wildlife	Most of this corridor is used for agriculture; important resources are likely to be absent. There is a possibility of wetlands and vernal pool habitat west of the treatment facility location.	ME	

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(b) Raw Water Pipelines (cont'd)			
Fisheries	New pipeline alignments would cross several potentially fish-bearing streams, including Cross Canal/Curry Creek.	LME	Need to investigate: 1) engineering design features to determine how stream crossings will be addressed; and 2) determine the presence/absence of anadromous and/or resident fish for potential pipeline construction disturbances.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term affects anticipated.	ME with mitigation	Implement BMPs during construction.
Recreation	None anticipated.	ME	
Land Use	The proposed pipeline would likely be routed through an area presently in agricultural and industrial use, and designated for future industrial and commercial development. The pipeline is not expected to significantly affect land uses or conflict with existing plans and policies for this area.	ME	No mitigation required.
(c) Water Treatment Facilities			
Botany	No special-status plant species are shown on existing databases within the proposed alignment. Special-status species known to occur in quads crossed by the pipeline are dwarf downingia and Boggs Lake hedge-hyssop. These species occur in vernal pools, grasslands, and marshes/swamps. This site is near vernal pools, but appears to be located on agricultural land. If vernal pools are avoided, botanical impacts are likely to be minimal.	LME	Mitigation would not be required if impacts to vernal pools are avoided.

Wildlife	The Sankey WTP site is agricultural land and therefore has limited wildlife habitat value. However, the adjacent canal has potential for vernal pools species and the giant garter snake. Giant garter snakes are likely associated with canals and rice fields. Burrowing owls, a species of special concern, may also be present on or near the site	ASN Potentially significant impacts if vernal pools, vernal pool fairy shrimp species, and tiger salamanders are present.	Acquisition of land adjacent to the WTP for mitigation could be considered. It could be used to create habitat enhancement to off-set or compensate for any significant impacts.

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(c) Water Treatment Facilities (cont'd)			
Fisheries	NA	NA	NA
Water Quality	NA	NA	NA
Recreation	None anticipated.	ME	
Land Use	The proposed WTP would be near the southwest corner of Placer County, in an area with mainly agricultural and rural residential uses, with some nearby urban development. The WTP may conflict with existing residential uses.	ASN	Needs further investigation. If potential conflicts with adjacent residential uses are uncovered, early consultation should result in a consensus on mitigation.
(d) Treated Water Pipelines			
Botany	The planned pipeline alignment would be adjacent to or intersect a known occurrence of dwarf downingia — a special-status vernal pool species. Other special status plants occurring in quads crossed by the pipeline are Boggs Lake hedge-hyssop, big-scale balsamroot, hispid bird's-beak, legenere. These species occur in a variety of habitats, including vernal pools and grasslands. The habitat in this alignment may include wetlands such as drainage ditches, stream crossings, and vernal pools.	LME	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be planned to avoid impacting dwarf downingia and vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches would likely be at a lower ratio than riparian woodlands, but could be extensive if large linear distances are impacted.
Wildlife	Portions of this corridor traverse areas of low to moderate vernal pool habitat. These may support federally listed vernal pool fairy shrimp species and California tiger salamander. Canals and rice fields may also support the giant garter snake. Canals may support western pond turtles. Burrowing owls are also possible along most of the pipeline corridor.	ASN Unknown at this time. Impact to any of these resources would be significant.	Linear project offers potential for habitat establishment and/or enhancement through treatment of finished grade and surface.

Fisheries	New pipeline alignments would cross several potentially fish-bearing streams, including Dry Creek and Pleasant Grove Creek.	LME	Need to investigate: 1) engineering design features to determine how stream crossings will be addressed; and 2) determine the presence/absence of anadromous and/or resident fish for potential pipeline construction disturbances.

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(d) Treated Water Pipelines (cont'd)			
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term affects anticipated.	ME with mitigation	Implement BMPs during construction.
Recreation	None anticipated.		
Land Use	None anticipated.	ME	No mitigation required.
(e) Operations			
Botany	None anticipated.	ME	No mitigation required.
Wildlife	Nocturnal lighting and facility-generated noise is likely to have an insignificant effect on wildlife in this area.	ME	No mitigation required.
Fisheries	Anadromous and Resident Riverine Species – Changes in flow, water temperature, and reduced early lifestage salmon survival. (Note: Changes in the timing, magnitude, and frequency of these parameters, as they occur throughout the CVP/SWP system, are unknown without hydrologic modeling.) Warmwater Reservoir Fisheries – Changes in reservoir water surface elevation and littoral habitat affecting spawning and rearing. Reservoirs under consideration include: Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. Coldwater Reservoir Fisheries – Changes in reservoir storage impacting long-term population levels. Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. There is a potential to increase the volume of effluent discharge to fish-bearing streams.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Need to determine specifics of the operational pattern of the diversion (e.g., will water be withdrawn at a constant rate, will timing be annual or seasonal, what other conditions associated with the diversion could have an influence on CVP/SWP operations). This alternative's location in the watershed likely would result in a reduced amount of potential impacts to riverine fisheries resources relative to other alternatives because this section of the Sacramento River primarily is used as a migration corridor. Most of the anadromous fish spawning and rearing habitat is located upstream and would not likely be affected by diverting at this site.

Table D-A2. Summary of Phase 1 Environmental Evaluation for Sankey Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(e) Operations (cont'd)			
Water Quality	Reduced downstream dilution potential for pollutants and surface water quality parameters of concern.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Because water quality in the Sacramento River is generally considered to be of lesser quality than water from the lower American River, potential water quality impacts from this alternative could be of smaller consequence relative to other alternatives under consideration.
Recreation	None anticipated.	ME	
Land Use	None anticipated.	ME	
(f) Elkhorn/Elverta Module - See Elkhorn/Elverta Diversion Alternative			

Categories of potential magnitude of effects and mitigation:

LME Potentially Large Magnitude of Effect
ME Potentially Small Magnitude of Effect
ASN Additional Study Needed

Table D-3. Summary of Phase 1 Environmental Evaluation for Feather River Diversion Alternative

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities			
Botany	There are no records of special-status species occurring in the diversion footprint. However, the Delta tule pea — a federal species of concern — was observed at this site during field reconnaissance. One special-status plant species is known to occur within this quad: dwarf downingia. This species occurs in a valley and foothill grassland, and vernal pools. This footprint would impact extensive high-quality riparian woodland and marsh habitat. Numerous other sensitive wetland/riparian plant species have potential to occur in this area.	LME	Extensive mitigation would be required for impacts to riparian woodlands and adjacent marsh wetland. This area has high potential to support sensitive plant species. It is unlikely that feasible mitigation would be possible for the anticipated impacts to the ecosystem.
Wildlife	The proximity of this site to an established wildlife preserve known to support significant sensitive biological resources has the potential for greater levels of significant terrestrial biological resource impacts than any of the other alternative diversions. Potentially significant impacts to wildlife area and its inhabitants, including Swainson's hawk, giant garter snake, valley elderberry longhorn beetle, bank swallows, western pond turtle.	LME	MI Potential impacts to terrestrial biological resources could be difficult and expensive to mitigate. This site has greater ecological diversity and thus, more potential issues than other alternative diversion sites. In addition to biological impacts, development of this site could bring significant public opposition, particularly from those associated with concerns for biological resource protection.
Fisheries	1) Entrainment/impingement; and 2) disturbance of SRA habitat.	LME or ME with mitigation	1) Incorporate fish screen into design features; and 2) need to investigate: (a) engineering design features; and (b) quality of SRA habitat, amount of construction-related disturbance, and potential mitigation requirements. (Higher quality SRA habitat at this location may require extensive mitigation relative to other alternatives under consideration.)

Table D-A3. Summary of Phase 1 Environmental Evaluation for Feather River Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements /Avoidance Options
(a) Diversion Facilities (cont'd)			
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) Construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term effects anticipated.	ASN	Implement BMPs during construction.
Recreation	The Feather River Wildlife Area is immediately adjacent to the diversion site. Bobelaine Ecological Reserve, located within 1 mile upstream of the diversion has 5 miles of signed and maintained trails that run through climax oak grassland, open grassland, sloughs, and a lake, and through mixed riparian woodland. Facilities also include a portable toilet, parking for vehicles and school buses, and three picnic areas with running water. An informal gravel walking path is at the top of the levee closest to the south bank of the river. Any potential effect on the Bobelaine Ecological Reserve would be considered a significant impact	LME	Because of the dependence of the recreational experience on an ecological community at the reserve, mitigation that would require recreation of the community would be difficult or impossible.
Land Use	None anticipated.	ME	No mitigation required.
(b) Raw Water Pipelines			
Botany	There are no known occurrences of special-status plants within the pipeline alignment. Special-status plants occurring in quads crossed by the pipeline are dwarf downingia, Boggs Lake hedge-hyssop, big-scale balsamroot, hispid bird's-beak, legenere, Ahart's dwarf rush, Brandegee's clarkia. These species occur in a variety of habitats, including vernal pools, grasslands, marsh, chaparral, and woodlands. The habitat in this alignment may include wetlands such as drainage ditches, stream crossings, and vernal pools.	ASN	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be planned to avoid impacting vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches would likely be at a lower ratio than for riparian woodlands but could be extensive if large linear distances are impacted.

Table D-A3. Summary of Phase 1 Environmental Evaluation for Feather River Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/ Avoidance Options
(b) Raw Water Pipelines (cont'd)			
Wildlife	Much of this corridor is used for agriculture, but areas along this corridor support riparian and standing water habitats, including rice fields, and thus have potential for the federally threatened giant garter snakes, western pond turtles, and burrowing owls.	ASN Potentially significant, but proximity of the pipeline to paved roads and the limited footprint may help reduce the level of potential significance.	Treatment of finished grade and surface of the pipeline construction area offer opportunities to establish and/or enhance habitat for sensitive species and vernal pools.
Fisheries	None anticipated.	ME	None anticipated.
Water Quality	None anticipated.	ME	None anticipated.
Recreation	None anticipated.	ME	None anticipated.
Land Use	None anticipated.	ME	No mitigation required.
(c) Water Treatment Facilities			
Botany	There are no records of special-status species occurring in the WTP footprint. One special-status plant species is known to occur within this quad: dwarf downingia. This species occurs in a valley and foothill grassland, and vernal pools. The habitat at the proposed location of the water treatment facility is unknown but is not likely to support vernal pools.	ME	Mitigation not likely to be required.
Wildlife	Likely to be limited.	ME	Habitat enhancement may be possible to offset potentially significant impacts if surplus lands are available for such treatment.
Fisheries	None anticipated.	ME	None anticipated.
Water Quality	None anticipated.	ME	None anticipated.
Recreation	None anticipated.	ME	None anticipated.
Land Use	The proposed WTP would be located in an area composed of agricultural and rural residential uses.	ME	

Table D-A3. Summary of Phase 1 Environmental Evaluation for Feather River Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements /Avoidance Options
(d) Treated Water Pipelines			
Wildlife	Segments of this corridor will likely traverse areas with low to moderate density of vernal pools. These areas are present along the northern edge of Nicolaus Road and along the north-south alignment adjacent to Fiddyment Road. The potential exists for vernal pool fairy shrimp species, and the Californian tiger salamander is present. Giant garter snakes, valley elderberry longhorn beetle habitat, western pond turtles, and burrowing owls are also potential inhabitants of these areas.	ASN Possibly significant if these resources are present and are likely to be impacted.	Treatment of finished grade and surface of the pipeline construction area offer opportunities to establish and/or enhance habitat for sensitive species and vernal pools.
Fisheries	The new pipeline alignment would cross several potentially fish-bearing streams, including Dry Creek, Pleasant Grove Creek, Markham Ravine, Auburn Ravine, and Orchard Creek.	LME	Need to investigate: 1) engineering design features to determine how stream crossings will be addressed; and 2) determine the presence/absence of anadromous and/or resident fish for potential pipeline construction disturbances.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term affects anticipated.	ME with mitigation	Implement BMPs during construction.
Recreation	None anticipated.	ME	
Land Use	None anticipated. .	ME	
(e) Operations			
Botany	Not likely to be significant.	ME	No mitigation would be required.
Wildlife	Nocturnal lighting and operation-generated noise may adversely affect special status wildlife species. The potential level of impact will need careful review because of the diversity and high population levels of sensitive wildlife receptors.	ME	

Table D-A3. Summary of Phase 1 Environmental Evaluation for Feather River Diversion Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(e) Operations (cont'd)			
Fisheries	Anadromous and Resident Riverine Species— Changes in flow, water temperature, and reduced early lifestage salmon survival. (Note: Changes in the timing, magnitude and frequency of these parameters, as they occur throughout the CVP/SWP system, are unknown without hydrologic modeling.) Warmwater Reservoir Fisheries – Changes in reservoir water surface elevation and littoral habitat affecting spawning and rearing. Reservoirs under consideration include Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. Coldwater Reservoir Fisheries – Changes in reservoir storage impacting long-term population levels. Reservoirs under consideration include: Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. There is a potential to increase the volume of effluent discharge to fish-bearing streams.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Need to determine specifics of the operational pattern of the diversion (e.g., will water be withdrawn at a constant rate, will timing be annual or seasonal, what other conditions associated with the diversion could have an influence on CVP/SWP operations).
Water Quality	Reduced downstream dilution potential for pollutants and surface water quality parameters of concern. Extensive raw water pipeline length may affect raw water pipeline operations and maintenance.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. (Because water quality near the mouth of the Feather River is generally considered to be of lesser quality than water from the lower American River, potential water quality impacts from this alternative could be of smaller consequence relative to other alternatives under consideration.)
Recreation	None anticipated.	ME	
Land Use	None anticipated.	ME	
(f) Elkhorn/Elverta Module - See Elkhorn/Elverta Diversion Alternative			

Categories of potential magnitude of effects and mitigation:

LME Potentially Large Magnitude of Effect
ME Potentially Small Magnitude of Effect
ASN Additional Study Needed

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities			
Botany	The footprint of the pump station would not change, so there would be no construction impacts. Mitigation already addressed through pre-approved project.	ME	Additional mitigation not likely to be required for construction.
Wildlife	Addition of new pumping capacity will be within the footprint of the planned, permitted, and mitigated development, impacts should be limited	ASN	N/A
Fisheries	Entrainment/Impingement.	LME or ME with mitigation	None required. (Fish screen already has been incorporated into PCWA's design features for the permanent pump station facilities.)
Water Quality	1) Absence of construction-related activities would result in no disturbance or short-term impacts; and 2) no long-term affects anticipated.	ASN	None identified at this time.
Recreation	The American River Pump Station (ARPS) is within the 35,000-acre Auburn State Recreation Area (Auburn SRA). Current recreational uses in the vicinity of the intake include hiking, horseback riding, mountain biking, fishing, swimming, rafting, and kayaking. Formal recreation facilities include trails and signage, and a 70-vehicle parking area is planned about 1-2 miles downstream. Construction of the permanent ARPS has been approved and mitigation measures for recreation impacts have been incorporated in that project. Because of a potential reduction in water flows as a result of the project in extremely dry years, additional study is needed to determine any potential effects.	ASN	ASN

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Land Use			
	Land uses at and around the American River site include an existing seasonal pump station and pipeline; the partially completed Auburn Dam facilities; and unpaved access roads cut into the hillside. Large expanses of rugged, forested open space border the site, and the recreational trails of Auburn State Recreation Area traverse the surrounding hillsides. Farther away, some residential development is situated on the neighboring hills. The proposed diversion facilities are not expected to adversely affect these land uses or conflict with existing plans and policies for the area.	ME	No mitigation required.
(b) Water Treatment Facilities			
Botany	There are no special status-plant species shown on existing databases within the WTP footprint.	ME	Mitigation not likely to be necessary.
Wildlife	Valley elderberry longhorn beetle habitat, western pond turtles and several bird species of special concern may be present in the vicinity of the Phase 2 Expansion facility and the Sunset WTP site.	ASN Potentially locally significant if these sensitive resources are present.	Mitigation is possible; habitat enhancement is also possible, if needed to compensate for project impact.s
Fisheries	No constraints anticipated.	ME	None identified at this time.
Water Quality	1) Absence of construction-related activities would result in no disturbance or short-term impacts; and 2) no long-term affects anticipated.	ME	None identified at this time.
Recreation	No constraints anticipated.	ME	
Land Use	No significant land use impacts are anticipated.	ME	None identified at this time.

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(c) Treated Water Pipelines			
	The planned pipeline alignment would be adjacent to or intersect a known occurrence of Brandegee's clarkia – a chaparral, cismontaine woodland species. Special-status plants occurring in quads crossed by the pipeline are dwarf downingia, Boggs Lake hedge-hyssop, big-scale balsamroot, hispid bird's-beak, legenere, Brandegee's clarkia, and dubious pea. These species occur in a variety of habitats, including vernal pools, grasslands, marsh, chaparral, and woodlands. The habitat in this alignment may include wetlands such as stream crossings, drainage ditches, and vernal pools. A dense distribution of vernal pools occurs at the west end of the pipeline. Other special-status species with potential to occur in the project area are predominantly associated with ultramafic soils and include Stebbins's morning-glory and Pine Hill ceanothus. However, much of the area is included in proposed developments that have either been approved or are in the process of approval in the City of Roseville; associated mitigation measures would be incorporated in those project approvals. In addition, the pipeline alignment could be moved within the corridor to avoid areas of sensitive species.	ME	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be sited to avoid impacting Brandegee's clarkia and vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches would likely be at a lower ratio than riparian woodlands but could be extensive if large linear distances are impacted.

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(c) Treated Water Pipelines (cont'd)			
Wildlife	The pipeline corridor between the Phase 2 WTP and Sunset WTP may affect habitats for the valley elderberry longhorn beetle, western pond turtle, and burrowing owl. The corridor between the Sunset WTP and west of Highway 65 will traverse areas mapped by the Placer Legacy as moderate and high-density vernal pool habitat. These areas may support federally threatened species of vernal pool fairy shrimp species, California tiger salamander, giant garter snakes, and burrowing owls. Much of this area is targeted for planned development. These developments may have mitigation incorporated into their development plans, which could potentially reduce required pipeline mitigation significantly.	ME Potentially significant, particularly if high and moderate density vernal pool habitat is disrupted. The proximity of the pipeline to existing roads will be mitigating condition.	Treatment of finished grade and surface of the pipeline construction area offer opportunities to establish and/or enhance habitat for sensitive species and vernal pools. Lost habitat would have to be replaced at a ratio required by the USFWS and California Department of Fish and Game (CDFG), generally 3:1.
Fisheries	New pipeline alignment would cross several potentially fish-bearing streams, including Pleasant Grove Creek and Clover Valley Creek near Newcastle.	LME	Need to investigate: 1) engineering design features to determine how stream crossings will be addressed; and 2) determine the presence/ absence of anadromous and/or resident fish for potential pipeline construction disturbances.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term affects anticipated.	ME with mitigation	Implement BMPs during construction.
Recreation	None anticipated.	ME	
Land Use	None anticipated.	ME	No mitigation required.
(d) Operations			
Botany	There may be some downstream impacts to riparian vegetation from project operations. Decrease in flows could decrease scour and result in riparian vegetation recruitment downstream. Long-term impacts to vegetation could be different.	ASN	Further study needed on operational impacts to determine potential impacts.

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(d) Operations (cont'd)			
Wildlife	Reduced river flows and changed flow regimes may benefit early establishment of riparian habitat and thereby benefit wildlife. However, changed geomorphology as a result of project may affect long-term riparian habitat recruitment.	ASN	
Fisheries	Anadromous and Resident Riverine Species –Changes in flow, water temperature, and reduced early lifestage salmon survival. (Note: Changes in the timing, magnitude, and frequency of these parameters as they occur throughout the CVP/SWP system are unknown without hydrologic modeling.) Warmwater Reservoir Fisheries – Changes in reservoir water surface elevation and littoral habitat affecting spawning and rearing. Reservoirs under consideration include Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. Coldwater Reservoir Fisheries – Changes in reservoir storage impacting long-term population levels. Reservoirs under consideration include Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. There is a potential to increase the volume of effluent discharge to fish-bearing streams.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Need to determine specifics of the operational pattern of the diversion (e.g., will water be withdrawn at a constant rate, will timing be annual or seasonal, what other conditions associated with the diversion could have an influence on CVP/SWP operations). This alternative's location in the watershed likely would result in greater potential impacts to riverine fisheries resources relative to alternatives along the Sacramento River and the Feather River because the entire 23-mile length of the lower American River is used by anadromous fish for migration, spawning, and rearing.
Water Quality	1) Reduced downstream dilution potential for pollutants and surface water quality parameters of concern; and 2) increased mobilization of groundwater contaminants.	ASN Unknown without hydrologic modeling, additional analysis required.	Not yet able to be identified. Because water quality in the lower American River is generally considered to be of better quality than water from the Sacramento River, potential water quality impacts from this alternative could be of greater consequence relative to other alternatives under consideration.

Table D-A4. Summary of Phase 1 Environmental Evaluation for ARPS Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
Recreation	Although significant impacts to recreation activities or facilities are not anticipated, previously expressed concern of recreationists in this area about potential impacts will necessitate additional study.	ASN	ASN
Land Use	None anticipated.	ME	None anticipated.
(e) Elkhorn/Elverta Module - See Elkhorn/Elverta Diversion Alternative			

Categories of potential magnitude of effects and mitigation:

LME Potentially Large Magnitude of Effect
ME Potentially Small Magnitude of Effect
ASN Additional Study Needed

Table D-A5. Summary of Phase 1 Environmental Evaluation for Folsom Dam Alternative

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities			
Botany	No special-status plant species are shown on existing databases within the diversion footprint. Several-special status plants are known to occur in this quad, including pincushion navarretia, and Sacramento Orcutt grass. These species occur in vernal pools (not likely to occur in diversion facility footprint). The habitat in this primarily oak woodland. Field recon and habitat mapping for American River Watershed Study show this area as primarily developed. Because footprint would not impact habitat in which special-status plants occur, these species are not likely to be impacted.	ME	Mitigation not likely to be required.
Wildlife	Little or no terrestrial impact other than construction-related noise, dust, traffic, etc.	ME	
Fisheries	Entrainment/impingement.	ME with mitigation	Incorporate fish screen into design features.
	Water Quality	ASN	Implement BMPs during construction.
Recreation	Folsom Reservoir is entirely within the Folsom Reservoir State Recreation Area (Folsom SRA). The lower American River from Nimbus Dam to its confluence with the Sacramento River is designated a “recreational river” by the federal and state governments under the National Wild and Scenic Rivers Act. Approximately 29 miles of the lower American River from Folsom Dam to the confluence with the Sacramento River is included in the city of Sacramento’s American River Parkway Plan. Because of a potential reduction in water flows as a result of the project in extremely dry years, additional study is needed to determine any potential effects.	ASN	ASN

Table D-A5. Summary of Phase 1 Environmental Evaluation for Folsom Dam Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(a) Diversion Facilities (cont'd)			
Land Use	Surrounding land uses include Folsom Reservoir State Recreation Area, Folsom Dam Road, and residential and commercial development in the Granite Bay community of Placer County and the City of Folsom. An additional intake at Folsom Dam is not expected to adversely affect these land uses or conflict with existing plans and policies for the area.	ME	No mitigation required.
(b) Raw Water Pipelines			
Botany	Very small, disturbed area.	ME	Mitigation would not be required.
Wildlife	Limited impact within an existing disturbed corridor.	ME	N/A
Fisheries	None anticipated.		None anticipated.
Water Quality	1) Construction-related disturbance may cause temporary increase in turbidity; 2) construction-related groundwater dewatering may cause temporary decrease in water quality; and 3) no long-term affects anticipated.	ASN	Implement BMPs during construction.
Recreation	Additional study needed.	ASN	
Land Use	None anticipated.	ME	No mitigation required.

Table D-A5. Summary of Phase 1 Environmental Evaluation for Folsom Dam Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(c) Water Treatment Facilities			
Botany	No special-status plant species are shown on existing databases within the treatment facility footprint. Several special-status plants are known to occur in this quad, including pincushion navarretia, and Sacramento Orcutt grass. These species occur in vernal pools (not likely to occur in diversion facility footprint). The habitat is primarily oak woodland. Field reconnaissance and habitat mapping for the American River Watershed Study show this area as primarily developed. Because the footprint would not impact habitat in which special-status plants occur, these species are not likely to be impacted.	ME	Mitigation not likely to be required.
Wildlife	There are no special-status wildlife species in the WTP area, so no impacts are anticipated.	ME	None anticipated.
Fisheries	None anticipated.	ME	None anticipated.
Water Quality	1) Absence of construction-related activities would result in no disturbance or short-term impacts; and 2) no long-term affects anticipated.	ME	None anticipated.
Recreation	None anticipated.	ME	None anticipated.
Land Use	None anticipated, but further study required to determine consistency with applicable plans and policies.	ASN	None anticipated.

Table D-A5. Summary of Phase 1 Environmental Evaluation for Folsom Dam Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(d) Treated Water Pipelines			
Botany	No special-status species are shown on existing databases within the alignment. Several special-status plant species are known to occur in quads crossed by the pipeline: dwarf downingia, Boggs Lake hedge-hyssop, big-scale balsamroot, hispid bird's-beak, legenere, Sanford's arrowhead. These species occur in a variety of habitats, including vernal pools, grasslands, and marsh. The eastern terminus of the pipeline is developed. The habitat in the other portions of this alignment may include wetlands such as stream crossings, drainage ditches, and vernal pools.	ME	Mitigation would be required for any riparian/wetland and vernal pool impacts. If alignment can be planned to avoid impacting vernal pools, mitigation requirements may be minimized. Mitigation requirements for unavoidable streamside crossings and drainage ditches would likely be at a lower ratio than riparian woodlands, but could be extensive if large linear distances are impacted.
Wildlife	Expansion of existing facilities will likely only have limited, localized construction-related noise, dust, traffic impacts.	ME	None anticipated.
Fisheries	New pipeline alignments would cross several potentially fish-bearing streams, including Pleasant Grove Creek and Dry Creek.	LME	Need to investigate: 1) engineering design features to determine how stream crossings will be addressed; and 2) determine the presence/ absence of anadromous and/or resident fish for potential pipeline construction disturbances.
Water Quality	None anticipated.	ME	None anticipated.
Recreation	No constraints anticipated.	ME	
Land Use	None anticipated.	ME	No mitigation required.
(e) Operations			
Botany	None expected.	ME	Mitigation would not be required.
Wildlife	Impact to wildlife is expected to be minimal as the project is likely to have insignificant incremental increases in noise and nocturnal lighting.	ME	Mitigation would likely be minimal.

Table D-A5. Summary of Phase 1 Environmental Evaluation for Folsom Dam Alternative (cont'd)

Resource Area	Potential Environmental Consequences	Magnitude of Effect	Mitigation Requirements/Avoidance Options
(e) Operations (cont'd)			
Fisheries	Anadromous and Resident Riverine Species – Changes in flow, water temperature, and reduced early lifestage salmon survival. (Note: Changes in the timing, magnitude and frequency of these parameters, as they occur throughout the CVP/SWP system, are unknown without hydrologic modeling.) Warmwater Reservoir Fisheries – Changes in reservoir water surface elevation and littoral habitat affecting spawning and rearing. Reservoirs under consideration include Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. Coldwater Reservoir Fisheries – Changes in reservoir storage impacting long-term population levels. Reservoirs under consideration include Shasta Reservoir, Keswick Reservoir, Trinity Reservoir, Oroville Reservoir, Folsom Reservoir, and Lake Natoma. There is a potential to increase the volume of effluent discharge to fish-bearing streams.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Need to determine specifics of the operational pattern of the diversion (e.g., will water be withdrawn at a constant rate, will timing be annual or seasonal, what other conditions associated with the diversion could have an influence on CVP/SWP operations). This alternative's location in the watershed likely would result in greater potential impacts to riverine fisheries resources relative to alternatives along the Sacramento River and the Feather River. The entire 23-mile length of the lower American River is used by anadromous fish for migration, spawning, and rearing.
Water Quality	1) Reduced downstream dilution potential for pollutants and surface water quality parameters of concern; and 2) increased mobilization of groundwater contaminants.	ASN Unknown without hydrologic modeling; additional analysis required.	Not yet able to be identified. Because water quality in the lower American River is generally considered to be of better quality than water from the Sacramento River, potential water quality impacts from this alternative could be of greater consequence relative to other alternatives under consideration.
Recreation	None anticipated.	ME	None anticipated.
Land Use	None anticipated.	ME	None anticipated.
(f) Elkhorn/Elverta Module - See Elkhorn/Elverta Diversion Alternative			

Categories of potential magnitude of effects and mitigation:

LME Potentially Large Magnitude of Effect
ME Potentially Small Magnitude of Effect
ASN Additional Study Needed