

4. ALTERNATIVES TO THE PROJECT

This chapter describes the environmental impacts of three alternatives to the proposed Project, including the California Environmental Quality Act (CEQA) mandated No Project Alternative and two “build” alternatives. This chapter also compares each alternative with respect to meeting the Project objectives, and identifies the environmentally superior alternative.

4.1 GENERAL CEQA REQUIREMENTS

CEQA requires an Environmental Impact Report (EIR) to consider a reasonable range of alternatives to the proposed project. The alternatives considered should feasibly attain most of the basic objectives of the project, but will avoid or substantially lessen any of the identified significant environmental effects (CEQA Guidelines Section 15126.6(a)).

CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (Section 15126.6(a)).
- An EIR is not required to consider alternatives that are infeasible (Section 15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project (Section 15126.6(b)).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (Section 15126.6(c)).
- The EIR should briefly describe the rationale for selecting the alternatives to be discussed (Section 15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (Section 15126.6(d)).

- The specific alternative of “no project” shall also be evaluated along with its impact. The purpose is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (Section 15126.6(e)(1)).
- If the environmentally superior alternative is the “No Project” Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (Section 15126.6(e)(2)).

4.2 RELATIONSHIP TO PROJECT OBJECTIVES

The principal objectives of the Putah Creek Restoration Projects – Upper Reach Program, are summarized in **Table 4-1**. These objectives provide benchmarks for the comparative alternatives analysis.

Table 4-1 Project Objectives

GOAL: ENHANCE HABITATS FOR DELTA NATIVE FISHES AND WILDLIFE WITHIN THE PUTAH CREEK RESTORATION PROJECT UPPER REACH PROGRAM	
Objective 1	Provide for effective fish passage for essential life history stages – i.e., structural passage and recruitment and emigration flows – on Putah Creek above the Yolo Bypass Wildlife Area (YBWA) to upstream spawning grounds below the Putah Diversion Dam (PDD)
Objective 2	Restore, enhance, and maintain spawning and rearing physical habitats and processes on Putah Creek below the PDD
Objective 3	Provide necessary flow regimes and water quality conditions to support anadromous and other native Delta fishes on Putah Creek
Objective 4	Incorporate natural planform and cross sectional geomorphology that supports structural habitat complexity and natural hydrologic, geomorphic, and ecological processes
Objective 5	Maintain and enhance native riparian vegetation communities along Putah Creek below the PDD
Objective 6	Maintain a balance of existing fish and wildlife habitats, hunting, fishing, wildlife viewing, and other public benefits, including water supply and agriculture, between the PDD and YBWA

4.3 ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER EVALUATION

A broad range of alternatives was considered for the restoration of Putah Creek. Two of these alternatives (restoration of the pools only, and a reduced-restoration alternative) were carried forward for further review in this EIR. The following alternatives were considered and eliminated from further evaluation because of cost, feasibility, and/or lack of effectiveness in meeting the Project objectives.

- A full restoration alternative from Lake Berryessa to the YBWA was considered and eliminated because it would have required reconfiguration of the PDD and impacted an existing high-value public park, Lake Solano County Park, rendering it very costly, as well as technically and politically challenging.
- **Bank Protection Only Alternative:** The most common means of channel rehabilitation and restoration is bank protection, typically performed with extended rock revetment (rip-rap). This approach has been used in several locations in California and the Sacramento River Watershed in particular. This alternative would be aimed at preventing erosion and flow problems and improving habitat water quality to fulfill Project Objective 2 (to restore, enhance, and maintain spawning and rearing physical habitats and processes in the Project Area).

Under this alternative the stream would be mapped on an annual or semi-annual basis for locations where bank erosion is occurring and assessing the relative rate of bank loss over time, followed by implementation of appropriate bank stabilization measures (such as rock revetments) at identified problematic areas locations. A spot-repair maintenance program also would be established.

The rock revetments would protect the stream bank from further erosion and would mostly follow the existing bank line. This work would require sloping (cutting back) the existing near-vertical eroding bank to a slope that would allow the stable placement of rock. The rock footing would be extended to a depth of at least 5 feet below the existing average thalweg (low point of the stream) to prevent undercutting during high flows. The average top of armor elevation would be 3 feet (above the Ordinary High Water Mark), and the minimum thickness would be 3 feet.

This alternative would reduce, but not entirely avoid bank failures. It would not address the “underfit stream” impacts on fish habitat and water quality, nor would it remedy the adverse effects on habitat and water quality of the existing large, deep pools. In addition, extending the rock revetment beyond the limited minor bank protection proposed as part of the Project would incur significantly higher costs and result in the potential for significantly more environmental degradation than the alternatives being considered, and has not been demonstrated to be more effective than the proposed approach.

- **Reoperation of the Solano Project:** This alternative involves reoperation of the Solano Project to modify the flow regime in Putah Creek. It is aimed at improving flow, habitat, and water quality conditions to meet Objective 3 (to provide necessary flow regimes and water quality conditions to support anadromous and other native Delta fishes on Putah Creek). This alternative is legally infeasible because flows on

Putah Creek are subject to the flow regime instituted under the legally binding Putah Creek Accord, which took several years to negotiate and would be extremely difficult to modify in any reasonable time frame (see Section 3.1, *Hydrology*, and Chapter 2, *Project Description*, for additional information on the Putah Creek Accord).

- **Establish a Regional Park Associated with Restoration:** There are several existing parks and public access areas along the creek: Lake Solano County Park immediately upstream of the proposed Project, a large city park in the Creek’s upper reaches in Winters, a large public restoration area at Mace Road, and a limited-access Wildlife Refuge at the downstream end of the Project Area. Additional land and waterway area could be added to this existing network of recreational and open space areas, completing a continuous or nearly continuous regional park. This alternative is aimed at fulfilling Objective 6 to maintain a balance of existing fish and wildlife habitats, hunting, fishing, wildlife viewing, and other public benefits, including water supply and agriculture, within the Project Area. However, no funding exists for the establishment of a park, no parties are likely to be willing to take the liability involved, and expanded public access may result in conflicts with adjacent land uses.

4.4 ALTERNATIVES EVALUATED IN THIS EIR

Because the Putah Creek Restoration Project Program EIR (PEIR) is a Program-level EIR, all alternatives are described and evaluated at a program level. The focus is on alternatives that avoid or minimize significant environmental impacts of the proposed Project. As detailed below, this EIR addresses the CEQA-mandated No Project Alternative, as well as two “build” alternatives; Pool Filling Only and Reduced-Project Alternative.

4.5 ALTERNATIVES ANALYSIS

4.5.1 Alternative 1 – No Project

Description

The No Project Alternative analyzes the environmental effects of the future conditions along the Project reach absent the Project. This alternative assumes that the Project Area would remain in its current condition as a degraded-habitat stream corridor. Unlike the proposed Project, the No Project Alternative would not catalyze funding by creating a series of “shovel-ready” projects. Although some restoration projects may occur in the proposed Project’s absence, but the number of likely future restoration projects and their scale is dependent on episodic funding which is not predictable. This alternative assumes nominal restoration but ongoing implementation of existing maintenance

activities such as irrigation to establish native vegetation, management of non-native vegetation (including manual and mechanical removal and chemical control), and maintenance of long-term access points (see Table 2-2 in Chapter 2).

Environmental Impacts

The following discussion analyzes potential effects of the No Project Alternative and compares them to impacts of the proposed Project.

Hydrology

Potentially significant short-term construction impacts to erosion and stormwater drainage systems would be avoided under this alternative. However, long-term bank stabilization proposed as part of the Project may not be implemented.

Water Quality

Potentially significant short-term water quality impacts (increased turbidity) from Project construction activities and post-restoration (until bank vegetation is re-established) would not occur under this alternative. Long-term Project benefits (including increased dissolved oxygen and decreased water temperature due to conversion of overly large pools to new riffles and runs) would either not occur, or would occur in a more limited, piecemeal fashion.

Geology and Soils, and Mineral Resources

As with the proposed Project, no impacts related to erosion, geologic or seismic hazards, or bank instability) would occur under this alternative because no restoration activities would occur.

Biological Resources

Potentially significant impacts to special status wildlife species associated with restoration would be eliminated under this alternative because the Project Area would not be subject to disturbance from restoration or maintenance activities. Under this alternative, existing habitat deterioration would continue to adversely affect biological resources in parts of the Project Area, depending on funding available for maintenance and periodic restoration activities.

Air Quality and Greenhouse Gas Emissions

This alternative would reduce or eliminate the Project's air pollutant and greenhouse gas (GHG) emissions associated with construction equipment and traffic, and soil

disturbance, depending on funding available for maintenance and periodic restoration activities.

Noise

The short-term impacts of noise generated by restoration activities would not occur under this alternative. Therefore, this alternative would reduce or eliminate construction noise, depending on funding available for maintenance and periodic restoration activities.

Hazards and Hazardous Materials

The Project's potential short-term impacts associated with release of hazardous materials from construction equipment and other restoration activities and from fire hazards would be reduced or eliminated under this alternative, depending on funding available for maintenance and periodic restoration activities.

Land Use and Agricultural Resources

As with the proposed Project, the No Project Alternative would have **no impact** on land use, and no mitigation would be required.

The existing agricultural land adjacent to the creek would remain unaffected by construction activities under this alternative, resulting in **no impact** to agricultural resources.

Aesthetics

This alternative would eliminate or reduce impacts to visual resources compared to the Project, depending on funding available for maintenance and periodic restoration activities. However, the Project's long-term improvements to visual quality from the better-fit channel and associated new riparian vegetation in the channel would not occur, or be reduced, depending on funding available for maintenance and periodic restoration activities.

Recreation

This alternative would have reduced or no effects on formal or informal recreation, depending on funding available for maintenance and periodic restoration activities. The Project's construction-related impacts to recreation access in the Stevenson Bridge and UC Davis areas would be avoided. Existing recreation uses would continue.

Cultural Resources

Potentially significant but mitigable impacts to cultural or archaeological resources resulting from Project restoration activities would be eliminated or reduced under this alternative, depending on funding available for maintenance and periodic restoration activities.

Transportation/Traffic

Under Alternative 1, the Project's temporary construction traffic would be reduced or eliminated, depending on funding available for maintenance and periodic restoration activities.

Public Services

As with the proposed Project this alternative would not generate a need for new law enforcement facilities, fire protection facilities and equipment.

Utilities

The Project's potential impacts to stormwater drainage facilities and buried pipelines would not occur under this alternative, or would be reduced, depending on funding available for maintenance and periodic restoration activities.

Relationship of Alternative 1 to Project Objectives

This alternative would not fully meet any of the Project objectives. Degraded conditions associated with the deep pools would not be remedied, or may be partially remedied depending on funding available for maintenance and periodic restoration activities. Existing erosion and habitat degradation associated with non-native vegetation and invasive weeds would likely continue.

4.5.2 Alternative 2 – Pool Filling Only

Description

This alternative limits restoration activities to only re-contouring the channel to remove approximately 112.5 acres of wide, deep pools in the Project Area. These pools would be converted to stream or riparian habitat and are located in the Duncan-Giovannoni, Upper McNamara, Lower McNamara, Russell Ranch, Stevenson Bridge, Glide Ranch, Olmo-Hammond-UC Davis, Old Davis Road to Mace, Mace to Road 106A, and Road 106A to YBWA reaches. No Project-wide channel re-construction or restoration would occur. This alternative assumes nominal restoration but ongoing implementation of existing maintenance activities such as irrigation to establish native vegetation, management of

non-native vegetation (including manual and mechanical removal and chemical control), and maintenance of long-term access points (see Table 2-2 in Chapter 2).

Alternative 2 could feasibly accomplish significant restoration of areas with the worst aquatic habitat and water quality effects. The pools degrade habitat and water quality by creating areas of shallow, low-flow water exposed to sunlight, which warms the water to temperatures not conducive to native fishes, reduces the amount of dissolved oxygen in the water, and increases the amount of bioavailable mercury in the creek (see Section 3.2, *Water Quality*). Conversion of the pools to new stream riffles and runs would reverse these conditions, as well as increase the amount of spawning gravel available for salmonids, promote the growth of native fish species, and inhibit the spread of nonnative fish species (see Section 3.4, *Biological Resources*).

Environmental Impacts

The following discussion analyzes potential effects of **Alternative 2 – Pool Filling Only** compared to the proposed Project.

Hydrology

Alternative 2 would result in reduced, but still potentially significant, short-term construction impacts to hydrologic conditions, including erosion, siltation, and stormwater drainage systems compared with the proposed Project. These impacts would be similarly mitigated for both this alternative and the proposed Project, reducing this Alternative's impacts on hydrology to a **less-than-significant** level with mitigation, as with the proposed Project..

Water Quality

Alternative 2 would result in reduced, but still potentially significant, short-term construction impacts to water quality conditions, including siltation, and introduction of other potential pollutants into the creek. Mitigation related to erosion and sediment, mercury methylation, and herbicide use would still be required, reducing this Alternative's impacts on water quality to a **less-than-significant** level with mitigation, as with the proposed Project.. As with the proposed Project, filling the pools would improve water quality by increasing the amount of dissolved oxygen in the water, lowering water temperature, and decreasing the amount of bioavailable mercury in the creek. However, enhanced stream shading along non-pool reaches associated with the reduced stream channel and new riparian vegetation would not be achieved.

Geology and Soils, and Mineral Resources

Reduced construction activities under this alternative compared with the proposed Project would reduce erosion. Erosion control mitigation would still be required, reducing this Alternative's impacts on Geology and Soils to a **less-than-significant** level with mitigation, as with the proposed Project. As with the proposed Project, Alternative 2 would have **no impact** on Mineral Resources.

Biological Resources

Similar to the proposed Project, Alternative 2 would subject the Project Area to in-channel disturbance and restoration activities, leading to potentially significant impacts to several special status wildlife species including: song sparrow (Modesto Population), the Valley elderberry longhorn beetle (VELB), Swainson's hawk, western pond turtle, giant garter snake, pacific lamprey, and the white-tailed kite. Given the emphasis of this alternative on eliminating deep pools, the relative long-term aquatic impacts would be the same as the proposed Project: for instance, both would increase spawning gravels for salmonids and decrease water temperatures to promote native fish species. However, limiting restoration to the pool areas would not create as much improved fish-spawning habitat as would the proposed Project. In addition, the underfit creek's adverse effects on fish habitat and spawning access would not be improved outside of the pool areas. The proposed Project's temporary construction-related impacts to riparian habitat would be lessened, because less area would be subject to construction activities. Under the proposed Project, all biological impacts would be reduced to a less-than-significant level through the application of mitigation measures. Under Alternative 2, similar mitigation would also be required, resulting in a **less-than-significant** impact after mitigation.

Air Quality and Greenhouse Gas Emissions

The reduced construction activities from Alternative 2 would reduce emissions from mobile sources because fewer haul truck and worker commuter trips would be required, and in-channel construction equipment operations would be reduced. The reduced emissions from mobile sources and construction equipment with this alternative reduce generation of dust (particulate matter), other criteria pollutant emissions, and GHG emissions compared with the proposed Project. However, since construction activities would still occur, Best Management Practices (Mitigation 3.3-1) would still need to be implemented. Alternative 2 would result in a **less-than-significant** impact after mitigation.

Noise

Alternative 2 would result in the same construction noise levels as the proposed Project, but would reduce the number of noise receptors because construction areas would be more limited. Temporary construction noise increases would remain significant and unavoidable when construction is within 400 feet of residences, and construction noise would exceed Solano County noise standards if construction occurs within 150 feet of homes in Solano County. Thus, Alternative 2 would result in a **significant and unavoidable** noise impact during construction.

Hazards and Hazardous Materials

Potential short-term impacts associated with release of hazardous materials from construction equipment and other restoration activities, and from fire hazards would remain under this alternative, but would be reduced compared with the proposed Project because of the reduced level of construction activity. As with the proposed Project, all impacts related to hazards and hazardous materials would be reduced to a **less-than-significant** level through the application of the same mitigation measures identified in the DEIR.

Land Use and Agricultural Resources

This alternative would have similar but reduced impact associated with conflicts with adjacent land uses compared with the proposed Project.

Alternative 2 would result in a reduced, but still potentially **significant but mitigable** impact to agricultural resources, as with the proposed Project.

Aesthetics

This alternative would substantially reduce the amount of vegetation removal compared with the proposed Project, which would result in reduced aesthetic impacts from restoration activities than with the proposed project. Similar mitigation would likely be required to address potential aesthetic impacts in areas proposed for construction. As with the proposed Project, Alternative 2 would have a **less-than-significant** impact after mitigation.

Recreation

This alternative would have similar but reduced effects on formal and informal recreation compared with the Project. Construction-related impacts to recreation access in the Stevenson Bridge and UC Davis areas would still occur, as with the proposed

Project. This Alternative's impacts on Recreation resources would be reduced to a **less-than-significant** level with mitigation, as with the proposed Project..

Cultural Resources

Similar to the proposed Project, construction of Alternative 2 would subject the Project Area could result in significant impacts to any cultural or archaeological resources near the pool sites. However, because the area that would be disturbed would be less under this alternative than with the proposed Project, this impact would be less than with the proposed Project. As with the proposed Project, mitigation would result in a **less-than-significant** cultural resources impact.

Transportation/Traffic

Under both Alternative 2 and the proposed Project, all potential impacts related to transportation and traffic would be **less than significant**, and no mitigation measures would be required. However, Alternative 2 would reduce impacts related from temporary construction traffic and associated roadway hazards because it would reduce haul-truck trips, and be geographically more limited than the proposed Project.

Public Services

As with the proposed Project, Alternative 2 would have minimal impacts to police, fire and other public services providers.

Utilities

As with to the proposed Project, potential impacts to stormwater drainage facilities and to buried pipelines could occur under this alternative, but would it is likely that fewer facilities may be affected because this Alternative would have a reduced footprint. As with the proposed Project, all potentially significant impacts related to utilities would be mitigated to a **less-than-significant** level.

Relationship of Alternative 2 to Project Objectives

The alternative would meet a number of the Project's objectives: it would fulfill Objective 2 (restore, enhance, and maintain spawning and rearing physical habitats in the Project Area) by improving water quality and promoting much better habitat conditions for most, but not all of the native aquatic species.

However, Alternative 2 would not fully meet Objective 4 throughout the Project length (Incorporate natural channel morphology that supports structural habitat complexity and natural hydrologic, geomorphic, and ecological processes) because non-pool areas

with excessively wide channels would not be restored. In addition, this alternative would not provide as much floodplain habitat expansion as the proposed Project.

This alternative also would not fully fulfill Objective 5 (Maintain and enhance native riparian vegetation communities along the Project Area) because restoration areas would be reduced and the expanded weed control associated with the Project would not be implemented.

Additionally, this alternative would not meet the integrative restoration needs of the creek system as a whole. Therefore, Alternative 2 would be less consistent with project objectives than the proposed Project.

4.5.3 Alternative 3 – Reduced Project Alternative

Description

This alternative focuses all of the proposed potential restoration activities in the four reaches from PDD to the Interstate 505 (I-505) bridge (NAWCA/Mariani, Duncan-Giovannoni, Winters Putah Creek Nature Park, and East of I-505), a distance of approximately 4 miles. Alternative 3 construction activities would be completed over a 2-year period, 2 miles per year to accomplish the channel reconfiguration and vegetation management to cover essentially the entire footprint of the creek. The two-year time frame would allow for the most efficient use of equipment, time, and funding.

This alternative was selected instead of a downstream Reduced Project Alternative because upstream areas of the creek contain colder water and higher quality fisheries habitat than downstream, resulting in better project results with respect to fishery enhancement, and the most efficient use of funding. In addition, it is generally the best ecological practice to work upstream to downstream rather than vice-versa, where possible. This alternative would provide very high value aquatic and riparian habitat for the colder water species and a contiguous corridor for movement of terrestrial species, linking to the existing high quality PDD habitat to the Berryessa riparian corridor. This alternative could feasibly accomplish a number of Project Objectives while reducing the proposed Project's significant and unavoidable noise impacts.

Environmental Impacts

The following discussion analyzes potential effects of **Alternative 3 – Reduced Project Alternative** compared to the proposed Project.

Hydrology

Compared to the proposed Project, Alternative 3 would substantially reduce the area of grading and fill but would still require erosion-control mitigation. As with the proposed Project, impacts to hydrology from Alternative 3 would be **less than significant** after mitigation.

Water Quality

Compared to the proposed Project, Alternative 3 would reduce the total area where grading and fill would occur. However, it would still require mitigation related to erosion and sediment, mercury methylation, and herbicide use. As with the proposed Project, impacts on water quality from Alternative 3 would be **less than significant** after mitigation and, in the long-term, improved compared with existing conditions.

Geology and Soils, and Mineral Resources

Compared to the proposed Project, Alternative 3 would have greater short-term impacts on erosion and siltation because it concentrates all of the short-term project impacts in a narrower area over a shorter two-year timeframe. This could lead to cumulative sediment impacts. Similar erosion control mitigation would still be required, reducing this Alternative's impacts on Geology and Soils to a **less-than-significant** level with mitigation, as with the proposed Project. As with the proposed Project, Alternative 3 would have **no impact** on Mineral Resources.

Biological Resources

Similar to the proposed Project, Alternative 3 would subject the Project Area to in-channel disturbance and restoration activities, leading to potentially significant impacts to several special status wildlife species including: song sparrow (Modesto population), the Valley elderberry longhorn beetle (VELB), Swainson's hawk, western pond turtle, and the white-tailed kite. However, a smaller area than the proposed Project (4 acres rather than 24.2 miles) would be potentially affected under Alternative 3.

This alternative also would eliminate the deep pools in the restored reaches and have positive long-term aquatic impacts such as increasing spawning gravels for salmonids and decreasing water temperatures to promote native fish species, but these positive effects would also be limited to a smaller area.

As with the proposed Project, all biological impacts would be reduced to a less-than-significant level through the application of mitigation measures. Under Alternative 3, similar mitigation would also be required, resulting in a **less-than-significant** impact after mitigation.

Air Quality and Greenhouse Gas Emissions

The reduced construction activities from Alternative 3 would reduce emissions from mobile sources because fewer haul truck trips and worker commuter trips would be required. This alternative would also reduce emissions from construction equipment because less equipment would be needed and the needed equipment would be used for a shorter duration compared with the proposed Project. However, since construction activities would still occur, Best Management Practices (Mitigation Measure 3.3-1) would still need to be implemented. Alternative 3 would result in a **less-than-significant** impact after mitigation, as would the proposed Project.

Noise

Alternative 3 would result in the same construction noise levels as the proposed Project, but the reduced construction corridor would substantially reduce the number of receptors at which impacts would occur. Temporary construction noise increases would remain significant and unavoidable when construction is within 400 feet of residences, and construction noise would exceed Solano County noise standards if construction occurs within 150 feet of homes in Solano County. Thus, Alternative 3 would result in a **significant and unavoidable** noise impact, as would the proposed Project.

Hazards and Hazardous Materials

Potential short-term impacts on the Project Area associated with release of hazardous materials from construction equipment and other restoration activities and from fire hazards would remain under this alternative. As with the proposed Project, all impacts related to hazards and hazardous materials would be reduced to a less-than-significant level through the application of mitigation measures.

Land Use and Agricultural Resources

This alternative would have similar but reduced impact associated with conflicts with adjacent land uses compared with the proposed Project.

Alternative 3 would result in a **significant but mitigable** impact to agricultural resources, as with the proposed Project, but the acreage that could be affected by this alternative would be reduced compared with the Project.

Aesthetics

This alternative would remove less vegetation than the proposed Project, which would result in reduced temporary aesthetic impacts from restoration activities than with the proposed Project. Similar mitigation would likely be required to address potential

aesthetic impacts. Long-term aesthetic improvements to the non-restored areas would not occur. As with the proposed Project, Alternative 3 would have a **less-than-significant** impact after mitigation.

Recreation

This alternative would have reduced effects on formal and informal recreation compared with the Project. The Project's construction-related impacts to recreation access upstream would be limited to areas upstream of the I-505 bridge. Impacts to recreation would be **significant but mitigable**, as with the proposed Project.

Cultural Resources

Because the area that would be disturbed would be reduced compared with the proposed Project, impacts to potential cultural resources would be less than with the proposed Project, and limited to the upper 4 miles of the Project Area. As with the proposed Project, mitigation also would reduce this impact to a **less-than-significant** level.

Transportation/Traffic

Similar to the proposed Project, Alternative 3 would result in temporary construction traffic and potential short-term increases in roadway hazards. However, under this alternative, these impacts would be less than the proposed Project because Alternative 3 would limit project impacts to the upper 4 miles of the Project Area. As with the proposed Project, all potential impacts related to transportation and traffic would be **less than significant**, and no mitigation measures would be required.

Public Services

As with the proposed Project, Alternative 3 would have **less-than-significant** impacts to police, fire and other public services providers.

Utilities

As with to the proposed Project, potential impacts to stormwater drainage facilities and to buried pipelines could occur under this alternative, but would be lessened because this Alternative would perform activities over a smaller area. As with proposed Project, all potential adverse impacts related to utilities would be reduced to a **less-than-significant** level through the application of mitigation measures.

Relationship of Alternative 3 to Project Objectives

The alternative would meet a number of project objectives: it would fulfill Objective 2 (restore, enhance, and maintain spawning and rearing physical habitats in the Project Area) by improving water quality and promoting much better habitat conditions for native aquatic species, but it would do so over a much more limited area (4 miles) than the proposed Project (24.2 miles), focusing all of the proposed potential restoration activities in the reaches from PDD to the I-505 bridge. This alternative would provide very high value aquatic and riparian habitat to the colder water species and a contiguous corridor for movement of terrestrial species, linking to the existing high quality PDD to Berryessa riparian corridor.

This alternative would meet Objective 4 (Incorporate natural planform and cross sectional geomorphology that supports structural habitat complexity and natural hydrologic, geomorphic, and ecological processes). This alternative has the disadvantage that it would not provide as much restored floodplain riparian habitat expansion as the proposed Project. It also would not fill pools or otherwise improve habitat downstream of the I-505 bridge.

This alternative would fulfill Objective 5 (Maintain and enhance native riparian vegetation communities along the Project Area) because, like the proposed Project, it would implement a suite of vegetation management activities that would reduce the invasive weeds along and in the creek. However, it would do so over a much more limited area than the proposed Project.

Alternative 3 would not meet Objective 6 (Maintain a balance of existing fish and wildlife habitats, hunting, fishing, wildlife viewing, and other public benefits, including water supply and agriculture, between the PDD and YBWA) because it would not perform activities along Putah Creek all the way to the YBWA, and instead would stop at I-505 near the City of Winters. For this reason, Alternative 3 fails to meet the integrative restoration needs of the Creek system as a whole. Therefore, Alternative 3 would be less consistent with project objectives than the proposed Project.

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) requires that the Environmentally Superior Alternative be identified. If the environmentally superior alternative is the No Project/No Development Alternative, the EIR shall also identify an Environmentally Superior Alternative among other alternatives. CEQA also requires public agencies to

mitigate or avoid significant effects of a project whenever it is feasible to do so (Public Resources Code Section 21002.1).

The alternatives provide a range of feasible options for implementing the proposed Project, and the impacts of one or more alternatives on some resource topics would result in less significant impacts when compared with the other alternatives. As a result, it is possible for the lead and responsible agencies to select an alternative that would result in the least environmental impacts without carrying forward an action that would have unavoidable impacts.

Based on the analysis of the alternatives in Chapter 4, the No Project Alternative (Alternative 1) would have the least short-term adverse impacts, but would result in continued dominance of non-native and invasive plants in the Project Area and continued erosion and channel destabilization of Putah Creek, reducing the quality of wildlife habitat. In addition, as shown in **Table 4-2**, this alternative would not meet the Project objectives.

Alternative 3, the Reduced Project Alternative, would achieve many of the water quality and habitat benefits of the proposed Project but over a much more limited area (4-5 acres improved habitat over 4 miles) than the proposed Project (24.2 miles). In terms of gross acres of improved habitat (approximately 112.5 acres), Alternative 2 would have more ecological benefits for the full range of native species; however, for cold-water fisheries, Alternative 3 would provide a shorter corridor of enhanced aquatic and riparian habitat compared with the Project.

The Environmentally Superior Alternative is Alternative 2, Pool Filling Only, which achieves some of the water quality and habitat benefits of the proposed Project but with lessened short-term construction-related impacts. However, this alternative is less consistent with the Project objectives than the proposed Project.

Table 4-2 Comparison of Project Alternatives to the Proposed Project

Environmental Category	Proposed Project	Alternative 1 No Project	Alternative 2 Pool Filling Only	Alternative 3 Reduced Project
Aesthetics	LS/MM	NI	LS/MM	LS/MM-
Air Quality & Greenhouse Gas Emissions	LS/MM	NI	LS/MM-	LS/MM-
Biological Resources	LS/MM	NI	LS/MM-	LS/MM-
Cultural Resources	LS/MM	NI	LS/MM-	LS/MM-
Geology and Soils, Mineral Resources	LS/MM	NI	LS/MM-	LS/MM-
Hazards	LS/MM-	NI	LS/MM-	LS/MM-
Hydrology	LS/MM-	NI	LS/MM-	LS/MM-
Land Use	LS	NI	LS	LS/MM-
Noise	SU/MM	NI	SU-	SU-
Public Services	NI	NI	NI	NI
Recreation	LS	NI	LS-	LS-
Transportation/Traffic	LS	NI	LS/MM-	LS/MM-
Utilities	LS/MM	NI	LS/MM-	LS/MM-
Water Quality	LS/MM	NI	LS/MM-	LS/MM-
<i>Consistency with Project Objectives</i>	<i>Consistent</i>	<i>Inconsistent</i>	<i>Less Consistent</i>	<i>Less Consistent</i>

Notes:

NI = No impact would occur.

LS = All impacts would be less than significant, no mitigation required.

LS/MM = All impacts would be less than significant after mitigation.

SU = One or more impacts would be significant and unavoidable, even after mitigation.

- = Alternative impacts are less severe than the Proposed Project.

+ = Alternative impacts are more severe than the Proposed Project.

Where no + or - is indicated, impacts of the Proposed Project and the Alternative are identical or very similar.