U.S. Army Corps of Engineers
South Pacific Division
San Francisco District

LOWER ALAMEDA CREEK FISH PASSAGE IMPROVEMENTS
PRELIMINARY RESTORATION PLAN
UNDER SECTION 1135 OF
THE WATER RESOURCES DEVELOPMENT ACT OF 1986

1. Project. Lower Alameda Creek Fish Passage Improvements, city of Fremont, Alameda County, California.

a. Name of Modification. Lower Alameda Creek Fish Passage Improvements.

b. Name of Project being Modified. Alameda Creek Flood Control Project, located in the cities of Fremont, Hayward, and Union City, Alameda County, California.

c. Date Constructed. Construction of the Alameda Creek Flood Control Project was accomplished between 1965 and 1975 by the U.S. Army Corps of Engineers, San Francisco District, and the Alameda County Flood Control and Water Conservation District (ACFCWCD).

d. Authorized Purpose. Constructed under authority of the Flood Control Act of 1962 (Public Law 87-874), the purpose of the project is flood control.

2. Description of the Watershed, the Study Area, and the Ecosystem Problem.

a. Watershed and Study Area. The Alameda Creek watershed, as shown on Figure 1, is located primarily in Alameda and Santa Clara Counties, California. A small portion of the watershed is in Contra Costa County. It covers almost 700 square miles in these counties, and is the largest watershed draining into San Francisco Bay after the Sacramento-San Joaquin watershed. The watershed of Alameda Creek can be divided into inland and coastal portions, which are connected by Niles Canyon.

The inland portion contains the bulk of the watershed, including the headwaters. It consists of various ranges of hills and several large valleys, including Sunol, Livermore, and Amador valleys. The northern and eastern portions of the watershed drain into the Arroyo de la Laguna, which discharges into Alameda Creek in Sunol Valley.

Three major reservoirs regulate flows in the interior part of the watershed: Calaveras Reservoir on Calaveras Creek, San Antonio Reservoir on San Antonio Creek, and Del Valle Reservoir on Arroyo Valle. Calaveras and San Antonio reservoirs are used for water supply, while Del Valle Reservoir is used for water supply, flood control, and recreation. There are no major dams on Alameda Creek itself, though there is a diversion

dam upstream from Sunol Regional Park which until recently diverted part of the flow of the creek into a tunnel leading to Calaveras Reservoir.

Land uses in the interior watershed are primarily cattle ranching and other open-space uses. However, this area is experiencing continued urban growth, and much of the flat land in the Amador and Livermore valleys is now urbanized. Major communities are Pleasanton, Livermore, and Dublin. There are major gravel quarries in Sunol Valley and between Pleasanton and Livermore.

Aquatic habitat conditions in the interior watershed vary greatly. Most of the stream reaches in valley areas have been degraded by non-Corps flood control projects, drainage projects, and other activities, while stream reaches in the canyons and hills mostly remain fairly natural.

The coastal portion of the watershed consists of coastal plain between the hills and San Francisco Bay, across which the creek meanders. The only significant tributary is Dry Creek, which drains a portion of the Hayward Hills before emptying into Alameda Creek near Decoto. The creek empties into San Francisco Bay at the north end of the Coyote Hills. There are no reservoirs located in this area, but there are a number of gravel pits filled with water which now serve as groundwater recharge areas.

Most of the area this reach of the creek flows through is now urbanized, but from Union City Boulevard to San Francisco Bay the creek adjoins open space and salt evaporator ponds. Habitat conditions in coastal portion of Alameda Creek are discussed below in Section C. This section of Alameda Creek flows through the northern portion of the city of Fremont, then forms the boundary between Union City and Fremont, and finally forms the boundary between Hayward and Fremont.

The study area for this project modification is the portion of the Alameda Creek watershed downstream from major permanent fish barriers such as large dams. The portion of the study area where project modifications would be made will be referred to as the project study reach (Figure 2). The remainder of the study area is included for the purpose of evaluating project outputs and cost-effectiveness as the study progresses.

b. The Flood Control Project and Associated Structures. The portion of Alameda Creek between the mouth of Niles Canyon and the bay was well-known for its frequent flooding until the Corps of Engineers constructed a flood control channel, which was completed in 1975 (Figure 3). This project consists of a trapezoidal channel extending from a short distance upstream of Mission Boulevard downstream to San Francisco Bay. This section of the creek channel was substantially relocated, widened, and straightened, and the downstream portion of the creek was rerouted to reach the bay via a more direct route. The non-federal sponsor for this project is the ACFCWCD.

Within the flood control channel, four concrete grade-control structures were constructed between Mission Boulevard and Decoto Road, the reach of the creek now being considered for project modifications. One of these structures is a large Corps of

Engineers drop structure that was designed to replace an existing non-federal grade-control structure. This structure is located at the railroad and Bay Area Rapid Transit (BART) tracks and is also known as the BART weir.

The other three structures have minimal elevation drops and were designed and installed subsequently by the Alameda County Water District (ACWD) to serve as foundations for inflatable dams used for water retention, percolation, and diversion. One of these structures is just upstream from the Corps drop structure while the other two are located some distance upstream and downstream.

Construction of the upstream portion of the flood control channel eliminated or isolated the previous locations along the creek where the ACWD constructed seasonal dams to retain water for percolation and groundwater recharge. The new grade-control structures were designed to be used as a foundation for dams in these new locations. Initially, the ACWD constructed seasonal dams at these locations every spring, but starting in 1972 they have used inflatable rubber dams which back water up nearly all the time except during high streamflow events and periods of high turbidity. These dams are deflated by ACWD to allow high flows (exceeding 700 cfs) and associated debris and sediment to pass downstream safely. The lowest (first) dam inflates to a height of six feet, while the middle (second) and upper (third) dams can inflate to a height of up to thirteen feet.

The inflatable dams enable diversion of flows into off-stream percolation ponds (former gravel pits), as well as in-stream percolation, both for groundwater recharge. When the dams are inflated, a number of diversion structures are submerged under the ponded water, allowing diversion of water into adjacent percolation ponds. Some of these diversion structures were installed at the same time the channel was constructed, and others were installed later by the ACWD.

It also should be noted that while the flood-control channel is generally much wider than the previous natural creek channel, this is not necessarily the case in the project study reach which had already been substantially modified by gravel mining prior to construction of the federal project. The loss of previous percolation capacity was the reason the ACWD installed the rubber dams and additional diversion facilities, to allow larger diversions to off-stream percolation ponds over the course of the year. This helps to compensate for the loss of percolation area resulting from this reach of creek channel being narrowed by construction of the flood-control channel.

c. Habitat Conditions and Fisheries. The flood control channel has riprapped banks and an earthen bottom within the project study reach. Woody vegetation is not allowed to grow within the channel, but ornamental trees have been planted on top of the banks at some locations. Sediment that covers the riprap on the lower banks in some locations supports weedy herbaceous vegetation, and freshwater marsh vegetation grows on the channel bottom except in areas deeply submerged by operation of the inflatable dams. Wildlife use of the channel is minimal except for species such as herons and waterfowl that use the freshwater marsh and stream habitat downstream from the lowest

dam. Waterfowl also use the ponded sections of creek for feeding and resting to a limited extent.

Historically, the reach of Alameda Creek in Niles Canyon (upstream from the project study reach) most likely had little or no flow during the summer and early fall. However, pools probably remained and provided habitat for fish during those months (Gunther, et al., 2000) At present, the flow of Alameda Creek is augmented by upstream releases of water from reservoirs during summer months and year-round pumping from gravel quarry operations. As a result, the creek commonly has substantial summer flows through Niles Canyon, but not below the diversion dams.

At one time, Alameda Creek had self-sustaining runs of steelhead trout *Oncorynchus mykiss*. This kind of trout has a life cycle similar to that of salmon, in that the young are born in freshwater streams but they migrate downstream to the ocean where they reach maturity before returning to their stream of birth to spawn. That is, they are *anadromous*. However, unlike salmon the adults often survive spawning and return to the ocean from where they may again migrate upstream to spawn.

Steelhead trout are the same species as rainbow trout, a non-anadromous form. That is, *Oncorynchus mykiss* exists in both anadromous and non-anadromous populations. These differing populations are not necessarily reproductively isolated, as steelhead young may sometimes elect to remain in a stream rather than migrate to the ocean, and rainbow trout offspring may migrate to the ocean as smolts rather than remain in a stream. The term *smolt* refers to a juvenile steelhead trout which is in the process of undergoing anatomical and physiological changes which will prepare it for life in the ocean.

The life-cycle flexibility of steelhead/rainbow trout is an adaptation to uncertain environmental conditions. During dry years, suitable conditions for upstream or downstream migration of steelhead may not exist. It is not necessary to have suitable conditions for migration every year to have a viable population of steelhead trout, as the adults can remain in the ocean if upstream migration is not possible and smolts may "desmoltify" and remain in a stream in response to adverse migratory conditions.

d. Migration Barriers. Steelhead trout runs in Alameda Creek are well-documented in the historical record, including impressive photographs of trout from the early 20th Century. Habitat degradation in the 20th Century, including several upstream dams and a grade-control structure within the project study area that was constructed to protect a railroad crossing, greatly reduced runs of steelhead trout. By the time the Corps was designing its flood control project, the California Department of Fish and Game (CDFG) indicated that habitat conditions were sufficiently poor that fish passage need not be provided. Therefore, the grade-control structure for the flood control project was not designed to allow steelhead trout to migrate upstream, and it prevents upstream migration of these or other fish.

The inflatable rubber dams further impede upstream fish migration. While steelhead trout are able to pass the first (lowest) grade-control structure when the dam is deflated,

and may be able to pass the other low grade-control structures when the dams on top are deflated, they are unable to pass over these dams when they are inflated. The Corps drop structure appears to be entirely impassable to upstream migrations.

Until recently, when the dams inflated they cut off the downstream flow of water until enough water had backed up to spill over the dam again. As a result, fish downstream from the dam could become stranded and die. This occurrence has been documented at the middle dam on several occasions and has led to several fish-rescue efforts by private citizens and public agencies so that steelhead trout that were about to be stranded could be captured and released upstream. However, over the past several years ACWD has modified its operations to ensure that a pool is maintained below the middle dam and grade-control structure, to minimize this problem and to assist with fish rescue efforts.

At present, there do not appear to be viable and self-sustaining steelhead trout runs in Alameda Creek. However, in recent years adult steelhead have migrated up the creek a number of times only to be stopped by the Corps drop structure. While it appears that steelhead trout are unable to pass upstream past this structure on their own, citizens and agency personnel have manually moved some of the individual fish to locations upstream of the flood-control channel for release. One fish was radio-tagged and tracked for several weeks after its release.

A genetic analysis of the returning steelhead trout in Alameda Creek indicates that they belong to the Federally-listed *Central California Coast Evolutionarily Significant Unit (ESU)* of the steelhead trout. In addition, residential rainbow trout populations in the upper portion of the watershed appear to be derived from native steelhead trout populations from which they became separated by barriers (Gunther, et al., 2000). It is not known whether adult fish now returning up Alameda Creek are derived from smolts spawned by resident rainbow trout in the watershed or whether they are strays from other streams in the region. Steelhead trout are known to stray, a tendency which enables colonization of streams that have lost their steelhead populations due to temporary adverse conditions. Locally-funded studies are now underway to determine whether smolts are being produced above San Antonio and Calaveras Reservoirs.

The grade-control structures do not impede the downstream migration of smolts, but the inflatable dams prevent downstream migration at those times when they are not deflated and not being overtopped. A preliminary study by Gunther, et al. (2000) indicated that even under the current operation of the dams, smolts have at least some opportunity to pass downstream over these dams due to the dams being deflated or water spilling over the dams at times of high flow. It is not known whether smolts may be injured by passing downstream over the inflated dams as there is no pool to cushion their fall.

The diversions of water from the creek create an additional problem for steelhead trout. These diversions are not screened, so smolts entrained in these diversions will pass into the percolation ponds from which they will be unable to escape and unable to complete their life cycle. Adult fish probably would be kept out of the diversions by existing trash racks. These diversions may be damaging to downstream migration of smolts, especially

at times when little or no water is passing over the inflatable dams. At these times, flows into the diversions, which can reach as high as 100 cfs for some structures, may attract a large percentage of any smolts (from upstream rainbow trout populations) that may be present in the creek to the diversions where they would then be entrained.

Additional barriers to upstream migration exist higher in the watershed but are not proposed for inclusion in the possible Section 1135 project. These barriers are described in Gunther, et al. (2000) and are summarized below:

Two old and abandoned low dams in Niles Canyon are significant barriers to upstream fish movement. Both are silted in and have non-operational fish ladders. These dams are owned by the City of San Francisco Public Utilities Commission (SFPUC) and are scheduled to be removed within one to two years for the primary purpose of liability reduction.

A Pacific Gas and Electric Company (PG&E) pipeline crossing on Alameda Creek in Sunol Valley is a major barrier which may be impassable under all flow conditions. PG&E is actively studying fish passage improvements for this structure at the present time and their consultant has identified four alternatives.

Two modest barriers on Alameda Creek in Sunol Regional Park were removed in August 2001 by the East Bay Regional Park District (EBRPD). If barriers farther downstream are made passable to fish, removal of these two barriers will result in several additional miles of good habitat becoming more accessible to steelhead trout for spawning and rearing.

Several miles farther upstream, an SFPUC diversion dam on Alameda Creek is a completely impassable barrier. However, above this diversion dam is a considerable stretch of excellent spawning and rearing habitat in the remote and nearly uninhabited canyon of upper Alameda Creek. This is some of the best such habitat in the entire Alameda Creek watershed.

The SFPUC is studying the replacement of Calaveras Dam (on Calaveras Creek, a tributary of Alameda Creek) due to seismic safety concerns. Meanwhile, Calaveras Reservoir is being maintained in a drawn-down condition to ensure seismic safety until the dam can be replaced or repaired. For this reason, the Alameda Creek Diversion Dam is no longer being used to divert water into this reservoir. SFPUC staff has indicated that the SFPUC may remove this diversion dam as part of the possible replacement of Calaveras Dam with a larger dam that can store additional water from both local runoff and the Tuolumne River, the main source of imported water for the reservoir. Calaveras Creek itself is not expected to provide suitable habitat for steelhead trout due to the dam and natural barriers.

Other tributaries in the watershed could also provide steelhead trout habitat. The largest tributary of Alameda Creek, the Arroyo de la Laguna, joins Alameda Creek in Sunol Valley. The Arroyo de la Laguna drains the entire northern and eastern portion of the

watershed. Its two primary tributaries are Arroyo Valle and Arroyo Mocho. Arroyo Valle is blocked by Del Valle Dam, but Arroyo Mocho provides potential habitat. Several man-made barriers impede but do not prevent upstream migration to areas of potentially good spawning and rearing habitat along this tributary.

Two tributaries of Niles Canyon are potential habitat. Stonybrook Creek has good habitat but access is impeded by a culvert at Palomares Road. Sinbad Creek historically supported steelhead trout but may be marginal habitat.

Between the barriers to upstream migration of steelhead trout and the likely entrainment of smolts moving downstream, it is not possible at present for Alameda Creek to support a self-sustaining population of steelhead trout.

e. Steelhead Restoration Efforts. A great deal of interest has developed in recent years in restoring steelhead trout to Alameda Creek. In 1983, a task force determined that there is suitable habitat for anadromous fish in the upper watershed. A second study effort in 1989 by a technical committee (Technical Committee, 1989) did not lead to consensus on whether restoration efforts were justified.

More recently, steelhead trout and chinook salmon have been appearing in Alameda Creek below the Corps drop structure, leading to increased public interest in anadromous fish restoration. The Alameda Creek Alliance, a citizens' group, has been actively campaigning for resolution of fish-passage problems in the creek since 1997. They have publicized the fish-passage and stranding problems, organized fish-rescue operations, and they initiated the annual steelhead festival in Fremont. Last year this festival was sponsored by the City of Fremont, the ACFCWCD, the ACWD, the East Bay Regional Parks District, and other organizations.

Since 1998, the ACFCWCD and the ACWD have been very interested in restoration of steelhead trout in Alameda Creek. These agencies have spent $70,000 so far on two technical studies for steelhead trout restoration in the Alameda Creek watershed.

The first of these studies, *An Assessment of the Potential for Restoring a Viable Steelhead Trout Population in the Alameda Creek Watershed*, by Andrew J. Gunther, Jeffrey Hagar, and Paul Salop for Applied Marine Sciences, Inc. was released in February 2000 and was funded in part by the California State Coastal Conservancy. This report determined that restoration of steelhead trout to Alameda Creek is feasible and described actions needed to achieve this result.

The second study, *Conceptual Fish Passage Designs & Cost Estimates for Lower Alameda Creek*, by Darryl Hayes for CH2M Hill, was completed in January 2001. This report is the basis for the preliminary project concept presented in this Preliminary Restoration Plan.

The focus of agency and public interest has been on steelhead trout restoration. While Chinook salmon have been appearing in Alameda Creek in small numbers in recent

years, these fish are believed to be hatchery strays attracted by imported water in the creek. The CDFG is skeptical that Alameda Creek is capable of supporting Chinook salmon under current conditions. However, provision of fish passage facilities would enable Chinook salmon to gain access to suitable spawning habitat, though they might not be able to complete their life cycle due to low flows in spring.

The SFPUC expects to remove its two dams in Niles Canyon within the next two years. Funding for this action has been approved by the SFPUC and environmental studies are underway. This action is therefore part of the without-project condition. SFPUC staff has indicated that they also expect that the Alameda Creek Diversion Dam may be removed at some time in the future.

PG&E is currently investigating options for providing fish passage at its pipeline crossing in Sunol Valley and has come up with four preliminary alternatives. Farther upstream, the East Bay Regional Park District (EBRPD) has recently removed two concrete structures in Sunol Regional Park that were a partial migration barrier for future steelhead trout migrations.

Finally, the ACFCWCD is studying setting back from the creek the Corps levees at and near the mouth of Alameda Creek for the dual purposes of reduced maintenance cost and habitat restoration. If the ACFCWCD's initial study determines that this action appears to be feasible and worthwhile, then they will proceed with further studies, perhaps as part of a Section 1135 study. This levee modification would not be for the purpose of restoring steelhead trout, but smolts would benefit from the improved habitat.

3. Description of Proposed Project Modification.

a. Summary. The proposed project modification would consist of installation of two fish ladders on existing grade control/inflatable dam structures, and fish screens on four existing diversion structures, all within the existing Corps flood-control channel. These modifications would allow upstream passage of adult steelhead trout returning to Alameda Creek to spawn, and would protect steelhead trout smolts migrating downstream from being entrained in water diversions. With these modifications to the Corps project and associated facilities, it would be possible for steelhead trout to reach suitable spawning and rearing habitat in Niles Canyon and potentially farther upstream, and for smolts to migrate to the Bay without being entrained in water diversions.

Other potential project modification increments have not been included in this proposal. A fish ladder at the lowest grade control structure would be a useful enhancement and may be funded by the non-federal sponsor from other sources. However, steelhead trout have commonly been able to pass this barrier when the dam is deflated, and a fish ladder here is not essential to the restoration effort.

Several fish screens on other Alameda County Water District (ACWD) diversions also were examined, and the ACWD is in the process of evaluating their diversion program operations to determine whether they can make these other fish screens unnecessary, by

limiting the use of these other diversions when smolts may be present. If it is determined that fish screens are required for these other diversions then ACWD may install screens at these diversions with local and/or grant funding.

The proposed project modification is expected to be the first step in restoring viable steelhead trout runs to the Alameda Creek watershed. Other planned and potential restoration actions farther upstream, including removal of the SFPUC dams, modification of the Palomares Road culvert, modification of the PG&E pipeline crossing, and modification of the Arroyo Mocho migration barriers, would be of no value in restoring steelhead trout to this watershed in the absence of this project.

The project modification site supports limited aquatic, riparian, and upland wildlife habitats due to their removal and/or degradation during construction of the Corps flood-control project. The project modification would not be expected to have significant impacts on any existing habitats. The potential for restoration of habitats along the existing flood control channel appears to be severely constrained by channel capacity concerns and limited right-of-way, so is not currently being proposed for study.

The project modifications would not adversely affect the existing flood control project including its capacity for conveying floodwaters. The sites for the proposed fish ladders have been examined by Corps hydraulic engineers who have determined on a preliminary basis that the proposed modifications would not adversely affect channel capacity. The existing project was designed to convey a standard project flood.

b. Existing Corps Project; Federal Causes of Degradation and Consequent Results. Before the Corps constructed the Alameda Creek Flood Control Project, there were two types of barriers to steelhead trout migrations in the reach now occupied by the current flood-control channel. First, there was a sheetpile and timber grade-control structure protecting the railroad crossing adjacent to the present location of the Corps drop structure. This structure was installed to protect the railroad bridge from erosion, and most likely impeded upstream steelhead trout migrations.

Second, earthen dams were installed in this reach of the creek to encourage percolation of creek water into the aquifer for municipal water supply. These dams were installed every spring and washed out every fall with the first heavy rains. The seasonal dams did not impede the upstream migration of adult steelhead in the late fall and early winter, but may have prevented much of the spring smolt migration from reaching the ocean.

The Corps project replaced the sheetpile grade control structure with a much more massive structure that appears to be a complete barrier to the upstream migration of fish. Provisions for upstream fish passage were not made because by the 1950s the CDFG considered Alameda Creek to no longer have a viable steelhead fishery (Technical Committee, 1989).

The Corps' modification of the channel eliminated the former locations for construction of seasonal percolation dams, so the ACWD instead constructed these seasonal dams in

the new flood-control channel until the inflatable dams were installed, the first one in 1972. In addition, the creek channel in the percolation area was very wide prior to construction of the Corps channel. This wide area provided a large area for percolation, which the Corps project substantially reduced. As compensation, several diversion structures were included in the project to enable future off-stream percolation. These diversion structures were not screened, again because of the assumed lack of a viable steelhead trout fishery in the creek.

When operated, the diversion structures can entrain fish that are in the ponded water behind the inflatable dams. At these times, any smolts attempting to pass downstream would probably be attracted into the diversions as they will often be the primary or only "downstream" flow present. Thus, the unscreened diversions may cause loss of a major portion of any smolt migrations. Diverted smolts would end up in percolation ponds from which they could not escape, and where they may suffer heavy predation from freshwater game fish. Any smolts that desmoltify and mature into rainbow trout would be unable to return upstream to spawn and would be permanently isolated from the creek's steelhead/rainbow trout population.

The PRP study process identified eligibility issues involving structures and facilities in the channel. These eligibility issues revolve around the extent to which facilities in the Federal channel can qualify as either Federal facilities or as facilities constructed to rectify problems caused by the Federal project. Only facilities that meet this definition are eligible for modification under the 1135 program.

At issue is the eligibility of the upper grade-control structure and the upper and middle inflatable dams, as well as related water-diversion structures. These grade-control structures, dams, and diversion structures were constructed by the ACWD over a period of time to compensate for the larger percolation area in the natural streambed which had been lost due to construction of the Federal project. Some diversion structures may have been constructed by the Corps as part of the Federal project

Because of the complex nature of the situation and the overall benefit of the potential project, it was felt that the resolution of these issues would be better served by investigation and determination in the Detailed Project Report (DPR). For the purpose of this PRP, all facilities will be assumed to be eligible for inclusion in the Section 1135 project. However, the first effort towards preparation of the DPR will be completion of a Project Management Plan detailing the study tasks and schedule. This document will state unequivocally which project features are verified as being eligible for modification under the Section 1135 authority, based on further investigation.

c. Proposed Project Modification Features. The proposed project modifications would include two fish ladders on existing grade-control structures and rubber dams, and fish screens on four existing water diversions.

The fish ladder at the Corps drop structure and middle dam would be designed to pass fish upstream when the rubber dam is either inflated or deflated. Fish would enter the

structure from just downstream of the existing concrete sloping apron. They would progress up a series of stepped pools to enable them to surmount the drop structure. A four-foot wide channel would continue upstream and would pass underneath the abutment of the rubber dam. Above the dam, a sliding gate would enable fish to exit the fishway when the dam is down. When the dam is up, the fish would continue up a second series of stepped pools to an exit at the proper elevation.

Additional fish passage improvements would be made to the Corps drop structure and to the ACWD grade-control structure just upstream. A low-flow channel would improve fish passage across an existing area of grouted riprap which currently tends to have sheet flow. A two-foot high concrete sill at the downstream end of the existing energy dissipator would create adequate water depth for fish to enter the fish ladder, and would channel more water into the low-flow channel. In addition, a concrete curb would be installed just downstream from the inflatable dam. This would pool water below the dam to make passage over the dam safer for fish.

The upper fish ladder would be designed to function only when the dam is inflated. Stepped pools would enable the fish to gain enough elevation to exit to the ponded water behind the ladder. Minor modifications to the grade-control structure would enable fish to pass over the structure and the rubber dam when the dam is deflated. These would consist of a concrete curb below the dam with openings to concentrate flow downstream. The curb would create a ponded area below the dam that would allow fish to enter the fishway and which would cushion fish when they pass downstream over the dam.

The fish screens would be of two types. Larger diversions would use flat-plate fish screens with automatic cleaning devices. Smaller diversions would use a retractable cylindrical fish screen with automatic continuous cleaning brushes. The cylindrical fish screens would be retracted up the slope and out of the water during floods and for maintenance.

The Alameda Creek Pipeline diversion and the Upper Shinn Pond diversion would use flat plate fish screens. The B Pond diversion would use a cylindrical fish screen. The Kaiser Pond diversion could use either type of the screen. The fish screens would only operate when the rubber dams are inflated and water is backed up behind the dams. When the dams are deflated, there are no diversions and there is no risk of fish being entrained.

To operate, the fish ladders may require a continuous flow of water passing through them during the time adult steelhead trout are moving upstream in the late fall and early winter. During these times there will nearly always be a flow of water reaching the inflatable dams from upstream, but under current conditions most or all of this water is held back for diversion and percolation except during and immediately after storms. The ACWD understands that operation of the fish ladders may result in some water passing downstream which otherwise would have been captured for percolation or diversion. The ACWD and the SFPUC are currently conducting the technical studies necessary to determine in-stream flows needed for fish passage in the flood control channel and other

sections of Alameda Creek. ACWD is also committed to meeting all existing and future regulatory requirements for in-stream flows in Alameda Creek.

While a fish ladder is not proposed for the downstream dam as part of the proposed project modifications, the ACFCWCD and the ACWD intend to provide improved fish passage at this location through installation of a fish ladder (or through other structural or operational modifications) using other funding sources.

The proposed project would allow adult steelhead trout to migrate up Alameda Creek to spawning grounds in Niles Canyon and possibly farther upstream. It also would allow steelhead trout smolts to safely pass downstream without becoming entrained in existing water diversions. As a result, migration barriers for this species would be substantially reduced from the present situation, where successful upstream migration is impossible and downstream migration perilous.

The proposed project would not eliminate all difficulties for migrating steelhead trout in Alameda Creek. First, the channel of Alameda Creek downstream from the inflatable dam is a trapezoidal flood control channel which does not provide good habitat. Also, the portions of the channel upstream from the three inflatable dams serve as percolation ponds at most times and thus are poor habitat for smolts moving downstream. The study plan for the DPR includes a study of these portions of the channel to determine to what extent they would impede the establishment and maintenance of a viable steelhead trout population in this watershed.

Second, the operation of the inflatable dams during the spring out-migration season for smolts may be important in the restoration of viable steelhead runs. At present, downstream migration of smolts is only possible when the dams are deflated or when water is spilling over their tops. The analysis in Gunther, et al. (2000) determined that in many years there are a number of days when the dams are down or water spills over the top of the dams, allowing downstream migration. In some years there may be poor conditions for out-migration of smolts, but as noted above in Section 2.c. this is a condition which steelhead trout experience in many watersheds and which will not prevent restoration of a viable population.

Finally, there are a number of other barriers farther upstream in the watershed. The two most significant barriers, located three and five miles above the uppermost grade-control structure, are the SFPUC dams. Removal of these barriers will be considered to be part of the without-project condition due to the SFPUC voting to budget for their removal.

Removal of additional barriers farther upstream in the watershed is not certain at this time, although studies are underway as indicated above. However, as long as the barriers in the Corps flood control channel remain in place, there is no incentive to remove upstream barriers, except where there is a matter of liability as with the SFPUC dams or flood control as with the Stonybrook Creek culvert. *Removal of barriers* is used here to refer to either removal of the actual structure, as in the case of the SFPUC dams, or

removal of the structure's function as a barrier, for example, by installation of fish ladders so fish can surmount the structure.

With the construction of the proposed project and the planned removal of the SFPUC dams (the latter as part of the without-project condition), steelhead trout would have access to four to five miles of spawning and rearing habitat in Niles Canyon. The suitability of this habitat was examined in Gunther, et al. (2000), with the conclusion that the downstream portion is suitable spawning and rearing habitat for this species. The CDFG has communicated in meetings of the Alameda Creek Fisheries Workgroup (ACFW) that it expects that removal of migration barriers in Alameda Creek will allow a viable steelhead trout fishery to be restored in Alameda Creek.

Population genetics are also a concern in this restoration effort. A new population of any species will experience the *founder effect*. This term refers to the fact that whichever individuals found the new population will provide the only genes that population will have, subject to possible later genetic exchange with other populations. As these individuals are likely to be in this role by chance, this means that the genetic composition of the new population may be atypical, perhaps not desirable, and limited in diversity if the founding individuals are few in number. Thus, if only a few steelhead trout are the basis for the new population in Alameda Creek, there is a significant risk that its genetic composition may be far from optimum.

To assist in the restoration of steelhead trout to this watershed, the CDFG may use rainbow trout eggs from existing trout populations in the watershed to jump-start the new steelhead trout population. By rearing a large number of trout fry and releasing them to the creek, it is likely that some individuals, or young from future generations of trout, will change into smolts and migrate to the ocean. This should result in a more diverse population of adult steelhead trout returning to spawn two or more years later, leading ultimately to an overall population that is more genetically diverse. At present, this CDFG effort is not included in the proposed project modification but has been suggested as a possible independent effort.

d. Project Modification Purpose. The purpose of this project modification is the restoration of a self-sustaining population of native steelhead trout in the Alameda Creek watershed.

(1) Degradation History. Prior to construction of the channel improvements, Alameda Creek had already experienced habitat degradation. In particular, the project study reach was an active gravel mining area with a number of gravel pits. In this reach the stream bed was very wide and had relatively little riparian vegetation, suggesting that there may have been in-stream mining of gravel in the past. Seasonal gravel dams offered some impediment to steelhead trout migrations but were not present during the rainy season. A timber and sheetpile grade-control structure at the railroad crossing was also a barrier to an unknown extent.

At the time that the existing project was being designed, the CDFG did not consider Alameda Creek to have a viable steelhead trout fishery. There were probably a variety of reasons why this was the case. First, habitat degradation, the seasonal gravel dams, and the grade-control structure in the project study reach probably impeded steelhead trout migration in both directions to some extent. Second, the SFPUC dams in Niles Canyon offered a partial barrier to upstream migration. While these dams had fish ladders, for an unknown length of time they had not been working. Third, construction of the Alameda Creek Diversion Dam and Calaveras Dam in the early part of the 20th Century undoubtedly removed much of the watershed's spawning and rearing habitat from access by returning adult steelhead. Finally, other habitat degradation and man-made migration barriers in the watershed may have impeded steelhead trout runs, while summer flows may not have been augmented to the same degree they now are in some areas.

(2) Existing and without-project conditions. The Corps drop structure is a complete barrier to upstream migration of steelhead trout. The three local grade-control structures are partial barriers to upstream migration. The inflatable dams on top of these structures are complete barriers to upstream migration when inflated. All the inflatable dams are barriers to downstream migration when they are inflated and water is not spilling over them. The water diversions are likely to entrain at least some smolts migrating downstream as they produce attraction flows and are unscreened. In the absence of any project, these conditions would not change.

Despite the presence of these barriers, adult steelhead trout have returned to Alameda Creek to spawn in increasing numbers in the 1990s and have been noted every year since at least 1997, even though they are unable to reach their spawning and rearing habitat without assistance. It is not known whether these fish are strays from other streams or are derived from smolts coming from rainbow trout higher in the watershed. The series of relatively wet winters starting in the mid-1990s may have created better than usual conditions for smolt out-migration, thus leading to this situation. However, under the without-project condition these returning adults would be unable to reproduce and complete their life cycle, and smolts produced by rainbow trout may be largely prevented from reaching the ocean due to barriers and diversions.

The SFPUC will remove its two non-functioning dams in Niles Canyon within the next two years for the primary purpose of liability reduction, regardless of whether fish passage is provided downstream. Therefore, the removal of these dams is considered part of the without-project condition. However, removal of these dams will not by itself allow steelhead trout to utilize the Alameda Creek watershed for spawning and rearing.

(3) With-project condition. Implementation of the proposed project modification would enable steelhead trout to migrate upstream to spawning habitat in Niles Canyon and its tributaries. The lower inflatable dam would remain as a partial barrier, though it is deflated often enough to allow some adult steelhead trout to pass upstream. The ACWD is very interested in providing fish passage at this location and intends to pursue other sources of funding to achieve this.

The combination of this project modification and removal of the SFPUC dams would open the entire length of Niles Canyon to steelhead trout as spawning and rearing habitat. The upper end of Niles Canyon may not be suitable for summer rearing due to high water temperatures. However, the lower end of the canyon appears to be in the suitable range for "warmwater" summer trout habitat and is expected to provide both spawning and rearing habitat. This is a kind of habitat with summer water temperatures between 20 and 24 degrees Celsius, where fast flows due to flow augmentation allow the trout to obtain adequate food despite higher metabolic needs under those conditions (Gunther, et al., 2000).

e. Project Outputs. The expected output of the proposed project modification in the short term would be the availability of approximately two miles of suitable spawning and rearing habitat for steelhead trout in lower Niles Canyon and the re-establishment of a population of steelhead trout in the Alameda Creek Watershed, even without removal of the SFPUC dams. The planned removal of those dams by the SFPUC will open up an additional two or more miles of seasonally suitable steelhead trout habitat, but that reach of Alameda Creek would not provide good summer rearing habitat due to high water temperatures in those months. It is not known how large a population of steelhead trout would result, so outputs would most likely be measured in habitat units using the Habitat Evaluation Procedures (HEP) methodology.

Non-Federal steelhead trout restoration projects farther upstream could open up substantial additional reaches of spawning and rearing habitat. These areas consist of gravelly stream reaches located in steep, wooded canyons with good water quality and suitable temperatures. The result could be later increases in the outputs of the proposed project modification. The possible upstream projects include the following, which are discussed in more detail in Section 2.d. above:

Modification of the Palomares Road culvert would open up two miles of suitable habitat along Stonybrook Creek. The PG&E pipeline crossing in Sunol Valley is probably a barrier to upstream migration under most or all flow conditions. Modification of this structure would open up approximately five miles of suitable habitat along upper Alameda Creek. Farther upstream, removal of the Alameda Creek Diversion Dam would open up an additional ten miles of suitable habitat along Alameda Creek.

Within the Arroyo de la Laguna subwatershed, the only suitable and potentially accessible habitat is the upper portion of Arroyo Mocho. While 10 to 14 miles of this stream appear to contain suitable habitat, it is not known whether habitat conditions (water availability and temperature) farther downstream are suitable for migration of adults and juveniles. Therefore, restoration of steelhead trout in this stream is more speculative, even if the partial migration barriers below the suitable reach are modified.

Past efforts to place numbers on the potential population of steelhead trout that could be restored to the Alameda Creek watershed have been contentious (Gunther, et al., 2000). Therefore, no numbers are available at this time. One of the tasks during preparation of

the Detailed Project Report will be to better assess this issue, and if practical, determine credible numbers for use in evaluating the cost-effectiveness of this proposal.

There is a great deal of interest in the restoration of steelhead trout runs to Alameda Creek. A number of restoration actions are being implemented, planned, or considered by various agencies as described above in Section 2.e. However, none of these actions would assist in the restoration of steelhead trout runs unless steelhead trout are able to surmount the barrier created by the existing Corps of Engineers drop structure. Also, restoration efforts would be substantially impaired unless the trout can avoid entrainment by the substantial water diversions in the project study reach.

Thus, this project is an essential first step in the progressive restoration of steelhead trout to various portions of the Alameda Creek watershed. Given the level of agency and public interest in this larger effort, implementation of this project is expected to provide an important incentive to additional restoration actions.

There been repeated discussions in the Alameda Creek Fisheries Workgroup regarding the appropriate approach to restoration of steelhead trout in this watershed. There have also been several discussions between the Corps and the non-federal sponsor regarding this issue. The various interested parties have repeatedly agreed that provision of fish passage in the Corps of Engineers flood-control channel should not be held up by watershed-wide ecosystem restoration planning, given that the migration impediments in the Corps channel are the key limiting factor to steelhead trout restoration in this watershed.

Tentatively, the output of the project modification would be measured by the number of steelhead trout habitat units created in the Alameda Creek watershed. Habitat outputs would be quantified by an assessment based the HEP methodology. The intent is to quantitatively evaluate without-project and with-project biological outputs in terms of habitat units. If further studies indicate that fish numbers resulting from the project modification can be estimated with sufficient accuracy and in a cost-effective manner, then fish numbers could be used instead to measure the project output.

f. Importance of Project Benefits. The steelhead trout (*Oncorhynchus mykiss)* is listed as threatened under the federal Endangered Species Act. This species has declined greatly due to habitat loss and degradation and is a priority for restoration efforts. The project modification would provide for the establishment of a viable population of steelhead trout in Alameda Creek and would lay the foundation for further restoration actions by other parties. Reestablishment of steelhead trout in the Alameda Creek watershed would help to restore the geographic distribution and viability of this species.

The Alameda Creek watershed is the largest watershed draining into the San Francisco Estuary aside from the Sacramento-San Joaquin watershed, and has potential to be one of the most important steelhead trout streams draining into this estuary due to its size and the presence of good spawning and rearing habitat in a number of stream reaches within the watershed. Many other streams around the bay are largely or entirely blocked by

major dams or are otherwise too degraded to be feasible locations for steelhead trout restoration efforts.

This restoration effort would also provide educational values. Most steelhead trout populations are in rural areas, but Alameda Creek runs through the city of Fremont and adjacent to Union City and Hayward, which together have a population of over 350,000 people. Fremont now has an annual Fremont Steelhead Festival and Watershed Awareness Fair.

In addition, enabling fish passage at these barriers is essential to any steelhead trout restoration program higher up in the watershed. Suitable spawning and rearing habitat in Arroyo Mocho, upper Alameda Creek, and Stonybrook Creek is rendered difficult or impossible to access by partial and complete migration barriers upstream from the barriers under discussion here, quite aside from the several large dams in the watershed which are not likely to be removed. While the proposed modifications are a stand-alone project, these modifications would interact synergistically with future upstream improvements by others which themselves would be encouraged by the proposed project modification.

g. Status of LERRs. This section relates to requirements for project lands, easements, rights-of-way, and relocations (LERRs). The ACFCWCD manages the existing channel and owns the project lands in fee simple title. No additional right-of-way requirements have been identified or are anticipated.

The ACFCWCD acquired the LERRs for the existing Corps project. No credit will be given for LERRs acquired as part of the required local contribution for the existing project. Administrative costs expended by the non-federal sponsor for documentation of LERRs during preparation of the DPR can not be credited as in-kind contributions, as a project cost-sharing agreement would not be in force yet.

h. Other Ongoing or Proposed Actions. The Corps of Engineers has no other current actions planned or underway in the watershed. The San Francisco Public Utilities Commission expects to remove the Sunol and Niles Dams within one to two years and has included this action in its budget. They also are no longer using the Alameda Creek Diversion Dam and may remove it as part of their renovation or replacement of Calaveras Dam. Pacific Gas and Electric is investigating fish passage options at its Sunol Valley pipeline crossing and has developed four preliminary alternatives. The Alameda County Fisheries Workgroup is developing goals and objectives for restoration of steelhead trout to the Alameda Creek watershed. This effort will include determination of needed actions, responsible or participating parties, collaboration, sequencing of actions, and selection of priority actions.

i. Alternatives. The following alternatives to the proposed project were considered during preparation of the Preliminary Restoration Plan. These would be further considered during preparation of the DPR. All alternatives to be considered include the laddering the middle inflatable dam and the Corps drop structure, and

provision of fish screens on four water intakes, as these are believed to be the minimum actions needed to allow safe fish passage in the study area.

(1) *NO ACTION ALTERNATIVE/WITHOUT-PROJECT CONDITION* - The No Action Alternative would continue operation of the Alameda Creek Flood Control Project, the inflatable dams, and water diversions as they have been operated to date. The existing project does not provide any upstream fish passage or safe downstream passage through the upper portion of the flood control channel. Without the proposed project modification, steelhead trout would continue to be unable to complete their life cycle in the Alameda Creek watershed. This would impede the recovery of a federally-listed threatened species. Planned and potential fish-passage projects elsewhere in the watershed by other parties would be of no value.

(2) *MIDDLE GRADE-CONTROL STRUCTURE AND FISH SCREENS ALTERNATIVE* - The second alternative would be the same as the proposed project, except that it would delete the fish ladder at the upper inflatable dam. This structure is entirely a non-federal structure, although it was constructed to compensate for losses of percolation capacity caused by the federal project. This alternative would provide less upstream and downstream fish passage, though some migration would still be possible. Minor improvements to the grade-control structure by the ACWD could improve upstream fish passage during periods when the dam is deflated. Additional study during preparation of the DPR would determine the benefits associated with this alternative and evaluate its short-term and long-term cost-effectiveness relative to the proposed project.

j. Study Methodologies. The initial task in the preparation of the DPR will be preparation of the Project Management Plan (PMP) with detailed delineation of needed tasks and subtasks, timelines, and budgets.

This task will include an investigation of each potential project component described in this PRP to determine if the structure to be modified by that project component qualifies as either a part of the Federally-constructed project or else as a locally-constructed feature installed to rectify a problem caused by the Federal project. Upon completion of this task, the study will continue with various tasks outlined below. This initial investigation of project component eligibility is estimated to cost $20,000 and to take two months.

The studies necessary for completion of the study and the implementation of the project are:

1. Preparation of a Project Management Plan with detailed delineation of needed tasks and subtasks, timelines, and budgets.
2. Investigation and determination of the eligibility of specific structures in the flood-control channel for inclusion in a Section 1135 project.
3. Biological assessment under Section 7 of the Endangered Species Act.
4. Wetland delineation under Section 404 of the Clean Water Act.
5. Planning Aid Report under the Fish and Wildlife Coordination Act.

6. Habitat Evaluation Procedures (HEP) study
7. Temperature and water quality studies.
8. Flow management studies.
9. Environmental Assessment/Negative Declaration.
10. Hydraulic analysis to ensure that project modifications maintain the design level of flood protection.
11. Engineering and geotechnical studies.
12. Maintenance study to identify the necessary activities, regulatory permits, and maintenance costs associated with the ongoing operation of the project.
13. Incremental cost analysis to identify cost-effective alternatives.
14. Detailed Project Report.

4. Consistency Statement. The proposed project modification is consistent with the primary flood control purpose of the Alameda Creek Flood Control Project and would not affect the degree of protection provided by the project. The proposed modification would allow safe fish passage consistent with this purpose.

5. Views of Sponsor. The Alameda County Flood Control and Water Conservation District has provided a letter of intent for this project (attached). This agency and the Alameda County Water District have consistently supported installation of fish ladders and fish screens on their facilities in Alameda Creek.

6. Views of Federal, State, and Regional Agencies. The following agencies have expressed written support for modification of the Alameda Creek Flood Control Project for fish passage and for restoration of a self-sustaining population of steelhead trout to Alameda Creek. Their letters are attached to this document.

National Marine Fisheries Service (NMFS)
California State Coastal Conservancy
East Bay Regional Parks District
Alameda County Board of Supervisors
Muwekma Ohlone Tribe

The California Department of Fish and Game (CDFG) has provided strong verbal support for the proposed modification.

A letter of support has been received from Representative Ellen Tauscher of the 10th Congressional District of California. Ms. Tauscher represents part of the upper watershed of Alameda Creek. A letter of support has also been received from Representative George Miller of the 7th Congressional District. The proposed modification lies within the 13th Congressional District, represented by Representative Pete Stark, who has not yet indicated a position on this project. State Senator Liz Figuaroa has provided a letter of support. She represents the 10th State Senatorial District which includes part of the Alameda Creek watershed including the project study reach.

7. Views of the Public and Private Organizations. The Alameda Creek Fisheries Workgroup includes the Alameda Creek Alliance (ACA) a local environmental group. The ACA strongly supports the proposed project modification, and they provided a letter dated September 15, 2000 (attached) endorsing installation of fish ladders and fish screens in the Corps flood control channel. This letter was signed by officials from the following organizations:

American Rivers
Bay Area Citizens for Creek Restoration
California Sportfishing Protection Alliance
California Trout
Center for Biological Diversity
Friends of the River
Friends of Sausal Creek
Golden Gate Audubon Society
Livermore Flyfishers
Muwekma Ohlone Tribe
Northern California Council of the Federation of Flyfishers
Ohlone Audubon Society
Save San Francisco Bay Association
Sierra Club, Bay Chapter
Tri-City Anglers
Tri-City Ecology Center
Trout Unlimited
United Anglers of California
Urban Creeks Council of California

Other interested members of the public have attended ACFW meetings and expressed their support for this proposal.

8. Status of Environmental Compliance. In accordance with the National Environmental Policy Act of 1970 (NEPA), as amended, an Environmental Assessment (EA) or Environmental Impact Statement will be prepared in conjunction with the development of the DPR, as appropriate. At present, an EA appears to be sufficient for NEPA compliance. The draft NEPA document will be circulated for a 30 or 45-day public review and comment period. Upon completion of the public review period, comments received will be addressed by the Corps and incorporated into the final NEPA document. Compliance with all appropriate Federal and State statutes will also take place during the DPR phase of study, including but not limited to the Endangered Species Act, the Fish and Wildlife Coordination Act , the Clean Water Act, the Clean Air Act, and the National Historic Preservation Act, provided however, that water quality certification may occur after issuance of the final NEPA document.

9. Costs and Benefits.

a. Project Modification Costs. The implementation cost for the proposed project modification is estimated at $7,964,000. This includes preparation of the DPR and EA, planning, design, and construction. The cost to complete the DPR and EA is estimated at $904,000. The cost for the design and construction of the project modification is estimated at $6,960,000 (see financial table). Operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) requirements are the responsibility of the non-Federal sponsor and would include ongoing maintenance of the ladders and screens at an estimated annual cost of $40,000.

b. Project Modification Benefits. The primary environmental benefits would be the establishment of a native steelhead trout population in Alameda Creek. This benefit will likely be increased over time by additional non-Federal fish passage projects farther upstream which are now in the planning phase or are considered likely targets for future corrective action under the action plan now being developed by the ACFW. It is not known at this time whether it will be possible to quantify the number of fish that would be produced. Steelhead trout are listed as threatened under the federal Endangered Species Act of 1973. This species is of great interest to the public and is viewed by the resource agencies as a priority for restoration efforts.

Many creeks draining into the San Francisco Estuary which historically supported steelhead trout no longer support populations of this species due to severe habitat degradation and creation of insurmountable barriers to migration. For example, the next major creek to the north of Alameda Creek is San Lorenzo Creek, which once supported steelhead trout and which still has suitable habitat in its headwaters. However, the lower section of this creek has been restricted to a concrete channel for many miles, creating conditions inimical to steelhead trout migrations. Right-of-way limitations make it unlikely that these channelized sections can be restored.

The next major creek to the north of San Lorenzo Creek is San Leandro Creek, which also supported steelhead trout runs. Two major water supply reservoirs in this watershed completely isolate the remaining suitable habitat from access by steelhead trout returning from the ocean, and the importance of these reservoirs makes their removal highly unlikely. Other major East Bay (Alameda and Contra Costa counties) watersheds to the north, such as San Pablo Creek and Walnut Creek, also have major barriers that would be difficult or impractical to bypass or remove.

In contrast, the Alameda Creek watershed is much larger, yet all the migration barriers in the lower watershed, and some of those in the upper watershed, can feasibly be made passable to adult and juvenile steelhead trout. Meanwhile, while much of the stream mileage in the watershed has been degraded, substantial areas of good steelhead trout habitat remain. Thus, this watershed has the best potential for restoration of steelhead trout of any large watershed in the East Bay.

c. Institutional and Public Recognition. The value of protecting and restoring threatened and endangered species in general is acknowledged in the following Federal statute:

Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)

The value of anadromous fish runs and the biological functions they provide are acknowledged in the following Federal statutes:

Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. 1801 et seq.)
Water Resources Development Acts (various Public Laws)
Various other federal statutes

Salmon and steelhead trout are species of great interest to the public, both to fishermen and the public at large. The City of Fremont sponsors an annual steelhead trout festival in recognition of the public interest in this species.

d. Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R). OMRR&R are the responsibility of the non-Federal sponsor(s). These costs would include maintenance of the fish ladders and fish screens. Maintenance can be expected to include frequent inspections, removal of debris (primarily during periods of high flow), annual replacement of cleaning brushes, and similar activities. On rare occasions parts may need to be replaced, as in the case of electric motors. However, the proposed facilities are expected to be long-lived. OMRR&R costs are currently estimated at $40,000 per year. OMRR&R activities and costs will be described and quantified in more detail during preparation of the DPR.

e. Funding Source Statement. The non-Federal sponsor and local funding source for non-federal funds will be the Alameda County Flood Control and Water Conservation District (ACFCWCD). The Alameda County Water District (ACWD) will assist the ACFCWCD with the cost of the project and will closely coordinate with the ACFCWCD and the Corps of Engineers during the planning and implementation of the fish passage project, but will not be an official sponsor.

At this time, while these agencies may not have adequate funds to pay the entire local share of cost, they are actively investigating potential funding sources such as the California State Coastal Conservancy, CALFED (non-federal funds), the Wildlife Conservation Board, and other grant programs.

The ACFCWCD and the ACDW are aware of the cost-sharing limits of the Section 1135 program. They are aware that the largest possible Federal contribution towards a Section 1135 project is $5,000,000, and that any study and project costs above and beyond that figure must be paid entirely by the non-Federal sponsor using non-Federal funds. They are aware of the estimated cost of this project, including study, design, and construction costs.

The ACFCWCD has provided a letter of intent which indicates their understanding of these issues and their commitment to provide any funding needed above the Federal share of cost to complete this project. The ACWD has provided a letter of intent to the ACFCWCD indicating their intent to provide substantial funding towards the non-Federal share of cost for this project. The California State Coastal Conservancy is very interested in this project and has indicated their intent to assist with the non-Federal share of cost.

10. Schedule. The proposed project is scheduled for completion in FY 2005, based on an DPR start date of April 2002. The proposed schedule is as follows:

Task	Date
Initiate DPR	April 2002
Circulate Draft DPR and EA	Mar 2004
Complete DPR, EA, and Draft PCA	May 2004
SPD DPR/PCA Approval	Jul 2004
Initiate Plans & Specs	Aug 2004
Complete Plans & Specs	Jan 2005
Execute PCA	Feb 2005
Award Contract	Jun 2005
Start Construction	Jul 2005
Complete Construction	Oct 2005

11. Supplemental Information.

The ACFCWCD and the ACDW are aware of the Continuing Authorities Program (CAP) and the General Investigations (GI) program and their respective features. The possibility of pursuing this project modification under the GI program was considered, discussed, and rejected by the ACFCWCD and the ACWA after discussions with San Francisco District and South Pacific Division staff. The reason for this decision is the relative rapidity of studying and approving a project under the Section 1135 program. The ACFCWCD and ACWA would prefer to construct the proposed project modification within two or three years.

The proposed project modification would further the aims of several programs, such as the San Francisco Estuary Program, The San Francisco Bay Joint Venture, CalFed, and the Coastal America Partnership, by restoring steelhead trout to an important tributary of the San Francisco Estuary and by enabling and encouraging further steelhead trout restoration actions in this watershed by other parties. The Alameda Creek watershed is the most promising watershed in the East Bay, and one of the most promising in the San Francisco Estuary watershed, for steelhead trout restoration. No steelhead trout restoration can occur in this watershed without provision of adequate fish passage in this reach of Alameda Creek.

12. Financial Data. Estimated project modification costs are as follows:

PROJECT MODIFICATION COSTS & TIMETABLE							
Alameda Creek Fish Passage Project				Federal Funding Needs			
Phase	Totals	Non-Fed	Federal	FY02	FY 03	FY 04	FY 05
Report (DPR)	$904,000	$0	$904,000	$200,000	$394,000	$310,000	
Plans and Specifications	$100,000	$0	$100,000	$0	$0	$35,000	$65,000
Construction	$6,960,000	$2,964,000	$3,996,000	$0	$0	$0	$3,996,000
TOTALS	$7,964,000	$2,964,000	$5,000,000	$200,000	$394,000	$345,000	$4,061,000

COST BREAKDOWN BY WORK ELEMENT			
Description	Total Cost	Federal Cost	Non-Federal Cost
Hydrology and hydraulics studies	$40,000		
Geotechnical studies/report	$77,000		
Engineering design	$94,000		
Real estate analysis/report	$33,000		
Environmental studies/report (except FWCA&ESA)	$17,000		
Financial analysis of sponsor	$7,000		
Thermal, water quality, and flow studies	$200,000		
Endangered Species Act compliance	$13,000		
Fish and wildlife Planning Aid Report	$29,000		
HTRW studies report	$73,000		
Cultural resources studies/report	$19,000		
Cost estimates	$53,000		
Public involvement	$9,000		
Plan formulation and evaluation	$52,000		
Planning management	$22,000		
Management documents PPMD (Includes PCA)	$63,000		
NEPA/CEQA documentation	$15,000		
DPR – draft and final DPR	$25,000		
Technical review (QA/QC)	$21,000		
Contingencies	$42,000		
SUBTOTAL FOR DPR	**$904,000**	**$904,000**	**$0**
Plans (design and real estate)	$50,000		
Specifications (cost)	$50,000		
SUBTOTAL FOR PLANS AND SPECIFICATIONS	**$100,000**	**$100,000**	**$0**
Construction			
Middle Dam fish ladder	$2,900,000		
Upper Dam fish ladder	$1,400,000		
Alameda Creek Pipeline screens	$800,000		
B Pond Diversion screens	$150,000		
Kaiser Pond Diversion screens	$400,000		
Upper Shinn Pond Diversion screens	$1,100,000		
Supervision and administration	$150,000		
Operation and maintenance manual	$60,000		
SUBTOTAL FOR CONSTRUCTION	**$6,960,000**	**$3,996,000**	**$2,964,000**
TOTAL	**$7,964,000**	**$5,000,000**	**$2,964,000**

NON-FEDERAL REQUIREMENTS	
LERRD (non-Federal admin. cost during DPR; no credit given towards cost-sharing)	$5,000
Cash	$2,964,000
Work-in-Kind	$0
Total Non-Federal Share	**$2,964,000**
Annual OMRR&R	$40,000
Monitoring (total)	$150,000

13. FEDERAL ALLOCATIONS TO DATE:

FEDERAL ALLOCATIONS TO DATE	
Preliminary Restoration Plan	**$10,000**
Detailed Project Report	0
Plans and Specifications	0
Construction	0

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San Francisco District
South Pacific Division

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